The Case of Adverbials: Analyzing category D in UCCA Representation

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Abstract

As annotated corpora on semantic representations emerge, an empirical linguistic investigation on the schemes and their constituent labels will prove to be both interesting and informative. This paper examines the Adverbial (D) category in Universal Conceptual Cognitive Annotation (UCCA), a label for general scene-modifying elements, capturing a wide range of linguistic constructions and semantic functions. The paper 1) proposes a first semantic-type characterization of Adverbial instances, and 2) pilot-annotates the proposed sub-types of Adverbials in a parallel corpora of English and French, providing compatible categories for both languages. The current proposal hopes to call for a unified and semantically-motivated scheme for modifiers, and presents a number of empirical issues.

1 Introduction

The UCCA representation scheme is designed to be a multi-layered, cross-linguistically portable and stable semantic annotation scheme based on linguistic typology (Abend and Rappoport, 2013; Dixon, 2010). A special contribution of the semantically-motivated UCCA representation is that neither lexical sub-categorizations nor syntactic structures drive forth Meaning. In UCCA foundational layer, 14 labels are represented, among which the label of Adverbials (D) is an interesting subject of investigation. The current coarse-grained definition of Adverbials corresponds to modifiers of all scene-evoking units, but in fact encompasses a wide range of linguistic phenomena. While having an overarching label for all 'modifier-like' components reduces the output space for computational systems, one is nonetheless faced with the challenges of 1) distinguishing D from other categories which also contribute meaning, and 2) identifying the subtypes of D to actually make sense of its content, eliminating semantic ambiguity. This paper seeks to not only describe and analyze existing D distribution in UCCA corpora, but also propose a set of UCCA-specific Adverbial sub-types, in order to better understand the contents and semantic functions it encodes and provide further empirical support to computational methods.

The paper pilots a finer-grained semantic annotation of Adverbial instances using a parallel corpora (Sulem et al., 2015a). The goal is to present roughly consistent types of D across languages since UCCA is designed to be cross-linguistically stable. Section 2 examines related work done on UCCA foundational layer adverbs and other meaning representations. Section 3 covers basic lexical and syntactic distribution of the existing D labels. Section 4 proposes the initial categorization of D types, with a discussion of less clear-cut cases. Section 5 presents results of annotation on the parallel corpora, followed by discussions of difficulties, complexities, and limitations.

2 Background

UCCA and Adverbials (D) The annotation of UCCA scheme is organized into layers. In the foundational layer, each passage is further broken down with respect to scenes, which internally contain non-scene units or terminal spans, thus forming a directed graph. The labels for Participant (A), State (S), Process (P), and Adverbial (D) belong in the scene level, whereas the labels for Elaborator (E), Center (C), belong in the non-scene level. Therefore, with respect to Adverbials, they occur in a broad sense as modifiers to a State (S) or a Process (P), which evokes the scene. On the other hand, Elaborators (E) broadly serve as modifiers of Centers (C), which are one level down from the scene level.

As Section 3 confirms, D is a broad category and as a result it can denote and is not restricted to

direction, degree, negation, aspect, comparatives, covering all parts of speech, syntactic structure, position in the sentence, etc. (Hershcovich et al., 2019). In fact, typologists have not reached a consensus on semantic categorization of modifiers as a whole (Dixon, 2010). Often, for example, adjectival types are discussed apart from adverb types, and so on (Dixon and Aĭkhenvald, 2004; Portner, 2007). In UCCA research, there have been efforts to further label specific constructions such as adpositional phrases, which partially overlap with Adverbial spans, by integrating adpositional supersense annotation (Prange et al., 2019; Shalev et al., 2019). Another investigation examines UCCA labels against combination of lexical semantics and syntax (Hershcovich et al., 2020), which notes that there remain challenging cases involving D such as nominal compounds and adverb/linker distinction. It seems that neither Typology nor NLP work have raised a unified modifier typing scheme, probably due to the breadth and variation found in this category. As a pilot study towards it, this paper focuses on examining UCCA-proper Adverbials in current corpora to fill in the gaps that are yet unaccounted for and to bring forward interesting linguistic patterns.

Adverbials in other Meaning representations Here I briefly describe how other meaning representations deal with adverbial-like elements in annotation (Abend and Rappoport, 2017). In AMR (Banarescu et al., 2013), roles are divided into core-roles and non-core roles, the latter of which roughly match, but does not directly correspond to the Adverbials in UCCA. The AMR non-core roles include 'Source,' 'Condition,' 'Instrument,' 'Direction,' etc., for a total of 23 roles[1]. In addition, AMR extensions also propose time and aspect (Donatelli et al., 2018), and comparative constructions (Bonial et al., 2018), among others. In FrameNet (Ruppenhofer et al., 2006), adverbials are 'Peripheral Elements,' most of which are modifiers to the core frame elements, each receiving a specific label. This paper recognizes the similarities with these two schemes, but offers a completely new set of sub-categories.

Parallel Corpora Comparison UCCA is relatively stable across French and English (Sulem et al., 2015b). In the Sulem et al. (2015) study, the UCCA-annotated Adverbials in English and French achieved 0.83 in F-score similarity when being aligned. In this paper I seek to build on the attested portability and stability of UCCA, and base sub-categorization of D on two languages to start with, as opposed to extending an English sub-categorization to French at a later point. The results show, however, that many divergences stem from initial D-divergence between the language pair (Section 5).

3 Basic Distribution

Before defining the semantic functions, I describe the structural distribution of the D categories as a starting point, also as a way to illustrate the lexical and syntactic diversity of the D category with empirical evidence. In the following I present lexical and syntactic distribution, i.e. the Forms of all D categories found in the parallel corpora. It should become increasingly clear that a semantic categorization is needed rather than a syntactic one.

Table 1 specifies the number of syntactic categories that are labeled 'D' in both English and French. The instances cover simple words, composite units, implicit units, and unanalyzable units, as well as various parts of speech[2]. There is also 'Negation', whose numbers include units that contain negative units, including negative polarity items. From the numbers, one can see that while adverbs and adverbial phrases constitute about 26% to 27% of total UCCA Adverbials, almost all other syntactic categories are also attested in the distribution. In both languages verbs or verb phrases make up around 10%, and auxiliaries make up 11% in English and 9% in French. Phrases including negation particles make up 14% in English and 28% in French – doubling the proportion of that in English (likely due to the nature of discontinuous negation units in French).

Necessity for Semantic Characterization As shown, the syntactic/surface distribution of Adverbials in UCCA is highly diverse – confirming the design that linguistic elements are labeled according to semantic functions. Therefore an extension upon the Adverbial label should also assume a semantic model rather than a syntactic one. In many cases, syntax and semantic functions mismatch. Especially, the D units that belong in one

[1] Retrieved from https://github.com/amrisi/amr-guidelines/blob/master/amr.md

[2] The parts of speech of words and phrases are collapsed into one category/part-of-speech to simplify the distribution. Therefore verbs are grouped together with VP, etc.

	English	French
Adverbial	200	171
Adjectival	67	46
Verbal	79	68
Nominal	15	4
Preverbal auxiliaries	120	56
Prepositional	73	68
Negation	109	172
Question word	15	9
Particle	6	5
Implicit	1	2
Composite	110	120
Total	771	614

Table 1: Formal/structural distribution of D categories

syntactic category do not denote the same type of meaning. For instance, some adverbs such as 'happily' or 'quickly' describe the manner of an action or a state, while other adverbs like 'still' and 'already' convey aspectual information. For Prepositional Phrases (PP), the phrase 'with confidence' describes manner, while the phrase 'after all' denotes epistemic values. In the course of investigation it becomes clear that having a syntactic grouping is not enough, and certainly not compatible with the UCCA scheme.

4 Semantic Functions of D

The proposed semantic grouping draws inspirations and insights from not one, but many sources. One of the sources is existing meaning representations like AMR, specifically its non-core roles (Banarescu et al., 2013). But in practice, adapting all non-core roles into UCCA would make the scheme unnecessarily specific. Another source comes from theoretical semantic research of adverbs. Although Adverbials in UCCA include not only adverbs, some aspects of adverb/adjunct typology could still contribute to formalizing semantic representation of modifiers (Payne, 2018; Thomason and Stalnaker, 1973). The reason that multiple frameworks are consulted is that there does not (yet) exist a unified, semantically-motivated subcategorization that is explicitly for semantic modifiers. Through efforts of this work, the scheme should also be compatible in at least English and French – and I leave further cross-linguistic generalizations to future research.

4.1 General Types

Table 2 reports the categories. Importantly, these function labels should apply to D categories regardless of the lexical or syntactic categories of the D units. For example, while the adverb 'closely' would be labeled DESCRIPTION, the adjective 'unanimous' should equally receive the DESCRIPTION label.

Moreover, because the semantic types are designed to abstract away from surface forms, every D unit is evaluated in context, and many cases can turn out to receive somewhat counter-intuitive labels than if the unit is looked at in isolation. For example, the phrase *in bulk* in isolation may look like a QUANTITY-denoting element, but in fact when it is used in the sentence *It exceeded in bulk any whale...*, its meaning should in fact be annotated with a DEGREE label[3]. Another example is the word *good*, if looked at in isolation, one may think it is a descriptive D, receiving a DESCRIPTION label, but in fact in the context sentence *There is good reason to stop and think...*, it might be better suited with a DEGREE label[4].

Crucially, one D unit is able to receive multiple labels. This is due to the observation that often multiple functions are achieved by using one D element, which serves to convey meaning along more than one dimensions. For instance, the word *never* receives NEGATION as well as FREQUENCY. The phrase *no longer* receives NEGATION as well as ASPECTUAL. Another example is the phrase *as easily as*, which would receive both COMPARATIVE and DEGREE[5]. Naturally, some cases are more complex and larger than others – I discuss a few below.

4.2 Challenging Cases

Mood Mood is one of the more encompassing categories. It is one step finer-grained than the Adverbial label, but there is still a considerable amount of semantic variation in this category. Overall I have considered not only modal auxiliaries such as *would, could, might, should, must*, but also adverbs (*perhaps*), adjectives (*possible*), phrases

[3]One has to bear in mind each annotator might not agree on one single interpretation in many cases, in this project and results that follow I'm annotating by one person, and thus do not provide inter-annotator measure.

[4]From the author's judgment, saying *good reason* is equivalent to saying *enough reason*, which would constitute a DEGREE label.

[5]As a comparison, the word *more* or *most* would only receive a COMPARATIVE label.

Type	Description	Examples
Degree	describing the extent of S/P	extremely, colossal
Frequency	describing S/P with time intervals or frequency	again, at first, for ten times
Description	descriptives, bounding S/P to a certain property or dimension or evaluation, semantically heavy	fast, feverishly, (was) busy (doing...)
Aspectual	having to do with ongoing or finishing S/P	later, still
Mood	units conveying modality	want, will, actually
Spatial	geographical, positional descriptions of S/P	near, around
Condition	when S/P is a condition	if, had it not been
Quantity	number modifiers to S/P	2,000
Negation	complex category, mostly units that involve uses of negation	without, nothing, no longer
Reason	denoting the reasons of state or process	because, since
Support	either light verb, serial verb, or adding a preverbal attitude or event to S/P	take (a photo)
Cause	units denoting causing the state or process to happen	let, cause, made
Comparative and Superlative	units involving comparison with another state or action	more, most, happier

Table 2: Proposed Semantic Functions across UCCA Adverbials; S stands for State and P stands for Process

(*would like*), etc. Below I provide some examples where D (in boldface) has been labeled as MOOD in the proposed scheme.

(1) In this event I [**would be inclined to** D] [accept P] the existence of a giant narwhale. MOOD

(2) [**Please** D] [forgive P] me. MOOD

The MOOD label also includes units related to speaker attitude or speaker evaluation, as well as response particles.

(3) [IMPLICIT S] A route slightly less direct, [**that's all** D]. MOOD

(4) The ship had been [**perfectly** D] [chosen and fitted out P] for its new assignment. MOOD

(5) Ned Land was [**about** D] 40 years [old S]. MOOD

(6) [**How** D] [**can** D] you still [doubt P] the reality of this cetacean we're after? MOOD

(7) "[**Aye** D], sir," the engineer replied. MOOD

The cases where MOOD overlaps with another label are also seen.

(8) The atmosphere's pressure [**actually** D] [weighs S] slightly more. MOOD, DEGREE

Negation The linguistic phenomenon of negation interfaces with both syntax and semantics and presents a number of issues when classifying Adverbials in UCCA. First, not all negation phenomena are captured with the label 'D.' The word *nothing*, for example, may well be a Participant label (A). The second problem involves scope. Negation results in different interpretations when used differently. For example, the *no* answer to polar questions (as opposed to *yes*) is semantically different from negating a verb, as in *He was not eating*. In the current scheme, negation on all phrase levels are identified as NEGATION, often alongside another label (see examples below; more in Section 6).

(9) I [**no longer** D] [left P] the ship's deck. NEGATION, ASPECTUAL

(10) I wanted [**nothing more** D] than to [see P] [my country A]. NEGATION, COMPARATIVE

The third problem is perhaps more salient in French than in English, which involves the negative quantifier chain *ne...que*, and similar constructions. While using negation, they often result in positive rather than negative readings. The French phrase *ne...que* translates to *nothing...but*, and effectively means *only*. In this proposal, such cases are cap-

tured by assigning multiple labels, signaling that multiple dimensions of meanings are conveyed.

Support I propose to assign a SUPPORT label to the elements that, rather than modify the State or Process, simply introduce the State or Process in a certain construction. Often the sentence can be paraphrased so that the SUPPORT element disappears. Common types include light verbs and transparent structures (Fillmore et al., 2002), but are not restricted to verbs/nouns or verb/noun phrases. I show some examples below and in the Appendix.

(11) [This promise P] was [**given** D] on November 2. SUPPORT

(12) The common narwhale, or sea unicorn, often [**reaches** D] [a length of sixty feet S]. SUPPORT

(13) It's a glorious mission but also [mission A*] [**a...one** D] [dangerous S]! SUPPORT

As Example 13 shows, the label SUPPORT does not necessarily applies to verbs or nouns, but can also apply to other constructions.

Description Here I discuss perhaps the largest category in the proposal, which is DESCRIPTION. While many other labels specify a more or less concrete modifier function, the category of DESCRIPTION has undeterministic content. It includes manner adverbs (14), adpositional phrases (15), attributive adjectives (16), preverbal elements which describe an action (17, 18), and many more.

(14) My article was [**hotly** D] [debated P]. DESCRIPTION

(15) I [called P] [**in an impatient voice** D]. DESCRIPTION

(16) I understood at last that my [**true** D] [vocation S]. DESCRIPTION

(17) Captain Anderson [**hastened** D] to [reassure P] them. DESCRIPTION

(18) I was [**busy** D] [classifying P] my mineralogical, botanical, and zoological treasures. DESCRIPTION

An interesting finding when identifying the DESCRIPTION instances was that many verbs, including control and raising structures, can be grouped with adjectives and adverbs, if the context suits. This means that it is not uncommon for verbs to modify verbs. UCCA readily has distinguished the main scene-evoking State or Process from the secondary verbs, and it turns out that many of these secondary verbs are in fact descriptive modifiers, like in (17). The difference between a verb that is DESCRIPTION and one that is SUPPORT depends on if the verb adds complexity to the primary State or Process[6].

I also note that there is a distinction between DESCRIPTION and DEGREE. The intuition is that DESCRIPTION often is semantically heavier and more loaded than DEGREE. Words such as *tremendously, deeply, little* are accordingly DEGREE rather than DESCRIPTION.

4.3 Limitations

Because the semantic functions have been based on existing D instances in corpora, one has yet to test if the categorization is robust against newly annotated data. The task at hand does not yet consider annotating new data. Also, the results in the next section are done by one annotator. Furthermore, the heuristic here may extend to non-scene modifiers, i.e. the Elaborator (E) category, but because this paper focuses on Adverbials, one does not yet discuss the transferrability to Elaborators as modifiers.

Along similar lines, there also exists annotation crossovers between D and other labels, either due to annotation mistake or other reasons. For example, a number of *would* are labeled as 'F' instead of 'D,' though my impression was that most instances of *would* are labeled with 'D.' For now, I take the UCCA annotation as they are, and I leave this issue to future consideration.

5 Pilot Annotation and Results

In applying the above heuristics to annotating the UCCA *Twenty Thousand Leagues Under the Sea* corpora (Sulem et al., 2015a) in English and French, I have gone through all Adverbial categories and have annotated them in their respective contexts, for a total of over 1400 instances (Table 3; Figure 1)[7]. When an Adverbial instance receives multiple labels, each category is counted – therefore the number for each category does not necessarily sum up to the total number of D instances. Moreover,

[6] I found that often one can paraphrase a control or raising structure with relative clause, in which case the verb/adjective will be DESCRIPTION.

[7] The resources, code, and results can be found at: https://github.com/IvyWang13/ucca_adverbials/blob/main/README.md

	English	French
Description	211	180
Negation	118	173
Mood	178	111
Degree	120	90
Aspectual	48	24
Comparative	42	40
Frequency	21	31
Support	41	22
Quantity	9	5
Reason	3	1
Condition	2	2
Cause	3	3
Total	771	614

Table 3: Semantic type distribution of D categories

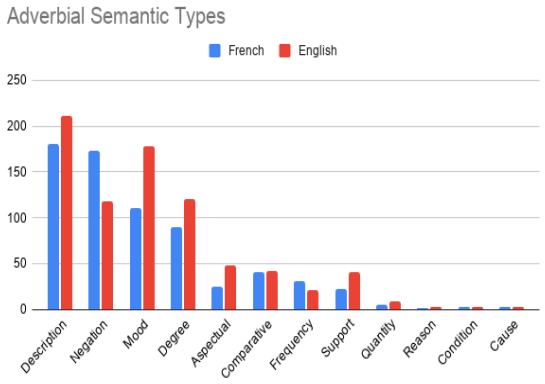

Figure 1: Graphical Rendition of Semantic type distribution for *En* and *Fr*.

the implicit D units (3 in French text and 2 in English text) are not counted as their cases are so few, and are due to coordinate structures. Additionally, remote D edges are not counted.

Next I present annotation results. In both languages, there exists quite an uneven distribution, with DESCRIPTION, MOOD and NEGATION being the top three categories (see Figure 1). On the other hand REASON, CONDITION and CAUSE are the three fewest categories, due to their low occurrence in the text, and also due to the fact that they capture relatively fewer and more distinctive linguistic phenomena than the larger categories.

Also, from Table 3, there are some considerable divergences between English and French, identifiable by category. For example, the English text has doubled the use of ASPECTUAL and SUPPORT categories. French text also has much more NEGATION labels while English has much more MOOD (see asymmetry in Figure 1). On the other hand, the use of COMPARATIVE and FREQUENCY is much more comparable. Overall, English has over 100 more D instances than the French text, and as discussed in the following, there are initial D-divergences which in turn caused the divergence in D subcategorization.

In addition, it is worth noting that the categories which tend to interface variably with syntactic structure tend to have more differences across languages – NEGATION, SUPPORT, etc. Compared to CAUSE, or COMPARATIVE, these are more variable and dynamic since they still are closely related to syntactic structure, leading to language-specific constructional differences. One cannot help but reflect on how far the UCCA representation can truly implement its semantically-driven design principle, or if one should simply do away with and ignore categories like SUPPORT.

6 Discussion

6.1 Cases with multiple categories

There are relatively few D instances in either language that receive multiple labels, but they reveal interesting semantic patterns. While most commonly these labels include NEGATION, other dimensions or properties can also achieve combined meaning.

(19) Imagine...the animal [**ten times more** D] [powerful S] COMPARATIVE, DEGREE

(20) ...an animal that could [sink P] a frigate [**as easily as** D] a walnut shell! COMPARATIVE, DESCRIPTION

Examples 19 and 20 involves COMPARATIVE. The following example involve questions, and thus MOOD.

(21) [**Pourquoi (why)** D] cet organisme si [puissant (powerful) S]? DESCRIPTION, MOOD

In allowing the scheme to have multiple labels, one is spared the effort of creating new specific, but sparse categories for certain combined properties. Rather, it is easier to indicate category co-existence. In UCCA, this is currently and readily achieved by adding an extra 'remark' in the edge label. Table 4 shows what semantic properties are commonly combined and used in English.

	Negation	Comparative	Mood
Description	1	6	-
Degree	2	5	3
Aspectual	3	-	-
Frequency	1	1	-
Negation	N/A	4	1
Quantity	-	1	-
Condition	2	-	-
Support	1	-	-

Table 4: Distribution of multi-labeled instances in English, see Appendix for French.

Negation + X From Table 4 negation almost overlaps with all other categories (except for QUANTITY) in the current corpora. As previously mentioned, the linguistic phenomena involving negation are complex. The current proposal potentially resolves some scope ambiguities as it allows the combination of NEGATION and another label on one D unit. Not counting annotation mistakes, this separates out the instances where negation modifies the State/Process and the instances where negation modifies another Adverbial. The latter is captured by assigning NEGATION and another label to the D instance as a finer-grained function (see Example 22).

(22) They were [**unable** D] to [say P]. DESCRIPTION, NEGATION

Arguably, the similar effect can be achieved for COMPARATIVE and MOOD patterns, but to a much lesser extent.

Annotation Inconsistencies While it is appealing to implement multiple functions on one D instance to resolve ambiguities for categories like NEGATION, a necessary condition is that we expect this to work only in unanalyzeable units (UNA). Thus, when annotation is inconsistent, due to potentially different grouping/segmentation of D instances, the effect does not apply. In the current foundational layer, multi-words Adverbials are sometimes unanalyzeable units, and other times, under similar contexts, separated/discontinuous units, as the following examples show.

(23) I could [**no** D+NEGATION] [D **longer** D+ASPECTUAL] [hold my tongue P].

(24) ...unicorn [**no longer** D+NEGATION +ASPECTUAL] [armed S] [with a mere lance].

6.2 Cases for En-Fr divergence

As seen above, some categories still exhibit divergences across English and French. There are several causes, but the most common is the difference in their linguistic structure, resulting in an initial divergence between D and another category. In the following examples, the words in boldface are alignments between English and French.

(25) a. EN: ...[finished off P] the monster [**for good** D + ASPECTUAL].

b. FR: ...lui [porta (carry) P] [un **dernier** coup (a last strike) A].

In Example 25, while the phrase *for good* is labeled as D + ASPECTUAL, the French construction uses a noun phrase *a last strike*, which does not readily signal the same annotation. In fact, while *finished off* is P, *for good* is D in English, in French *porta (to carry out)* remains P, but the object *un dernier coup (a last strike)* becomes a Participant A. Consequenly, the meaning of "for good" is embedded in the Elaborator in the Participant A.

(26) a. EN: ...a collision occurred, [**scarcely** D] [noticeable P] on the whole...

b. FR: ...[un choc, [**peu** sensible, en somme E] A], [se produisit P]...

Similarly in Example 26, the adverb *scarcely* has been annotated as D + DEGREE. But in the corresponding French text, the collision is not deemed scene-evoking, thus the *peu (scarcely)* is labeled as E instead of D. It turns out that D and E can share semantic functions quite a bit, and the failure to apply sub-categories comes from a level-difference. Potentially, such divergences can be resolved by applying the subcategorization to both instances of E and of D, without re-analyzing entire passages. After all, both the Elaborator and the D category are designated for modifiers/adjuncts.

Besides the initial divergence between D and another category – often E – there are also instances where an element in one language is simply nonexistent in another.

(27) a. EN: ...the Americans, who when they [**do** D + SUPPORT] [laugh P], laugh raucously.

b. FR: ...aux Américains, qui (who) rient (laugh) bien, quand (when) ils (they) [rient (laugh) P].

In Example 27, the English construction has a verb *do* before the Process *laugh*, whereas in the French equivalent, the *when*-adverbial clause comes last in the sentence, and does not have an extra support verb. Arguably this is a difference stemming from the different constructions, where in the English construction the insertion of *do* stresses and completes the meaning of the sentence.

7 Conclusion

In this paper I have attempted a first semantic characterization of Adverbial categories in UCCA. I find that first the Adverbial elements are lexically, syntactically, and constructionally diverse. In presenting a scheme of refinement annotation, I have refrained from subdividing into too much details and have distinguished conceptual categories of distinctive properties. Importantly I have allowed assigning multiple labels to one Adverbial instance. Several of the categories are broad (like DESCRIPTION) and others are complex (like NEGATION) – but overall the scheme is quite applicable, learnable, and accessible for future annotators. Accordingly I provide pilot annotation on the parallel corpora of *Twenty Thousand Leagues Under the Sea*.

While comparing annotations for English and French, there are many cases where Adverbials in both languages do not initially line up, such that a sub-categorization of the D instances won't line up perfectly. Also, in this proposal I have not considered the effects of semantic scope but have argued that multiple labels can resolve some simple cases of ambiguity. Lastly, future research might benefit from looking at all modifiers beyond just the D category – especially Elaborators (E) – in order to achieve the best and more-encompassing refinement scheme.

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A Appendices

A.1 Mood

(28) "[Oh F] [**really** D]?" Ned said, tipping me a wink. MOOD

(29) [**Let** D] 's accept that the pressure of one atmosphere is represented by the pressure of a column of water thirty-two feet high. MOOD

(30) Commander Farragut was unwilling to attempt this tortuous passageway and [maneuvered P] [**instead** D] to double Cape Horn. MOOD

(31) Were we [**likely** D] to [encounter P] the narwhale in such a cramped strait? MOOD

A.2 Negation

(32) If master's eyes would kindly [**stop** D] [bulging P]. NEGATION, SUPPORT

(33) If it [**hadn't been for** D] Commander Farragut's characteristic [stubbornness S], the frigate would ultimately have put back to that cape in the south. NEGATION, CONDITION

A.3 Support

(34) Several people [**did me the honor of** D] [consulting P] me on the phenomenon in question. SUPPORT

(35) We [**have** D] [n't D] a moment to [lose P]. SUPPORT

(36) In twenty-six years Cunard ships have [**made** D] 2,000 Atlantic [crossings P]. SUPPORT

A.4 Description

(37) They were [**able** D] to [estimate P] the mammal's minimum length. DESCRIPTION

(38) They were [**unable** D] to [say P]. DESCRIPTION, NEGATION

A.5 Multiple label correlation in French

	Negation	Comparative	Mood
Description	1	7	10
Degree	18	7	8
Aspectual	4	-	-
Frequency	2	2	-
Negation	N/A	-	-
Quantity	-	-	2
Condition	-	-	-
Support	-	-	2

Table 5: Distribution of multi-labeled instances in French