Verbs of Emotion in French and English

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Abstract

We undertook a detailed investigation of French and English verbs of emotion. Based on a prior classification of French emotion verbs (Mathieu, 2000, 2005), the corresponding English verbs were manually identified. An independent classification for each language yielded 27 shared classes and one class specific to English only. We matched the verbs and the classes crosslinguistically for both semantic and syntactic properties and considered some properties that cut across our classes. Lexically, emotion verbs exhibit the same phenomena familiar from other areas of the lexicon, such as systematic metaphoricity and different kinds of polysemy. We consider possible new ways of representing the emotion verb lexicon in WordNet.

1 Introduction

The lexicon of emotions presents significant challenges for systematic investigation and lexical encoding. Psychologists have identified a small number of basic emotions that are maximally distinct from one another and arguably have universal status; some have physical reflexes (e.g., Johnson-Laird and Oatley, 1989). But languages lexicalize a far greater number of emotion verbs that cannot be easily accommodated within such fairly straightforward schemes; moreover, there is significant crosslinguistic variation, some of which may be culturally conditioned (e.g., Benedict, 1946).

Emotion verbs have been been classified semantically and syntactically for a number of languages Voorst (Belletti and Rizzi, 1988, Levin 1993, Ruwet, 1995, van Voorst, 1995, Mathieu, ibid, *inter alia*). The semantic field of emotion verbs is not clearly delimited. Thus, a number of verbs denote a physical reaction or behavior that may express an emotion:

(1)   It pains/hurts Mary to see John so lonely

Similarly, verbs like *paralyze* may denote both a psychological and a physical change of state.

Verbs like *disillusion, suprise* and *boggle* straddle the border between cognition and emotion. In the work reported here, we took a fairly broad approach and included all verbs that have at least one of their readings in the emotion domain.

Belletti and Rizzi (ibid.) contributed an important distinction to the study of emotion verbs, based on the semantic-syntactic distribution of the arguments and the associated Semantic Roles. One class of verbs projects the Experiencer of the emotion as their structural subject and the Theme or Stimulus (the object of the emotion) as their structural object; the other class realizes the Theme/Stimulus as the subject and the Experiencer as the object. Corresponding examples for English and French are given in (2) and (3):

(2)   Mary loves Paul
        Mary aime Paul

(3)   Paul frightens Mary
        Paul effraye Mary

In this paper we focus exclusively on verbs of the second category, represented by Engl. *frighten* (Fr. *effrayer*).

2 Semantic classification of emotion verbs Credits

Taking a prior classification of French verbs (Mathieu, 2000, 2005) as our point of departure, we manually aligned the English emotion verb lexicon to the French verbs. We consulted standard mono- and bilingual lexicographic resources, such as the *Trésor de la Langue Française Informatisé* and *WordReference.com.*

Our alignment and semantic classification resulted in 27 classes common to English and French and one class that is lexicalized in English only (*shame*). The classes are listed in Table 1 (French classes are in italics). They are labeled with a verb that we judged to be prototypical and most representative for all members of the class. For instance, the class *Frighten* includes all verbs referring to the causation of fear, such as *frighten, scare, panic and terrify.* We were surprised that the emotion lexicons of the two languages aligned so well, a result that we had not expected a priori.

Amuse	Annoy	Astonish
amuser	*déranger*	*étonner*
Awe	Bore	Calm
effarer	*lasser*	*calmer*
Comfort	Confuse	Dazzle
rassurer	*déconcerter*	*épater*
Disappoint	Discourage	Disgust
désappointer	*décourager*	*dégoûter*
Distress	Excite	Flatter
meurtrir	*passionner*	*flatter*
Frighten	Frustrate	Interest
effrayer	frustrer	*intéresser*
Intimidate	Irritate	Move
intimider	*irriter*	*émouvoir*
Obsess	Offend	Sadden
obséder	*offenser*	*attrister*
Satisfy	Shame	Thrill
satisfaire		*subjuguer*
Worry		
tracasser		

Table 1. Semantic classes of emotion verbs

2.1 French and English verbs of emotion

In French, about 100 verbs belong to the *love* type verb category and 500 to the *frighten* type verb. Contrary to English, there is no verbs expressing a shame feeling, but *frighten* type constructions like "faire honte" (put to shame) or *love* type constructions like "avoir honte" (be ashamed) exist.

For English, our analysis included 370 verbs. These were drawn from WordNet and Levin (1993); additional verbs were translated from the French list.

2.2 Metaphoricity

While many of the verbs we included have a psychological meaning only (*tempt/tenter, amuse/amuser, astonish/étonner,* etc.), the large number of polysemous verbs is striking. In particular, many verbs have two distinct but related meanings, a primary or "basic" one as in (4), and a metaphoric, psychological one (5):

(4)   The sun irritates Mary (her skin)
        Le soleil irrite Mary (sa peau)

(5)   Paul irritates Mary (by his behavior)
        Paul irrite Mary (par son comportement)

An extended emotion reading is particularly common among verbs with a primary physical/contact reading (*strike, touch*) and verbs expressing physical injury (*hurt, wound*).

2.3 Polarity and strength of emotions

Our study highlights three categories of verbs:
   a) Negative polarity verbs which express a rather unpleasant feeling, such as fear or disappointment,
   b) Positive polarity verbs which express a rather pleasant feeling, such as amusement or fascination, and
   c) Neutral polarity verbs which express a neither pleasant nor unpleasant feeling, like astonishment. The polarity of this verbs depends on the context.

This distinction between verbs regarding their polarity corroborate many works in sentiment analysis (Pang *et al.*, 2002, Turney, 2002) which have attempted to classify emotions (in particular those expressing attitudes or reactions) in terms of intuitively positive vs. negative emotions.

A second axis along which the semantics of emtion verbs can be measured is the strength, or intensity, of the emotion. Within each class, members express different degrees of intensity of the core emotion (Mathieu, ibid.). Thus, the *amaze* class includes, in approximately increasing order of intensity, *astonish, surprise, startle, flabbergast, dumbfound, jar, floor, stagger, stun.* Some feelings, such as *anger* or *dislike*, are par-

ticularly richly lexicalized and the verbs express strengths of emotions on many points of the scale.

2.4 Intentional vs. unintentional subject stimuli

All the psychological verbs accept non-agentive and hence non-intentional stimuli or causes as subjects. In the examples (6-7), the non-agentive causes are events or states:

(6) The song moved Marie
    La chanson a ému Marie

(7) The increasing costs worries John
    Les frais croissants tracassent Jean

Another distinction can be drawn stimuli with human referents. Verbs like *frighten* or *amuse* accept both non-intentional and intentional, agentive stimuli (Grimshaw, 1990). Thus, a sentence like *Luc frightens Marie* has two possible meanings: that Luc frightens Marie intentionally (perhaps by jumping at her from behind), or he frightens her unintentionally, as by his behavior or his appearance. In second case, the subject is non agentive. The same two readings can apply to *move*: one can be moved by watching a sleeping child (non-intentional) or by listening to a pianist playing a sad piece (intentional).

3 Syntax

We investigate the behavior of emotion verbs with respect to the exogenic/endogenic properties of the emotions they evoke by considering the middle and the unaccusative constructions. These constructions are linked to the implict presence of an Agent (middle) and the absence of an Agent (unaccusative). Since any event that evokes an emotion involves an Experiencer who by experiencing an emotion is contributing to the evocation and persistence of a feeling (rather than a Theme, as in the case of verbs like *hit* and *break*), these constructions seem relevant.

3.1 Emotion verbs in middle and unaccusative constructions

The middle construction (Keyser and Roeper, 1984, Fellbaum, 1985, Fellbaum and Zribi-Hertz, 1989, Condoravdi, 1989, *inter alia*) is said to be generic and stative and refer to a property of the syntactic subject. Thus in (8), the car has (had)

the property of being easily sellable and the hood of the car has properties that make it not easy to open

(8) This hybrid car sold out fast
    The hood doesn't open easily

The English middle construction is roughly paraphrasable with *tough*-movement; thus (8) means approximately the same as (9):

(9) This hybrid car is easy to sell
    The hood is not easy to open

The subject of a middle is never an Agent; in most cases, as in (8), it is the Theme. A subclass of psych verbs from the *amuse*-group, which have Experiencer objects, can form middles where the Experiencer appears in the subject position:

(10) John frightens/confuses/discourages easily

(10) expresses that John has properties such as it is easy for someone or something to frighten/confuse/discourage him, or that he is easily frightened/confused/discouraged, independent of any particular Agent of Stimulus[1].

The unaccusative construction, exemplified in (11), superficially resembles the middle:

(11) John saddens easily
     Mary enrages quickly

The difference between middles and unaccusatives is that the latter do not imply an Agent, though they may imply a Cause (Fellbaum and Zribi-Hertz, 1989). Thus, only middles accept « agent-oriented adverbs » like « without difficulty », and only middles are paraphrasable with *tough*-movement structures. Moreover, while adverbs in middles always follow the verb, they can either precede or follow the verb in unaccusatives (Fellbaum, 1985) :

(12)a. Mary worries easily/quickly (middle or unaccus.)
     b. Mary easily/quickly worries (unaccusative)

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[1] Verbs with a primary physical sense (*hit, strike, touch*) that cannot form middles cannot do so under a psych reading, either.

This test shows that some psych verbs cannot occur in the unaccusative and require an exernal Agent or Stimulus:

(13)a. Joe embarrasses/disappoints/annoys quickly (middle)
 b. ?Joe quickly embarrasses/ disappoints /annoys (unaccusative)

Many psych verbs, like *worry* and *exhilarate,* can occur in both constructions, showing that the emotion can be evoked by causes both external and internal to the Experiencer.

A priori, one would expect all *amuse*-type verbs can be input to middle formation. However, some verbs do not appear to be felicitous in this construction and we could not find attested examples:

(14) $^?$John aggrieves/pains/chagrins easily

We suggest that the verbs' compatibility with the middle construction points to a more-fine-grained sub-classification of *amuse*-type verbs, namely *exogenic* and *endogenic* psych verbs. Exogenic verbs denote the experience of emotions caused by an external Agent or Stimulus; endogenic verbs denote the experience of emotions that arise from "inside" the Experiencer and do not merely express a reaction to an external stimulus. The classes *sadden, awe, interest, move, obsess* all include endogenic verbs *(*Anscombre, 1996) ; others include *rejoice.*

Unlike English, French does not have clear tests for distinguishing unaccusatives from middles, as the two are morphosyntactically identical. However, we can tease out the ability of a verb to receive a middle reading by means of three criteria. First, a middle interpretation is possible in constructions of the form (a) *X se V Adverb* construction, exemplified by

(15) *Marie s'énerve facilement/* Mary enrages easily

As in English, such sentences have an alternative unaccusative reading ("it happens easily/often that Mary enrages") in addition to the middle one ("it is easy for someone/something to enrage Mary"). When the verb is reflexive (*s'énerver*), a manual classification of the results of a corpus search shows that the semantics of this construction is most often unaccusative (in-

choative). Zribi-Hertz (2008) points out that when a reflexive sentence can be read either as an unaccusative or as middle, the unaccusative interpretation predominates.

Second, the middle interpretation can be paraphrased as in (16)

(16) One/people in general enrage Mary easily
 It is easy to enrage Mary

Third, the construction allows for an implicit agentive stimuli, as in (16).

Most of the verbs we studied accept this construction (22/23 of the classes in Table 1) while a small number of verbs is not compatible with it (5/6 classes in Table 1): *sadden, move, awe, interest, obsess.* While English and French converge with respect to allowing a middle interpretation (or not), the class *tracasser* (*worry*) allows middles in English but not in French.

Another class of verbs, which includes *annoy* and *depress* cannot occur in unaccusative readings. Thus, sentences like

(17) Mary annoys/depresses easily

can only have middle/causative readings meaning "it is easy to annoy/depress Mary" and not "Mary falls easily into a state of annoyance/depression." These verbs are strongly exogenic.

4 Representing emotion verbs in WordNet

How can our classification of the emotion verb lexicon be accommodated in WordNet? Currently, all verbs are hierarchically arranged by means of a "manner of" relation (troponymy), which distinguishes general from increasingly semantically specified verbs. Like most verb hierarchies, the emotion verb "tree" is fairly shallow. The root synset for causative (*amuse*-type) verbs is{arouse, kindle, elicit, evoke, fire, raise, provoke}, which refers to the arousing of an emotion. To make a distinction among the verbs of the 28 classes we identified, a different representation is called for. One possibility would be a cluster of verbs related to the central member. Thus, a group of verbs like *placate, pacify, relax, humor* and appease would be radially arranged around the core verb *calm* that best exemplifies this group. Possibly, the strength of the emotion

could be graded and expressed with numerical values (cf. section 2.3).

4.1 Creating a network of verbs

The current WordNet database provides for the clustering of verbs into synsets and the encoding of links from emotion verbs to the corresponding nouns (*please-pleasure*), although currently only homophonic pairs of this kind are in fact encoded (Fellbaum, Osherson and Clark, 2009). In addition, verbs and adjectives (denoting the emotional state) can be paired and linked (*sadden-sad*). Finally, causation links must be added for all relevant pairs (*frighten-fear*, etc.), allowing the user to identify verbs with both causative/middle and unaccusative reading as well as verbs that allow only one of these argument structures (*annoy* vs. *pain*).

4.2 Polysemy and Autotroponomy

The almost regular polysemy found between emotion and communication and cognition readings, as well as between emotion and physical contact readings can be encoded in WordNet and distinguished from less regular and metaphoric polysemy.

Fellbaum (2002) studied a particular kind of polysemy, dubbed autotroponymy, where a single word form has both a more general and a more specific meaning. Among the psych verbs we examined, we found autotroponyms like *concern* and *preoccupy*, which have both a general, neutral reading and a more specific, negative reading, as in (18):

(18) This letter concerns only me (not you)
    This letter really concerns me (I'm concerned aout this letter)

(18') Her job preoccupies her (no time for anything else)
    Her job preoccupies her (she's worried)

5 Conclusion

We undertook a comparative study of the French and English emotion verb lexicon. We found that we could match the verbs semantically and group them into 27 crosslinguistic classes. English has one additional class not lexicalize in French, *shame*. The verbs' participation in the middle and unaccusative constructions may refine the distinction between exogenic and endogenic emotions. Representing the verbs in WordNet in a way that reflects their semantic classification would require a radial, cluster arrangement rather than the present hierarchical one. We are currently restructuring the WordNet database in a way that would allow for a representation of emotion verbs (as well as related nouns and adjectives) along the lines sketched here.

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