Resolving scope ambiguity: Lexicon, pragmatics, information structure

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Abstract: This paper presents a corpus study of factors involved in disambiguating potentially ambiguous sentences with negation and universal quantifier *all* in written English, such as *I haven't heard all these details*. Ambiguity in such sentences results from potential differences in scope assignment. If negation scopes over the quantifier, we get the interpretation of partial negation: 'I have heard some of these details'. If negation scopes over the verb, we get the interpretation of total negation: 'I haven't heard any of these details'.

While there is abundant research on the phenomenon of scope ambiguity and its disambiguation via prosody, syntax and semantics, less is known about the pragmatic mechanisms that allow speakers to infer intended scope readings from the lexical environment in actual texts. In order to study the correlation between the lexical set-up of *not* + Verb + *all* sentences, their pragmatically plausible interpretations, their information structure, and their scope readings in actual usage, we analyze about 1500 sentences extracted from EnTenTen15 Corpus and the Corpus of Contemporary American. Our study demonstrates that different lexical instantiations of this construction are associated with different pragmatic scenarios and, hence, with different information structures and scope readings.

The interpretations of partial negation (quantifier negation) and total negation (verb negation) differ with respect to semantics, pragmatics and information structure. Namely, a focused quantifier produces partial negation, while a focused verb produces total negation. Quantifier negation entails literal interpretation of the quantifier *all* in its direct quantificational meaning (*I haven't talked to* [*all*] *my students*); verb negation mostly entails emphatic interpretation of *all* in its meaning of negative emphasis (*I don't* [*want*] *to talk to all these idiots*).

Quantifier negation is considerably more frequent than verb negation due to its pragmatic neutrality. In the absence of verb negation markers, it is the default interpretation of *V not all* structures. Because of its association with quantification, quantifier negation frequently occurs in the context of predicates that take a quantificational argument as a direct object (*to include*, *to list*, *to finish*), or easily allow quantifiable or multiple objects (*to know*, *to meet requirements*, *to answer criteria*). Such predicates are conducive both to placing the quantifier in the focus and interpreting it in its literal quantificational meaning: *He didn't list* [*all*] *the requirements*; *The candidate doesn't answer* [*all*] *the criteria*. Verb negation usually occurs with temporal modifiers containing *all* (such as *all night*) because they are conducive to placing the verb in the focus: *I haven't* [*slept*] *all night*. Verb negation also occurs with emphatic demonstratives and negatively connoted lexical items because they consolidate the emphatic interpretation of the quantifier *all*: *I don't* [*want*] *to hear all these disgusting details*.

Keywords: information structure, negation, pragmatics, quantifiers, scope, semantics

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Разрешение неоднозначных сфер действия: лексика, прагматика, коммуникативная структура

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Аннотация: В статье представлено корпусное исследование факторов, связанных с разрешением неоднозначности потенциально двусмысленных предложений с отрицанием и квантором всеобщности в письменном английском языке, таких как *I haven't heard all these details.* Неопределенность в таких предложениях проистекает из потенциальных различий в сфере действия. Если отрицание включает в свою сферу действия квантор, мы получаем интерпретацию частичного отрицания: 'Я слышал некоторые из этих деталей'. Если отрицание включает в свою сферу действия глагол, мы получаем интерпретацию полного отрицания: 'Я не слышал ни одной из этих деталей'.

Хотя неоднозначность сфер действия в предложениях с отрицанием и квантором всеобщности, а также механизмы ее разрешения с помощью просодии, синтаксиса и семантики достаточно хорошо изучены, о прагматических механизмах, позволяющих говорящим интерпретировать потенциально двусмысленные предложения, известно намного меньше. Чтобы изучить корреляцию между лексической реализацией предложений вида *not* + Verb + *all*, их прагматически правдоподобными интерпретациями и их коммуникативной структурой, мы анализируем около 1500 предложений, извлеченных из корпуса EnTenTen15 и Корпуса современного американского языка. Наше исследование демонстрирует, что различные лексические реализации этой конструкции связаны с различными прагматическими сценариями и, следовательно, с различными коммуникативными структурами и различными интерпретациями сфер действия.

Отрицание квантора встречается значительно чаще, чем отрицание глагола, из-за его прагматической нейтральности. В отсутствие маркеров отрицания, по умолчанию структуры вида *not V all X* интерпретируются с частичным отрицанием. Поскольку при отрицании квантора он имеет количественную (а не эмфатическую) интерпретацию, контексты частичного отрицания тяготеют к особому семантическому классу предикатов — а именно, к глаголам, которые принимают количественный аргумент в качестве прямого объекта (*to include*, *to list*, *to finish*). Такие предикаты способствуют как помещению квантора в фокус, так и его интерпретации в буквальном количественном значении: *He didn't list* [*all*] *the requirements*; *The candidate doesn't answer* [*all*] *the criteria*. Глагол обычно попадает под отрицание в контексте временны́х модификаторов, содержащих квантор *all* (например, *all night*), потому что они способствуют помещению глагола в фокус: *I haven't* [*slept*] *all night*. Отрицание глагола также встречается с указательными местоимениями в эмфатической функции, поскольку они консолидируют эмфатическую (а не количественную) интерпретацию всей именной группы с квантором: *I don't* [*want*] *to hear all these disgusting details*.

Ключевые слова: кванторные местоимения, коммуникативная структура, отрицание, прагматика, семантика, сфера действия

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1. Introduction

This paper considers the correlation between lexicon, pragmatics and information structure in the interpretation of scope ambiguities in English sentences with predicate negation[1] and universal quantifier, such as

(1) *I haven't talked to all these students*.

Negation can scope either over the universal quantifier, producing the interpretation of partial negation 'I have talked only to part of these students', or over the verb, producing the interpretation of total negation 'I haven't talked to any of these students'. The scope of negation is decided on the basis of information structure, as demonstrated by [Jackendoff 1972: 248–273]; namely, the operator (in this case, negation) scopes over the FOCUS of the utterance. Scope ambiguities are a well-studied area of linguistics; consider [Jespersen 1924; Klima 1964; Hintikka 1973; Cooper 1979; Gil 1982; Aoun, Li 1989; Horn 1989; Partee 1993; Reinhart 1997; Kiss 2006], to mention just a few seminal works. There is also plentiful research on the role of information structure in determining scope [Jackendoff 1972; Sgall et al. 1973; Partee 1991; Hajičova 1998]. Many recent experimental studies on scope disambiguation examine the role of prosody in the detection of the intended scope reading and its ties with information structure [Kadmon, Roberts 1986; Koizumi 2009; Ionin 2010; Syrett et al. 2014]. Other research on disambiguation focuses on syntactic clues [Kurtzman, MacDonald 1993]; on respective probabilities of possible readings [Hurum 1988]; on general structural and semantic principles of scope disambiguation, such as "economic stance" [Tunstall 1998].

While the role of information structure in scope disambiguation is paramount, we suggest that in written text, where prosodic information is unavailable, information structure is ultimately inferred via pragmatic reasoning. Pragmatically different situations are associated with different lexical environment. Thus, the objective of this research is to find correlations between the lexical filling of *not* + Verb + *all* strings and standard pragmatic scenarios associated with each lexicalization pattern, on the one hand, and typical information structures and scope readings, on the other.

2. Hypothesis and approach

Our approach in this paper is based on some of the claims and results presented in [V. Apresjan 2019], mainly relative to the Russian data.

Namely, we assume that different information structures of *not* + Verb + *all* sentences, which result in different scope readings of negation, are associated with different kinds of pragmatic scenarios and, therefore, with different lexical expression. Thus, lexical environment can be used as a clue to infer the intended scope readings. We expect to demonstrate that the two major scope readings of negation in *not* + Verb + *all* sentences, namely, negated quantifier reading and negated verb reading, possess their own distinct lexical markers. Certain pragmatically plausible readings are to a large extent lexicalized.

We aspire to study the typical collocational patterns of *not* + Verb + *all* sentences and demonstrate that they are associated with particular pragmatic scenarios and, hence, with specific information structures and scope readings.

[1] Following [Paducheva 1974], we use this term in its syntactic sense, namely, to describe negation that is syntactically attached to the predicate (but semantically can have scope over other constituents in the sentence).

3. Methods and materials

The study is based on samples extracted from Corpus of Contemporary American [COCA], which is a balanced 560-million-token corpus spanning 1990–2015, and [EnTenTen15] Corpus on Sketch Engine, which is a 19-billion-token Web-based corpus, crawled and processed during the last ten years. Our main samples used to analyze the distribution of readings and identify their contextual markers include 200 examples from each corpus.[2] They have been randomly selected from the results of the search query *not* + Verb + *all*, after manually excluding all irrelevant contexts. Irrelevant contexts included:

— idiomatic constructions, such as *He isn't all that smart*;
— clauses with factive predicates which allow only verb-negated readings because the embedded proposition is presupposed, such as *I didn't know all the students were late*;
— clauses with non-factive predicates which allow only quantifier-negated readings, because the embedded proposition is asserted, such as *I didn't think all the students were late*;
— rhetoric questions and unreal conditionals which presuppose the truthfulness of the negated proposition, such as *Haven't I said all this before?*, *If he hadn't spent all the money gambling, he'd have bought himself a new suit*.

Our search query does not include sentences of *all* + Noun + Verb + *not* structure, with the quantifier *all* in the subject.[3] In principle, this string allows both quantifier-negated (Q-negated) and verb-negated (V-negated) interpretations:

(2) [*All*] *men are not created equal.*
'Not all men are created equal.'

(3) *At examination, all monkeys had not* [*undergone*] *any intervention and had not been involved in any study.*
'None of the monkeys had undergone any intervention.'

However, both for verb negation and for quantifier negation, this construction is considerably less frequent than alternative ways of expression. Partial negation of subjects with *all* is more frequently expressed by strings *not* + *all* + Noun + Verb (a rare case when constituent negation is preferred over sentential negation in English). The frequency of *not* + *all* + Noun + Verb strings is almost 5 times as high the frequency of *all* + Noun + Verb + *not* strings (3.88 ipm vs. 0.82 ipm in EnTenTen15). Total negation in English is normally expressed by negative pronouns: *None of the students came*, but not *All students didn't come*.

First, we annotate our two samples for scope. Next, we formulate contextual markers for verb-negated and quantifier-negated readings. Then we verify the validity of our contexts as markers of specific readings by extracting samples with these markers from COCA and from EnTenTen15 and analyzing them for scope. We also rely on frequency data from both corpora to verify our claims.

[2] We extracted a different sample from COCA than the one used in [V. Apresjan 2019], using an enhanced manual extraction procedure that excluded irrelevant contexts; although the distribution of readings is similar, the actual numbers are slightly different. We have also included a sample from the EnTenTen15 corpus, which we did not consider in earlier work.

[3] Tottie and Neukom-Hermann [2010] present a corpus analysis of *all N not V* sentences and suggest that their interpretation is decided mostly by syntactic factors.

4. Results and discussion

4.1. Interpretations of sentences with predicate negation

In our samples, we encounter four types of scope readings: Q-negated readings, or sentences where the negation scopes over the quantifier; V-negated readings, or sentences where negation scopes over the verb; C-negated readings, or sentences where negation scopes over a different constituent; A-readings, or ambiguous readings.

In Q-negated readings, the negation scopes over the quantifier, which is in the focus:

(4) *I haven't read* [*all*] *the instructions.* [EnTenTen15]

The quantifier is interpreted in its direct quantificational meaning. The resulting interpretation is that of partial negation: 'not all X Y'. Thus, Q-negated reading of the structure *not Y* [*all*] *X-s* is normally interpreted as 'Some X-s Y and some X-s not Y'. If the quantifier is stressed and thus forms a single focus, the affirmative component 'some X-s Y' has the status of a presupposition and cannot be denied:

(5) a. *I haven't read* [ALL] *the instructions, I have read only part*.

b. **I haven't read* [ALL] *the instructions; in fact, I haven't read any.*

In this respect, Q-negated readings of sentences with sentential negation are the same as sentences with constituent negation of the universal quantifier:

(6) **Not all guests came; in fact, none did.*

If the quantifier is unstressed and thus is part of the focus, the component 'some X-s Y' has the status of a scalar implicature and can be denied:

(7) a. *The students don't realize* [*all*] *the opportunities they have to go out and do things*. [EnTenTen15]

b. *The students don't realize* [*all*] *the opportunities they have to go out and do things; in fact, they realize nothing.*

In V-negated readings, the negation scopes over the verb, which is in the focus:

(8) *People just get along with their business, work hard, and they're not* [*causing*] *all sorts of trouble.* [COCA]

(9) *We can do the same, not* [*accepting*] *all the religious ideas that swirl around but not condemning them either.* [EnTenTen15]

The resulting interpretation is that of total negation: 'all X not Y'. In V-negated readings, the quantifier is frequently interpreted not in its direct quantificational meaning, but as a marker of negative emphasis:

(10) *We will not have all these little houses, we must all get big houses, man.* [COCA]

When *all* is interpreted emphatically, it can be dropped without significant changes in semantics: *We will not have* (*these*) *little houses, we must all get big houses*.

Ambiguous readings are contextually underspecified sentences, which are felicitous either with partial or total negation, as in (11)[4]:

(11) *Thank you for not counting all of my sins against me.* [EnTenTen15]

[4] As demonstrated below, they are fairly rare.

(11) can mean either ‘Thank you for counting only part of my sins against me and overlooking others’ (Q-negation) or ‘Thank you for not counting any of my great many sins against me’ (V-negation). With Q-negation, *all* is neutral and refers only to the quantity of sins (which can be modest). With V-negation, *all* is emphatic and expresses quantitative and qualitative assessment of the sins — they are both numerous and great. In case of (11), the utterance does not contain the necessary clues, and a wider context is required for interpretation. Possible interpretations are built based on reconstructing the potential intention of the speaker.

However, in the majority of cases this intention is clear from the utterance; consider (12) vs. (13):

(12) *Social Security does not count all your resources when deciding SSI* [supplemental security income] *eligibility.* ([EnTenTen15]; Q-negation)

(13) *This doesn’t count all the people who never showed up for meetings.* ([EnTenTen15]; V-negation)

In (12), it is plausible that deciding social benefits eligibility includes at least some assessment of a person’s resources, so Q-negation is the preferred option. Sentence (13) makes more sense with V-negation: it is more logical to exclude the non-attendees from general count altogether, rather than exclude only part of them on some obscure grounds.

In C-negated readings, the negation scopes over some other focused component in the sentence:

(14) *Young people cannot do all those things* [*at 16*].
‘Young people can do all those things but not at 16.’

4.2. Distribution of readings and contexts

Our 200-sentence EnTenTen15 and COCA samples demonstrate a similar distribution of readings (Tables 1 and 2) and their lexical environments. As one can easily observe, the overwhelming majority of sentences in our sample is interpreted with Q-negation; a much smaller number of sentences receives V-negated readings; ambiguity and especially C-negation are rare. The types of lexical contexts and their motivation by different scope readings are explained below.

On the whole, lexical markers of Q-negation and V-negation are determined by the semantic and pragmatic peculiarities of these readings, namely (i) partial or total negation and (ii) quantificational or emphatic interpretation of the quantifier. The interpretation of partial or total negation is triggered by the information structure of the sentence: quantifier in the focus for partial negation, verb in the focus for total negation.

Table 1

EnTenTen15 sample: distribution of readings and contexts

Reading	Total number	Percentage	Marker	
Quantifier-negated reading	167	83.5	quantification	59
			needs	38
			possession	30
			mental	27
			idiom	5
			perception	4
			numeral	1
			no marker	36

Table 1 (continued)

Reading	Total number	Percentage	Marker	
Verb-negated reading	25	12.5	demonstrative	9
			definite description	8
			negative	4
			negative+demonstrative	3
			temporal	1
Constituent	2	1		
Ambiguous reading	6	3	demonstrative	3
			definite description	2
			negative	1
Total	*200*	*100*		

Table 2

COCA sample: distribution of readings and contexts

Reading	Total number	Percentage	Marker	
Quantifier-negated reading	173	86.5	needs	42
			quantification	20
			mental	19
			perception	12
			possession	12
			numeral	7
			no marker	61
Verb-negated reading	17	8.5	temporal	4
			definite description	4
			demonstrative	4
			negative	3
			negative+temporal	1
			negative+definite description	1
Constituent	2	1		
Ambiguous reading	8	4	demonstrative	3
			negative	3
			definite description	1
			demonstrative+negative	1
Total	*200*	*100*		

4.3. Quantifier-negated readings: contextual markers

Lexical markers of Q-negation are triggered by the following two factors: in Q-negated readings, (i) the quantifier is in the focus; (ii) the quantifier is interpreted in its quantificational meaning.

As concerns (i), we observe correlation between the scope interpretation of predicate negation and the status of the quantificational group with *all* in the argument structure of the matrix predicate. Namely, the interpretation of partial negation is normally available for predicates where the quantificational group fills a verbal argument, rather than an adjunct. Indeed, in the absolute majority of Q-negated sentences, the quantifier phrase fills a verbal argument: *We haven't watched all Tarantino movies*, *He hasn't answered all the questions*, *I don't need all the money*, *The candidate doesn't meet all the requirements*.

As for semantic classes of predicates that occur with Q-negation, they are determined by the quantitative, non-emphatic interpretation of *all.* Q-negation frequently occurs with predicates that contain an indication or implication of quantity, such as *to include, to finish, to cover* (for details, see below). Yet another class of words that mark Q-negation are numerals, which also consolidate the quantitative interpretation of *all*.

4.3.1. Numerals as markers of quantifier-negated readings

In our combined sample, there are 8 numerals, which all occur with Q-negation, consider:

(15) *XM will not broadcast* [*all*] *64 matches in English and Spanish.* [COCA]

(16) *The animal cannot synthesize* [*all*] *20 amino acids.* [COCA]

(17) *The images did not reveal* [*all*] *four chambers.* [COCA]

To verify the validity of numerals as markers of Q-negation, we further analyze a sample of 100 randomly selected sentences from EnTenTen15 Corpus that contain the string *not* + Verb + *all* + Numeral, such as *She can't help all 20 million children in Africa*; *The medical insurance does not cover all three components.*

Out of 100 sentences with a numeral in the quantifier phrase, 89 sentences are interpreted with Q-negation. They demonstrate certain repeated lexical patterns that reflect typical real-life situations, mainly the situations of possession, need, being part of a certain group, meeting requirements and demands: *You cannot have all four options at the same time*; *The applicant does not meet all five requirements*; *The insurance does not cover all eight tests*; *The agreement does not include all three parties*; *I do not need all ten participants on each project*; *He didn't answer all ten questions.*

Eight sentences in our sample are "noise", where the numeral does not function as a numeral, such as *They can't be all <u>one</u>-sided*; *One cannot practice all <u>one</u> knows*. Only three sentences have alternative, not Q-negated, interpretations:

(18) *If we don't* [*receive all three requirements*]*, we cannot guarantee your slot.*
'If we receive less than three requirements, we cannot guarantee your slot.'

(19) *Why not* [*use all three*]*?*
'I suggest to use all three.'

(20) *There is tons to do and see throughout the county, so don't* [*miss*] *all three regions.*
'Miss none of the three regions.'

In (18), negation scopes over the entire proposition. Namely, the proposition in the main clause (*We cannot guarantee your slot*) is true in either case, whether we do not receive any of the three requirements (verb-negated reading, total negation) or we receive only some of the

three requirements (quantifier-negated reading, partial negation). The difference between total negation and partial negation in this case is immaterial.

In (19), the negative particle *not* is part of the syntactic phraseme *why not*. This idiomatic construction is an indirect speech act: it introduces a recommendation in the form of a question, namely, the speaker suggests that the addressee carries out the action expressed by the proposition. *Why not* construction scopes over the entire proposition.

Finally, (20) is naturally interpreted with a verb-negated reading: the speaker recommends not to miss ANY of the three regions. Thus, out of 92 relevant sentences, 89 are interpreted with quantifier negation. Therefore, numerals can indeed be considered a strong marker of quantifier-negated readings in English.

4.3.2. Predicates that refer to quantity as markers of quantifier-negated reading

Another marker of quantifier-negated readings are predicates with a quantitative argument, such as *to include*, *to contain*; *to complete*, *to finish*; *to exhaust*; *to cover*, *to absorb*; *to share*; *to itemize*, *to list* and some others. When used with negation and a quantifier phrase to fill their object argument slot, they naturally produce quantifier-negated readings. Consider the following examples:

(21) *The Archives Hub does not include* [*all*] *UK archives.* [COCA]
'The Archives Hub includes only part of the UK archives.'

(22) *Five students did not complete* [*all*] *EPQ items.* [COCA]
'Five students completed only part of EPQ items.'

(23) *We cannot* [*list*] *all the tracks now.* [EnTenTen15]
'We can list only some of the tracks now.'

(24) *This information is of a general character and does not* [*contain*] *all the conditions under which passenger transport is implemented by Slovak airline companies.* [EnTenTen15]
'This information contains only part of the conditions.'

All these verbs contain a semantic indication of quantification, at least on some level of semantic decomposition. Consider the definition of *to include* in the Online Macmillan Dictionary: 'to contain someone or something as a part'. The sense 'part' is quantitative, as attested by the definition of this word in the same dictionary: 'some but not all of something'. Thus, the verb *to include* contains the meaning of quantification on the second level of semantic decomposition. The same is true of *to contain* which is defined, somewhat circularly, as 'to include something, or to have it as a part'. Likewise, the verb *to complete* means 'to finish something', *to finish* means 'to do the last part of something', and *part* means, as said before, 'some but not all of something'. Therefore, the verb *to complete* contains the meaning of quantification on the third level of semantic decomposition. The verb *to list* means 'to mention or write a list of things, one after another', whereas the noun *list* refers to 'a set of names, numbers etc. that are written or printed one below another'. The word *set* refers to a certain NUMBER of elements that form a group together. Again, *to list* contains the meaning of quantification on the third level of semantic decomposition. The verb *to share* contains quantification on the first level of semantic decomposition: it means 'to give a part of what one has to another person'.

All verbs with a quantificational argument in our sample belong to the following semantic classes: (i) 'to have as a part' (*to contain*, *to include*); (ii) 'to put elements of a set in order' (*to list*, *to itemize*); (iii) 'to do something gradually with all elements of a set or all parts of an object' (*to finish*, *to complete*, *to cover*, *to absorb*); (iv) 'to do something with some elements of a set or some parts of an object' (*to share*). They form a considerable chunk of our sample (59 hits in EnTenTen15 and 20 hits in COCA), and they are strong predictors of Q-negated readings.

4.3.3. Predicates that frequently involve quantity as markers of quantifier-negated readings

More frequently, quantity is a plausible extention of the meaning, rather than a semantic component. Consider the example in (25):

(25) *Current contraceptive technology does not meet* [*all*] *of the National Park Service's criteria.* [COCA]
'Current technology meets part of the criteria.'

Indeed, *meeting criteria* usually implies more than one criterion, and the criteria are considered separately, one by one. *Meeting criteria* belongs to the semantic class of predicates that we labeled 'needs'. This class includes verbs that refer to situations of requirements, expectations, needs, and is represented by the verbs *to answer* (*expectations*, *needs*, *requirements*), *to fulfill* (*needs*), *to provide*, *to address* (*needs*), *to meet* (*expectations*, *criteria*, *requirements*), *to satisfy* (*requirements*), *to solve* (*all problems*) and some others. The argument filling the object slot in these verbs is usually quantified (*all needs*, *some requirements*, *five criteria*) because the situations described by these verbs normally involve sets consisting of more than one element. This semantic class is fairly frequent in our sample (42 hits in EnTenTen15, 38 hits in COCA) and is a strong predictor of Q-negated readings.

Other semantic classes of predicates that imply quantity while not referring to it directly, and that frequently occur in sentences with partial negation in our COCA sample are as follows:

— verbs of possession and acquisition, especially *to have*, *to possess*, *to get*;
— mental verbs, especially *to know*, *to understand*;
— verbs of perception, especially *to see*, *to hear*.

While verbs belonging to these semantic classes do not refer to quantity directly, they easily take quantifiable arguments because they frequently involve quantification: *He has three houses*; *He knows many languages*; *I saw four paintings*; *He told me several interesting stories*. Therefore, when used with the universal quantifier and negation, they are likely to be interpreted in the sense of partial negation, rather than total negation. Consider the following examples from our COCA sample, which are interpreted with quantifier negation:

(26) *They do not know* [*all*] *the information.* [COCA]

(27) *I have not seen* [*all*] *these figures.* [COCA]

Other mental verbs, e.g. *understand* and *realize*, have an even closer association with quantification. Understanding, unlike knowing, is not necessarily a state: it can refer to a process that is happening in increments: *I don't yet understand everything*; *There is little I understand so far*; *I am trying to understand*; *He has so far realized only some of the implications of this conflict.* This multi-stage nature of understanding carries an indirect reference to quantity: understanding is achieved in multiple instalments, and complete understanding is the sum of all the pieces of a puzzle. Thus, verbs of understanding also present a natural context for Q-negated readings, consider:

(28) *I still don't* [*understand*] *all the details.* [EnTenTen15]

Verbs of perception are yet another semantic class of verbs with quantitative implicatures. While the states of *seeing* or *hearing* do not, in themselves, involve any quantification, quantity is their frequent pragmatic extention. It can be triggered either by the fact that there may be multiple objects or sounds to be perceived (*I haven't seen all the paintings*; *I haven't heard everything she was saying*), or else by the fact that complete perception, even of a single object, might be hindered (*I can't see the entire tree through this dirty window*; *I can't hear everything you are*

saying in this noise). In the latter case, the verbs of perception usually occur with modals: *I can't see all the icons on this small screen*; *I was far from the stage, so I couldn't hear all the questions.*

The last frequent context for Q-negation in our sample is the idiom *not put all one's eggs in one basket*.

4.3.4. The most frequent corpus instantiations of *not* + Verb + *all* construction

Quantifier-negated readings in the context of predicates that indicate or imply quantity are the most frequent instantiations of the *not* + Verb + *all* construction, as attested both by COCA and EnTenTen15 collocational data. In terms of collostructional approach [Gries, Stefanowitsch 2004], predicates with quantificational meaning or implicatures can be considered collexemes of the *not* + Verb + *all* construction, or its most frequent lexical fillers. Table 3 shows the frequency hierarchy of predicates in order of their occurrence in construction with negation and universal quantifier in the EnTenTen corpus, while Table 4 provides the same information for COCA. Both charts give the top twenty predicates.

Table 3

EnTenTen15 collocational data

Lemma	Frequency	ipm
have	12,899	0.70
be	6,761	0.37
know	4,418	0.24
fit	4,285	0.23
get	4,065	0.22
cover	3,823	0.21
include	3,796	0.21
do	3,226	0.18
see	2,371	0.13
use	2,348	0.13
solve	2,341	0.13
need	2,237	0.12
meet	2,006	0.11
go	1,894	0.10
take	1,842	0.10
put	1,579	0.09
understand	1,531	0.08
spend	1,385	0.08
provide	1,299	0.07
contain	1,243	0.07

Table 4

COCA collocational data

Lemma	Frequency
not fit all	56
not answer all	52
not know all	47
not solve all	46
not cover all	44
not get all	39
not saying all	37
not go all	36
not include all	32
not see all	29
not understand all	29
not represent all	28
not getting all	25
not meet all	25
not address all	24
not take all	24
not need all	23
not use all	23
not provide all	22
not put all	19

More than half of the predicates in both samples coincide: *to know*, *to include*, *to fit*, *to get*, *to cover*, *to see*, *to solve*, *to need*, *to meet*, *to go*, *to take*, *to understand*, *to provide*. Also, many of the top predicates in both samples belong to the same semantic classes as the ones featuring

in the Q-negated readings from our original EnTenTen15 and COCA samples. They include verbs with the semantic component of quantification (*to include*, *to spend*), as well as verbs with quantificational implicatures, such as verbs of perception (*to see*), mental predicates (*to know*, *to understand*), modal verbs (*to need*), verbs of possession (*to have*).

Moreover, nearly all examples with the top frequency predicates are indeed interpreted with Q-negation. We analyzed all the examples in the presented frequency table from COCA, namely 660 sentences with 19 predicates (since the table presents the results for two different forms, *getting* and *get*, as two different verbs). Out of 660 sentences, 582 (or 88 percent) have Q-negated interpretations. Furthermore, out of the 78 sentences that do not have quantifier negation, only four are more likely to be interpreted with V-negation, and one with C-negation:

(29) *I did not* [*see*] *all the poison ivy and multiflora roses. I just saw possibilities.* ([COCA]; V-negation)

(30) *I did not see* [*all*] *this back then.* ([COCA]; V-negation)

(31) *I sure did not* [*see*] *all of this terrorism coming.* ([COCA]; V-negation)

(32) *USAir officials say privately that the public does not* [*see*] *all the pressure tactics that the airline is applying.* ([COCA]; V-negation)

(33) *I am not saying all this* [*because I have the president's seat*]. ([COCA]; C-negation)

The remaining 73 sentences that do not yield quantifier-negated interpretations, are "noise". There are quite numerous *why not* constructions (22 hits), as well as some other syntactic and lexical idioms, such as *to get all that X*, as in *Don't get all that excited* (10 hits), *go all that X*, as in *Don't go all that defensive* (3 hits), *all that much* (2 hits). Instantiations with the verb *to say* are almost entirely "noise" (36 hits) because in the sample, this verb is only used with dependent *that*-clauses, which preclude potential ambiguity. Sentences like *I am not saying all this is true* cannot in principle be interpreted with verb negation.

For the majority of predicates, the use in the construction with negation and universal quantifier is limited to a few specific contexts, which confirms our hypothesis about certain prototypical scenarios which incorporate the idea of partial quantity. For some predicates, there are no lexical restrictions on the use in this construction.

Table 5 (p. 19) summarizes the interpretations and typical contexts, if there are any, for each of the top predicates in this construction.

Table 5 demonstrates that verbs with the semantic component of quantification, as well as verbs with quantificational implicatures can indeed be considered a reliable contextual marker of quantifier-negated readings, as the overwhelming majority of their instantiations in the *not* + Verb + *all* construction is interpreted with quantifier negation. It further shows that in many cases, quantifier-negated readings are lexicalized not only with respect to the predicates, but also to their argument expression.

The process of lexicalization is not arbitrary: it is to a certain extent aligned with the meaning inherent in quantifier negation, namely the meaning of partial quantity. Predicates that contain an indication of quantity (such as *include*) or a strong quantificational implicature (such as *take*, *get*, *see*, *understand*) in their first or only meaning do not, as a rule, pose lexical restrictions on the realization of verbal arguments. Predicates that have one major meaning, such as *answer*, *use*, *need*, display lexical restrictions consistent with that meaning (*answer questions*, *use* or *need* various kinds of resources). However, predicates that have multiple meanings demonstrate lexical restrictions specific to the usage in which they have quantificational semantics or implicatures: *provide answers* / *information* / *services*, but not *provide new insights*; *address issues* / *questions* / *problems* / *needs*, but not *address the audience*, *address the envelope*; *meet criteria* / *requirements* / *demands* / *needs*, but not *meet friends.* Some predicates have a single frequent instantiation in this construction: *One size does not fill all*; *Do not put all your eggs in one basket*. These phrases reflect the ultimate degree of lexicalization associated with quantifier-negated readings.

Table 5

***Not* + Verb + *all* construction in the COCA sample**

Predicate	Hits	Q-negation	V/C-negation	Noise	Typical realization
get	64	54	0	10	no typical realization
fit	56	56	0	0	*One size does not fit all*
answer	52	52	0	0	*X can't answer all questions/queries*
know	47	44	0	3	*X doesn't know all answers/details*
solve	46	46	0	0	*X can't solve all problems/issues*
cover	44	44	0	0	*not cover all expenses*
say	37	0	1 (C-negation)	36	no typical realization
go	36	23	0	13	*not all go all the way*
include	32	31	0	1	no typical realization
understand	29	29	0	0	no typical realization
see	29	24	4 (V-negation)	1	no typical realization
represent	28	28	0	0	*not represent all* + 'people'
meet	25	25	0	0	*not meet criteria/requirements/demands/needs*
address	24	24	0	0	*not address issues/questions/problems/needs*
take	24	19	0	5	no typical realization
need	23	23	0	0	*not need* + 'resources'
use	23	23	0	0	*not use* + 'resources'
provide	22	22	0	0	*not provide answers/information/services*
put	19	15	0	4	*not put all eggs in one basket*

Thus, numerals and predicates with quantificational meaning or implicatures can generally be considered markers of quantifier negation, while some of the non-quantificational predicates are lexicalized as markers of quantifier negation only in specific contexts.

4.3.5. The status of Q-negation markers

As Tables 1 and 2 demonstrate, Q-negation is by far the most frequent interpretation of *not* + Verb + *all* construction. It occurs even in situations when there are no markers facilitating its contextual recognition. In fact, it is the default interpretation of the *not* + Verb + *all* construction. Thus, unless the context contains markers of verb negation, the construction coerces interpretation of partial negation even onto such predicates that have no quantificational components or implicatures. Consider the following EnTenTen examples with the verbs *to hate*, *to reduce*, *to collapse*, which do not have any quantificational semantic components or implicatures outside of the construction *not* + Verb + *all*, but which develop them once placed in it:

(34) *I don't hate* [*all*] *kinds of self-portraits.* [EnTenTen15]

(35) *Cultural sociology does not reduce* [*all*] *human matters to a problem of cultural encoding and decoding.* [EnTenTen15]

(36) *Nietzsche does not collapse* [*all*] *of asceticism into its especially malignant form.* [EnTenTen15]

Thus, although the major part of Q-negated readings occurs in the context of predicates belonging to specific semantic classes, quantifier negation does not in fact require any special markers for its identification in a given sentence. As mentioned above, numerals and predicates with quantificational meaning or implicatures can be considered collexemes of the *not* + Verb + *all* construction, or its most frequent lexical fillers. According to [Tomasello 2003], lexical items that are more entrenched (frequent) in a given construction, or are, in [Gries, Stefanowitsch 2004] parlance, its collexemes, are easier to acquire and use in that construction than the ones that are less entrenched. We can therefore expect speakers to make scope decisions in sentences with quantificational predicates faster than in sentences with other kinds of predicates. However, that remains a hypothesis for further research.

4.4. Verb-negated readings

Lexical markers of V-negation are triggered by the following two factors: in V-negated readings, (i) the verb is in the focus; (ii) the quantifier is interpreted in its emphatic meaning.

As concerns (i), we observe that the interpretation of total negation is normally available when the quantificational group does not fill a verbal argument, but has the status of an adjunct. This happens because in order to be negated, the verb has to be focused, while the quantifier should not be in the focus. If the quantifier phrase is an adjunct, especially a temporal modifier denoting a time period, it easily assumes the role of the topic: *We didn't move all night* vs. *All night, we didn't move*. Thus, temporal modifiers with *all* create contexts that are naturally interpreted with V-negation.

If the quantifier phrase fills a verbal argument, V-negation is still available, yet it requires emphatic interpretation of the quantifier. Contexts that consolidate this interpretation are demonstrative pronouns in their meaning of negative emphasis, frequently complemented by negatively connoted lexical items.

(37) *I didn't* [*have time to read*] *all these pamphlets.* [EnTenTen15]

(38) *I don't* [*want to get involved*] *in all this disgusting mess.* [EnTenTen15]

4.4.1. Temporal modifiers in the quantifier phrase as markers of V-negation

Temporal modifiers with *all* facilitate V-negated readings. On the whole, they form the only type of a context where V-negated readings are pragmatically more neutral than Q-negated readings, consider the following neutral statement:

(39) *The baby didn't* [*wake up*] *all night.*
'The baby did not wake once during the whole night.'

Q-negated readings of sentences with temporal modifiers are possible, but rare and pragmatically non-neutral:

(40) *I didn't spend* [*all*] *day in front of the TV.*

Sentences like (40) imply an opponent who claims the opposite (in this case, that the subject had spent an ENTIRE day in front of the TV) and the quantifier phrase forms a contrastive focus.

It must be noted that V-negated and Q-negated readings of sentences with temporal modifiers are associated with different aspectual interpretations of the predicate. With V-negated readings, the predicates are interpreted as achievements:

(41) *He hadn't* [*thought*] *of her all evening.*
'He hadn't thought of her once during the entire evening.'

With Q-negated readings, the predicates are interpreted as states or activities:

(42) *I hadn't thought of him* [*all*] *evening, but only for the first hour or so.*
'I had thought of him for only part of the evening.'

Thus, V-negated and Q-negated readings of sentences with a temporal modifier in the quantifier phrase are used in different types of speech acts. V-negated readings are usually statements of noteworthy occurrences or, rather, non-occurrences. They state that a situation that would naturally be expected to occur at least once or more during a certain time period T, had not occurred at all during that time period. Q-negated readings are objections disproving someone's statement that a certain situation was taking time during the entire time period T, and claiming that the aforementioned situation was taking time only during a certain part of that period T.

As it turns out, the former situation is more frequent, as well as less context-dependent and more rooted in conventionalized human practices or universal background knowledge. Each of these situations has its typical instantiations. Different situation types are lexicalized in the combination of a predicate with the name of a time period. While certain combinations can be interpreted either with V-negation or Q-negation, the most frequent combinations *not* + Verb + *all* + Time Period are fixed collocations reflecting lexicalizations of pragmatically plausible interpretations.

We have extracted and examined an additional sample of potentially ambiguous sentences to study the distribution of V-negated and Q-negated readings in this particular subgroup of sentences with predicate negation and universal quantifier. We have considered collocations with two time periods — *day* and *night*. On the whole, we examined 100 sentences from EnTenTen15 of *not* + Verb + *all* + *night* and 100 sentences of *not* + Verb + *all* + *day* structure from the same source. We considered their lexical set-up (namely, verbal collocates); typical real-life situations they refer to; scope readings of negation; the type of knowledge needed to infer the intended scope readings. The results are presented in Table 6.

Table 6

Verbal collocates and scope readings with temporal modifiers

All night	Hits	*All day*	Hits
V-negation			
Surprising total absence of expected situation during the time period (based on general extralinguistic knowledge): *sleep* (47).	47	Surprising total absence of expected situation during the time period (based on general extralinguistic knowledge): *eat* (22), *suckle* (1), *poop* (1), *go* (2), *move* (2).	28
Surprising total absence of expected interruption in a long state or process (based on general extralinguistic knowledge and linguistic pragmatics): *stop* (2), *quiet all night* (1), *dance floor didn't empty* (1).	4	Surprising total absence of expected interruption in a long state or process (based on general extralinguistic knowledge and linguistic pragmatics): *stop* (4), *cloud did not pass* (1), *fluid level hadn't dropped* (1).	5
Unsurprising total absence of unexpected situation (based on general extralinguistic knowledge): *eat* (2), *Sun doesn't shine* (1).	3	—	
Surprising total absence of expected situation (based on contextual extralinguistic knowledge): *move* (5), *bark* (2), *cry* (1), *check* (1), *dance* (1).	10	Surprising total absence of expected situation (based on contextual extralinguistic knowledge): *exercise* (1), *walk* (1), *stink* (1), *sleep* (2), *equipment didn't work* (1).	7
V-negation subtotal	*64*		*40*

Table 6 (continued)

All night	**Hits**	***All day***	**Hits**
Q-negation			
Situation does not or should not last all the time period, contrary to someone's wishes or expectations (based on contextual extralinguistic knowledge and linguistic pragmatics): *wait all night* (4), *remain* (4), *stay* (2), *don't be all night* (2).	12	Situation does not or should not last all the time period, contrary to someone's wishes or expectations (based on contextual extralinguistic knowledge and linguistic pragmatics): *work* (1), *be all day about it* (1), *Cats don't sleep all day* (2), *Makeup doesn't last all day* (3), *sit staring at the computer* (1), *play* (1).	9
Time period is a resource for an activity (based on general extralinguistic knowledge and linguistic pragmatics): *spend* (4), *have* (4), *got* (3), *take* (1).	12	Time period is a resource for an activity (based on general extralinguistic knowledge and linguistic pragmatics): *have* (23), *spend* (13), *take* (7), *last* (4).	47
Situation does not last all the time period, contrary to someone's wishes or expectations (based on contextual extralinguistic knowledge): *drink* (2), *chant* (1), *play* (1).	4	Situation does not last all the time period, contrary to someone's wishes or expectations (based on contextual extralinguistic knowledge): *rain* (2), *serve* (1).	3
Q-negation subtotal	*28*		*60*
Ambiguous			
Insufficient contextual knowledge in the absence of relevant general knowledge or linguistic pragmatics: *Some restaurants keep late hours, others may not serve all night* (2); *Many employees rely on subway which doesn't run all night* (2); *Put your lights on a timer to make sure they don't burn all night* (1); *She still doesn't like to be left alone, but she doesn't moan all night* (1); *I've got no problem with that as long as he doesn't snore all night* (1).	7	Insufficient contextual knowledge in the absence of relevant general knowledge or linguistic pragmatics: *Many stations in rural areas are not staffed all day* (1).	1
Constituent: *I didn't spend all night doing this for you to ruin it.*	1		
Total	***100***		***100***

Interpretations of sentences where *all* is part of a temporal modifier are influenced by a variety of factors, both linguistic and extralinguistic. A purely linguistic factor that affects readings of sentences with negation and temporal modifier with *all*, is the aspectual class of the predicate. If the predicate can only be understood as an achievement (such as *to stop*, *to interrupt*, etc.), the sentence is uniformly interpreted with V-negation, even in the absence of any previous knowledge of the situation and irrespectively of the time period: *He didn't stop talking all day* / *all night* 'He didn't stop talking at all during the entire day / night'. Likewise, if the predicate can only be interpreted as a state or activity (such as *to last*), it is invariably interpreted with Q-negation: *The meeting didn't last all day* / *all night* 'The meeting lasted for part of the day / night'.

However, since the majority of predicates in English can be interpreted both as activities (states) and accomplishments, most of the time the choice of a pragmatically plausible interpretation requires extralinguistic knowledge. This extralinguistic knowledge is of two kinds: general and contextual.

By general extralinguistic knowledge we mean knowledge that reflects universal human practices. A prime example is the tendency to sleep during the night. Because the majority of people tend to sleep at least for part of the night, a total lack of sleep constitutes a gross violation of usual practices, and as such is worthy of a special mention. Thus, V-negated interpretation of strings *X didn't sleep all night* 'X didn't sleep at all during the night' represents an informative and, therefore, pragmatically plausible reading.

On the contrary, a Q-negated reading of such sentences would be a stretch from the pragmatic point of view. The interpretation of partial negation 'X didn't sleep the whole night, but only part' requires someone's claim in the preceding context that X slept all night, which the speaker aspires to disprove. While a V-negated reading of the string *X didn't sleep all night* is a regularly made and easily understood statement about nocturnal insomnia, a Q-negated reading requires constructing a fairly complicated (and highly improbable) context. For example, somebody accuses a night security guard of unprofessional behavior, namely, sleeping the whole night; the speaker defends the guard by claiming that the guard slept for only part of the night. Unsurprisingly, all 267 occurrences of *not sleep all night* in EnTenTen are interpreted with V-negation. Thus, this expression can be considered a lexicalized instance of V-negation, triggered by general extralinguistic knowledge.

The two most frequent lexicalized instances of V-negation reflecting universal extralinguistic knowledge are *not* [*sleep*] *all night* 'not sleep at all during the night' and *not* [*eat*] *all day* 'not eat at all during the day' which reflect the most frequent violations of general human practices to sleep at least part of the night and eat at least once every day.

The most frequent lexicalized instance of Q-negation is *not* [*have*] *all day* 'to have only part of the day available', which reflects a universal approach to the daytime as a resource for different activities. In addition, the interpretation of partial negation is also more plausible from the linguistic point of view: in English, to report a total lack of resource, speakers would normally use negative construction: *I have no bread*, *I don't have any bread*, but not **I don't have all bread* (also, see Discussion).

By contextual extralinguistic knowledge we mean the knowledge of particular circumstances that allows the reader to reach a pragmatically plausible decision. E.g., phrases like *Restaurants don't serve all night*; *Buses don't run all night*; *The dog didn't bark all day*; *The baby didn't cry all day* cannot be interpreted without a larger context because there are no universal tendencies or rules concerning these situations. Restaurants can be closed for part of the night or for the whole night; likewise, buses can run for part of the night or not at all, depending on the practices of a specific place. Babies can cry for part of the day or can totally abstain from crying, as well as dogs can make some noise or not at all, depending on specific circumstances. While statements about the total lack of activity during a specific time period are more informative from the point of view of Gricean maxims of communication, specific practices might prevent interpretations based on cooperation principles. Sometimes, the choice of one interpretation is impossible; consider the following ambiguous sentences from our EnTenTen15 sample:

(43) *Some restaurants keep late hours, others may not serve all night.* [EnTenTen15]
either 'not serve at all during the night' or 'serve for only part of the night'

(44) *Many employees rely on subway which doesn't run all night.* [EnTenTen15]
either 'does not run at all during the night' or 'runs for only part of the night'

On the whole, we can observe that *night* triggers clearer expectations as to the choice of conventionalized occupations: it is the time for sleep. As a result, almost half of the negative sentences with *all night* contain *sleep* and are lexicalized with V-negation.

Day, naturally, presents a greater choice of activities and, hence, possible interpretations of negation scope. The most frequent violation of diurnal conventions is not eating. Hence, over one fifth of our *not* + Verb + *all day* sample (22 hits) is comprised by a lexicalized V-negated collocation *not eat all day*. Q-negation also has a frequent lexicalized expression, such as *not have*

all day (23 hits in our *day* sample). However, its collocation strength and, hence, recognizability, is considerably lower (see Tables 7 and 8). In both *night* and *day* samples, lexicalized V-negated readings, reflecting universal extralinguistic knowledge, form the top of the frequency. Therefore, it is reasonable to assume that temporal modifiers with *all*, especially *all night*, are markers of V-negation.

Table 7

Frequency of predicates in the string *not V all night*

Lemma	Frequency	ipm
sleep	265	0.01
have	26	
spend	20	
get	17	
stop	16	
stay	16	
run	15	
move	14	
last	13	
remain	12	
work	10	< 0.01
wait	9	
take	6	
got	6	
play	5	
eat	5	
snore	3	
pop	3	
open	3	
go	3	

Table 8

Frequency of predicates in the string *not V all day*

Lemma	Frequency	ipm
eat	229	0.01
have	176	
spend	152	
last	73	
get	61	
take	44	
bore	30	
work	29	
stop	25	< 0.01
sleep	25	
stay	25	
stay	24	
move	23	
sit	21	
got	21	
go	21	

4.4.2. Pragmaticalized demonstratives as markers of verb-negated readings

As mentioned above, demonstratives *this* and *that* in their pragmaticalized usage of expressing negative attitude serve as markers of those V-negated readings that involve an emphatic interpretation of the quantifier. Introducing them into the quantifier phrase increases the likelihood of a V-negated interpretation. Consider the following sentences:

(45) *I did not eat all the vegetables.*

(46) *I did not eat all these vegetables.*

(47) *I do not trust all doctors.*

(48) *I do not trust all those doctors.*

Sentences (45) and (47), without the demonstratives, are likely to be interpreted with Q-negation: 'I ate part of the vegetables', 'I trust part of the doctors'. However, sentences (46) and (48), with demonstratives, are likely to receive V-negated interpretations: 'I did not eat any of these (disgusting) vegetables', 'I do not trust any of those (incompetent) doctors'.

Consider also the following sentences from COCA, where (49) without a demonstrative is interpreted quantitatively with partial negation, and (50) with a demonstrative is interpreted emphatically with total negation:

(49) *Some transsexuals cannot afford* [*all*] *the surgeries necessary to full sex assignment.* [EnTenTen15]
'Some transsexuals can afford part of the necessary surgeries.'

(50) *The residents of Leavenworth cannot* [*afford*] *all these extra expenses that tourism has brought.* [EnTenTen15]
'The residents cannot afford any of the considerable tourism-associated extra expenses.'

To verify the validity of demonstratives *this* and *that* as markers of V-negated readings, we analyzed all strings *not* + Verb + *all* + *this*, *not* + Verb + *all* + *these*, *not* + Verb + *all* + *those* found in COCA. The string *not* + Verb + *all* + *that* was excluded from the analysis because all examples with it turned out to contain the syntactic phraseme *all that X* (*He doesn't seem all that happy*), which renders them useless for our purposes. Minus "noise", we analyzed the total of 83 examples: 27 sentences with *not* Verb *all this*, 34 sentences with *not* Verb *all these*, and 22 sentences with *not* Verb *all those.* The results are summarized in Table 9.

Table 9

Demonstratives as markers of V-negated readings: the data from COCA

String	Total relevant hits	V-negation	Q-negation	C-negation	Ambiguous reading
not Verb *all this*	27	22	1	4	0
not Verb *all these*	34	29	3	1	1
not Verb *all those*	22	19	0	3	0
Total	***83***	***70***	***4***	***8***	***1***

We can see that verb negation is indeed by far the predominant interpretation of the construction with negation, universal quantifier and demonstratives, so demonstratives can be considered a reliable marker of V-negation.

A closer analysis of the examples shows that in the majority of the sentences, the demonstratives are indeed not used in their primary function, but as markers of negative emphasis. In many cases, their interpretation as markers of negative attitude is triggered by the predicate. Namely, predicates that carry positive messages, in combination with negation express negative attitude, and, thus, entail emphatic interpretation of the demonstratives. Consider the following examples from COCA, where the use of the emphatic quantifier with the emphatic demonstrative creates additional implicit negative assessment:

(51) *She did not* [*like*] *all this attention for Christina when she, Dolly, was there.* [COCA]
'She did not like any of this (redundant) attention for Christina.'

(52) *This is unacceptable. I cannot* [*allow*] *all these intrusions.* [COCA]
'I cannot allow any of these (bothersome) intrusions.'

(53) *I'm not* [*enjoying*] *all this talk about George W. Bush's past life.* [COCA]
'I don't enjoy any of this (evil) talk about George Bush's past life.'

(54) *Our satisfaction is in God. We do not* [*need*] *all these extra things.* [COCA]
'We do not need any of these extra (mundane, vain) things.'

(55) *But when it comes to our own, we* [*should*] *not make all those excuses.* [COCA]
'We should not make any of those (self-justifying) excuses.'

Interpreting these sentences with Q-negation is a pragmatically implausible decision: it is indeed bizarre to suppose that one's negative attitude to a situation or an object only applies to some aspects / instances of that situation or some aspects / amounts of that object. This might be a manifestation of a certain cognitive tendency: people tend to generalize negative impressions more often than positive ones. This intuition is somewhat confirmed by the frequencies of *like* vs. *don't like* statements in EnTenTen15. We have formulated four queries: *I like all* + Noun, *I like some* + Noun, *I don't like any* + Noun, *I don't like some* + Noun. The results are in Table 10:

Table 10

Frequencies of general vs. selective statements of positive and negative attitude in EnTen Ten15

I like all **+ N**	***I like some*** **+ N**	***I don't like any*** **+ N**	***I don't like some*** **+ N**
675 0.04 ipm	300 0.02 ipm	100 0.01 ipm	30 less than 0.01 ipm

Though this data is insufficient for making any strong claims, it appears that in making negative statements, people generalize comparatively more often than in making positive statements, and that selective positive statements occur comparatively more frequently than selective negative statements. This cognitive tendency has a clear experiential basis: a small defect can entirely spoil something valuable, while the opposite is not true; cf. folk sayings *fly in the ointment*, Russian *ložka dëgtja v bočke mëda* 'a spoon of tar in the barrel of honey', German *ein Haar in der Suppe* 'a hair in the soup'.

When the predicate does not support negative emphatic interpretation of the quantifier and the demonstrative, Q-negation becomes possible. Consider the following ambiguous sentence from COCA:

(55) *U.S. policy cannot fix all these gaps, but it can help.*

With emphatic interpretation of the quantifier, it means 'US policy cannot fix any of the unpleasant and/or numerous gaps in question, but it can still help'. With quantificational interpretation of *all*, it means 'US policy can fix only some of the gaps in question but it can help'. Thus, demonstratives produce a number of ambiguous readings (three in the EnTenTen15 sample, four in the COCA sample), where both emphatic and non-emphatic interpretations of the quantifier and the demonstrative are pragmatically plausible.

However, on the whole, demonstratives *this* and *that* are fairly reliable markers of V-negation, especially when their negative emphatic interpretation is supported by other negative elements of the context. Those are usually of two types: mental predicates with the meaning of good attitude (*love*, *like*, *approve*, *enjoy*, *want*, *believe*), which in combination with negation express negative attitude, or else negatively connoted nouns or adjectives in the quantifier phrase (*all these disgusting details*, *all these idiots*).

4.4.2. Negative assessment as a marker of V-negation

In principle, markers of Q-negation and V-negation can compete in a sentence. E.g., verbs like *know* in the absence of other clues entail Q-negation:

(56) *I didn't know* [*all*] *the details.* = 'I knew some of the details, but not all.'

Introducing *these* or *those* into the utterance creates the possibility of emphatic interpretation and, thus, of V-negation: *I didn't know all these details* can mean either 'I knew some of the details, but not all' (Q-negation) or 'I didn't know any of the details' (V-negation). Adding another marker of V-negation, namely, a lexical item expressing negative assessment, consolidates the emphatic interpretation, and, hence, a V-negated reading:

(57) *I don't want to know all these details.* = 'I don't want to know any of the details.'

(58) *Don't tell me all these disgusting details.* = 'Don't tell me any of these disgusting details.'

Markers of the second type, namely, negatively connoted lexical items (*idiots*, *disgusting*) are stronger markers of V-negation than those that express negative attitude only in combination with negation (*want*, *like*). On their own, predicates like *want* and *like* are insufficient to render a phrase V-negated. Sentences *I don't want to know* [*all the details*]; *I don't trust* [*all*] *healers* are likely to be interpreted with Q-negation 'I want to know only some of the details', 'I trust only some healers'. Adding a demonstrative creates negative emphasis and results in V-negation:

(59) *I don't* [*want to know*] *all these details.* = 'I don't want to know any of these (sordid) details.'

(60) *I don't* [*like*] *all these healers.* = 'I don't like all these (untrustworthy) healers.'

Strong markers of V-negation, or items that incorporate negative assessment in their lexical meaning, are infelicitous in the absence of emphatic demonstratives: ??*Don't tell me all the disgusting details*; ??*I won't talk to all the idiots*; ??*I don't believe all the bullshit*. This is a manifestation of general referential properties of qualitative nouns, or nouns that carry strong evaluation, such as *shit*, *rubbish*, *junk*, *scoundrel*, etc. They are normally used non-referentially, as predicates: *This is rubbish*, but not **We discussed the rubbish for an hour*. In order to be used with specific reference, they require "pronoun determiners that take on the indexing role" [Arutyunova 1976: 348–349; Shmelyov 1996: 206–207].

4.5. Q-negation as the default reading of *not* + Verb + *all* sentences: Discussion

One of the main questions posed by our results is the motivation behind the statistical prominence of Q-negated readings. Why is Q-negation the default scope reading of sentences with predicate negation and universal quantifier? We have demonstrated that in the majority of contexts it is semantically and pragmatically neutral, unlike V-negation, which can explain its significantly higher frequency. The question remains, why is V-negation of *not* + Verb + *all* sentences semantically and pragmatically marked?

We suggest that Q-negated reading is the default option of interpreting *not* + Verb + *all* sentences for pragmatic reasons. Logically, the expressions $\neg\exists x\ (x = y)$ and $\forall x\ (x \neq y)$ are equivalent, as are the expressions $\neg\forall x\ (x = y)$ and $\exists x\ (x \neq y)$. However, pragmatically these expressions may be very different. We will demonstrate that V-negated interpretation of sentences with universal quantifier ($\forall x\ (x \neq y)$) is not a pragmatically neutral way of expressing the meaning of total negation in English. V-negated strings of *not* + Verb + *all* structure express a range of additional pragmatic shades, are pragmatically marked, and are, therefore, only used in a fraction of contexts with total negation. To express total negation in the majority of contexts, English normally uses negative pronouns, such as *nobody*, *nothing*, etc.; total negation can also be expressed by the NPI pronouns *anybody*, *anything*, etc., combined with a negated verb.

However, what is the difference between total negation expressed by negative pronouns and total negation which we find in V-negated readings of *not* + Verb + *all* construction? Consider the following pairs of sentences with negative pronouns and *not* + Verb + *all* construction, respectively:

(61) *I have no time.*

(62) **I don't have all time.*

The sentence with a negative pronoun is felicitous, whereas the sentence with *all* and predicate negation is not. On the contrary, in the next pair of sentences, the sentence with *all* and predicate negation is felicitous and the sentence with the negative pronoun is not:

(63) *She didn't sleep all night.*

(64) **She slept no night.*

To explain this difference, we have to formulate the difference between the meaning expressed by negative pronouns and the meaning expressed by a combination of a negated verb and universal quantifier when both are possible:

(65) *I don't read any newspapers.*

(66) *I don't read all these newspapers*.

We suggest that utterances with negative pronouns deny the existence of ANY objects that satisfy the conditions specified by the predicate and thus do not define sets or domains of discourse. They can be used without any specification of the potential members that could satisfy the propositional function. On the other hand, the universal quantifier *all* necessarily points to a certain set, or domain, whose members satisfy the propositional function without exception. Even when the propositional function is negative, as is the case with *not* [*V*] *all X* construction, the domain is predefined: we are talking about a certain set in question whose elements do not, without exception, satisfy the propositional function. Therefore, if we have not specified the domain in any way in the previous discourse, the phrase is infelicitous or else impossible to interpret with V-negation. Thus, phrases like (61), where it is impossible to introduce the idea of a definite set, are not felicitous with *not* + Verb + *all* structure. Likewise, sentences like (63), where the domain of discourse is necessarily defined by context (we are talking about a specific night), are impossible with negative pronouns. Sentences where both constructions are possible, have different meanings: in (65), the speaker denies reading any newspapers that potentially exist in the world, while in (66), the speaker denies reading any of the newspapers that have been mentioned previously (the use of a demonstrative pronoun is obligatory for a V-negated reading in (66)).

Thus, the meaning of total negation expressed by the strings *not* + Verb + *all* is pragmatically non-neutral relative to other means of expressing total negation, and only occurs in very specific pragmatic circumstances. Therefore, such strings can only be interpreted with V-negation in the presence of special markers, and Q-negated interpretations become the default reading.

5. Conclusion

We have conducted a corpus study of scope readings of negation in sentences with predicate negation and universal quantifier *all*, such as *Bars don't serve all night*; *I don't know all the details*. On the whole, we have analyzed about 1500 sentences with this structure, extracted from EnTenTen15 and COCA corpora. We have demonstrated that the lexical set-up of these sentences can serve as a predictor of their pragmatically plausible interpretations and, hence, their probable information structures and scope readings.

The two main scope readings of *not* + Verb + *all* sentences are Q-negation (partial negation) and V-negation (total negation): *I haven't talked to* [*all*] *my students* (Q-negation, 'I have talked to only part of my students'); *I don't* [*want*] *to talk to all these stuffy bureaucrats* (V-negation, 'I don't want to talk to any of these stuffy bureaucrats'). While Q-negation is a pragmatically neutral reading in most contexts, V-negation is pragmatically charged. Q-negation entails literal interpretation of the quantifier *all* in its direct quantificational meaning; V-negation mostly entails emphatic interpretation of *all* in its meaning of negative emphasis.

Lexical markers of Q-negation and V-negation are determined by their semantic and pragmatic peculiarities, namely (i) partially or totally negated interpretation of the sentence and (ii) quantificational or emphatic interpretation of the quantifier. The interpretation of partial or total negation is triggered by the information structure of the sentence: for partial negation, quantifier is in the focus, for total negation, verb is in the focus.

Therefore, Q-negation mostly occurs with predicates that take a quantificational argument as a direct object (*to include*, *to list*, *to finish*), or else easily take a quantifiable argument (*to know*, *to meet requirements*, *to answer criteria*) because such predicates are conducive both to placing the quantifier in the focus and interpreting it in its literal quantificational meaning. V-negation occurs with temporal modifiers containing *all* (such as *all night*) because they are conducive to placing the verb in the focus. It also occurs with emphatic demonstratives and negatively connoted lexical items because they consolidate the emphatic interpretation of the quantifier *all.*

Q-negation occurs considerably more frequently than V-negation due to its pragmatic neutrality. Generally, in the absence of markers of V-negation, *not* + Verb + *all* strings are interpreted with Q-negation. The construction coerces Q-negated readings even onto predicates that do not have quantificational meaning or implicatures.

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