A prototype analysis of the French category ''émotion''

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This paper reports a prototype analysis of the French emotion lexicon, which largely replicates a previous study by Zammuner (1998) of the Italian emotion lexicon. Three measures of prototypicality were assessed, from which an explicit and an implicit indicator were computed. Prototypicality was predicted by aspects of the subjective state denoted by the word (valence, intensity, duration, familiarity) as well as characteristics of the word (objective and subjective frequency in the language, age of acquisition). Results showed that intensity was a more important predictor of prototypicality than was valence, particularly for the explicit measure of prototypicality, which was likely to be more influenced by folk theory. In addition, the predictors of the implicit and explicit measures were somewhat different. The results are discussed in the light of the distinction between *émotion* and *sentiment* in the French language. The importance of recent models of concepts for understanding the semantics of emotion are also considered.

The relationship between emotions and emotion words can be viewed in two different ways. One can assume that there exist words (''emotion words'') that dictate the way that things are seen; or one can assume that there exist things (''emotions'') that are given names and thus have words assigned to them.

(Frijda, Markam, Sato, & Wiers, 1995)

Because emotions are internal states that cannot be directly measured, emotion psychologists must study the many indirect indicators of emotional states and their representational processes. One indicator of an emotion is the word that an individual uses to label it. As Frijda and colleagues (1995) note in the opening quote, the exact function and therefore the referent of emotion words is debatable (Russell, 1991a). Nevertheless, both those authors and the present ones adhere largely to the second approach, in which emotion words are labels for things that are experienced (Johnson-Laird & Oatley, 1989). Such a view of the semantics of emotion can be accounted for by recent embodiment theories of concept representation that ground concepts in perceptual experience (e.g., Barsalou, 1999; Barsalou, Niedenthal, Barbey, & Ruppert, in press; Niedenthal, Ric, & Krauth-Gruber, 2002). In such a view, knowledge is ''modal'' in that the perceptual states that are elicited by interaction or experience with the internal or external world constitute the concept or word, and use of a concept is the capacity to simulate an instance of the category. The use of an emotion concept, in this view, therefore involves a re-experience of the state itself. As Barsalou (1999), for example, suggests, ''on recognizing a word, the cognitive system activates the simulator for the associated concept to simulate a possible referent''. This possible referent could be the state or part of the state denoted by an emotion word, such as a physical-muscular response that is associated with that state.

If the sensory states that are the experience of emotion constitute their meaning, then we can learn something about emotion from an analysis of the referent of emotion words. However, as Wierzbicka (1986) has noted, the very assumption that the English word *emotion* delimits the range of phenomena of interest to emotion research is itself subject to debate. The term *emotion* is not universal (e.g., Russell, 1991a), and even if the word exists in different cultures and different languages, the possibility still exists that the word covers slightly different phenomena. In order to understand the structure and meaning of the category *emotion*, therefore, a number of researchers have studied the proto-typicality of words that refer to affective states for that category (e.g., Russell, 1991b; Shaver, Schwartz, Kirson, & O'Connor, 1987; Storm & Storm, 1987; Zammuner, 1998), or have conducted similar analyses of different languages (e.g., Clore, Ortony, & Foss, 1987; Frijda et al., 1995; Ortony, Clore, & Foss, 1987; Scherer, 1984). A prototype analysis in particular promotes an under-standing of the basic features of an *emotion* if one assumes that emotions are multicomponential (Scherer, 1984), that there are no necessary and sufficient features for membership in the category (Fehr & Russell, 1984), and that indeed the graded structure of the category can vary across situations, and across culture (Barsalou, 1987).

In one such analysis, Zammuner (1998) asked native Italian-speakers to rate the prototypicality of 153 Italian words for the category *emotion* in that language (Study 1). Other experimental participants categorised the same set of words as

denoting emotions (or not) in a speeded categorisation task (Study 8). Reaction times to correct categorisations (i.e., categorisations as an emotion) were used as a second indicator of prototypicality (e.g., Rosch, 1975). Still other participants freely generated emotion names in an instance generation task (Study 3). Possible predictors of prototypicality were assessed by questionnaires in which participants evaluated the valence of the state denoted by the word (Study 4), the duration of the state (Study 7), and the intensity of the state (Studies 5 and 6). What Zammuner (1998) called valence, but is also sometimes called pleasantness, refers to the hedonic quality of the experience. Intensity refers to the strength of the state, and is related to the degree to which the state becomes the focus of attention.

Zammuner conducted a regression analysis in which the dependent variable was a single emotionness factor that was extracted from the three indicators of prototypicality (prototypicality ratings, free listing, and reaction times). The analysis revealed that intensity and valence were the primary predictors of prototypicality for the category *emotion*. An emotion in Italian is thus a subjective state that is strongly hedonic and very intense. Such a finding is of course consistent with many other similar analyses, and supports a view of the concept of emotion as denoting a coherent pattern of features (e.g., Frijda et al., 1995).

The purposes of the present research were to conduct a prototype analysis of the French language category emotion, following closely the approach used by Zammuner (1998), and to develop a large database on the French emotion lexicon in order to facilitate future research. In definition and in folk theory, the French word *émotion* refers to rather immediate, unbidden reactions to present situations that do not last. And even animals can experience these states. This definition is distinct from the definition of *sentiment*, meaning something closer to *feeling* (see Demoulin, 2002; Leyens et al., 2000, 2001, for further discussion). *Sentiments* are considered to be largely experienced by human beings, and are longer-lasting states that involve "cognition, morality, evolution, memory and an active, rather than reactive, role of the person" (Leyens et al., 2000, p. 189).

A list of 237 words denoting affective states was prepared by translating the list of Italian words used by Zammuner (1998), collecting already-existing lists of French emotion words, and by evaluation and discussion among three of the francophone authors. Scale evaluations of "emotionness" as well as speeded judgements of membership in the category *émotion* were collected as indicators of prototypicality. Possible predictors of prototypicality assessed included: valence, duration of the state, and intensity of the state, as measured by Zammuner (1998). In addition, as another state characteristic we measured the familiarity of the state. Past research has indicated that familiarity with exemplars of a concept is related to its prototypicality (cf. Barsalou, 1985). Finally, we also assessed what we call word characteristics, including the age of acquisition of the word denoting the state and the subjective familiarity of the

word. Objective frequencies were also collected from existing norms. Thus, we measured features of the *state* referred to by the word, and also objective and subjective characteristics of the *words* themselves, in order to learn about the overall meaning of the French category *émotion*.

Present predictions

Valence and intensity.   Over different analyses (e.g., in which she examined her three indicators of prototypicality separately) Zammuner (1998) found that valence was a weak and sometimes nonsignificant predictor of prototypicality, such that more highly valenced states were somewhat more prototypical than less strongly valenced states. In contrast, intensity was consistently a strong predictor of prototypicality such that more intense states were also more prototypical emotions. Because valence and intensity are also moderately correlated, it seemed reasonable to test the possibility that previously observed (albeit weak) relations between valence and prototypicality are in fact mediated by intensity. This would be an interesting finding in the light of the fact that valence has typically emerged as the dimension that explains the greatest percentage of variance in other types of analyses of subjective state (e.g., Feldman, 1995; Mayer & Gaschke, 1988; Meyer & Shack, 1989). Note that, like Zammuner, we were not specifically interested in the direction of valence (negative vs. positive) and prototypicality. (And like Zammuner, we did not find any relationships between direction of valence and prototypicality in any event.)

Frequency and age of acquisition.   Three features of emotion words that may be thought to be more relevant to a lexical than semantic analysis are subjective and objective frequency of the occurrence of the word in the language, in this case French, and the age of acquisition of the word. Since *émotions* are rather primitive states that do not involve much higher order cognitive processing, the words for prototypical emotions should be learned early and this relation should exist even if when the frequency of the word in the language is taken into account (e.g., Mervis & Pani, 1980). Thus, we predicted that age of acquisition would be a predictor of prototypicality for emotions, beyond the predictive value of the frequency of the word in the language.

Explicit and implicit measures of prototypicality.   We collected three measures of prototypicality for the category *émotion* in the French language. These included questionnaire prototypicality ratings, the percentage of experimental participants who classified an item in the category *émotion*, and response latencies to the categorisations. The average emotionness ratings and the percentage of participants calling a given item a member of the category *émotion* were both considered to be explicit measures of prototypicality and therefore expected to be highly correlated. As such, they could be combined into

a single index of *explicit* prototypicality judgements. Predictors of this explicit measure could then be compared to the predictors of the response latency indicator, an *implicit* measure, to see whether explicit and implicit judgements were informed by the same features (see Brauer, Wasel, & Niedenthal, 2000 for a discussion). Since explicit measures are vulnerable to influences by folk theory, the above predictions should hold more for the explicit measure than for the implicit one.

METHOD

Selection of emotion terms

In order to obtain a large and representative set of French emotion terms we started by translating Zammuner's list of Italian words into French (based on their English translations, which included more than the 153 Italian words because sometimes several English meanings were proposed). The list of 153 Italian emotion words list reported by Zammuner (1998) was itself based on previous studies (Averill, 1975; Frijda, Ortony, Sonnemans, & Clore, 1992; Fehr & Russell, 1984; Galati, 1986; Gius, Cozzi, Spagnotto, & Villa, 1992; Johnson-Laird & Oatley, 1989; Ortony et al., 1987; Reisenzein, 1994; Russell, 1983; Shaver et al., 1987; Storm & Storm, 1987; van Goozen & Frijda, 1993). We then added any words that appeared on list of French emotion terms developed in Belgium (Leyens, pers. comm., 2000) that did not appear on Zammuner's list. Three French judges replaced some of the words in those existing lists with terms that were more often used in France, and also added other words used frequently in France that did not appear on any list (e.g., *trac,* which is *stage fright* in English). The final form of the word used was that which is used to describe the internal state of an individual and which, according to the judges, was the most frequently used form of the word. The final list contained 237 terms and is presented in the Appendix.

Questionnaire study

Prototypicality, *intensity*, *valence*, *duration*, *familiarity* of the state, as well as the estimated (subjective) *frequency* of the word in written and spoken French, and the estimated *age of acquisition* of the word, were all assessed with questionnaires. Any given respondent completed a questionnaire that assessed only one such feature of the emotion terms. Respondent samples and details of the questionnaire are described for each measured feature. Respondents were 2559 French university students who were enrolled in different faculties (e.g., law, economics, psychology, literature) at the two Universities of Clermont-Ferrand (France). They were solicited on campus to take part in a study of the French lexicon.

Due to the number of words under study, a given questionnaire assessing the features described below contained only half of the full stimulus list (approximately 118 words). To establish these lists, two random orders of the entire word list were constructed. Then these were divided in two, which resulted in four different versions of the questionnaire (each containing half of the entire list) for each feature assessed.[1] Demographic questions concerning the respondent's age, sex, year of study, native language, and, if not French, the age of acquisition of the French language, were assessed at the end of the questionnaire. It took respondents an average of 15 minutes to complete a questionnaire.

We excluded from final analysis the participants for whom French was not their native language and those who learned French after the age of 5 years.

Prototypicality. Respondents ($N = 319$; 229 women) with an average age of 20.9 ($SD = 1.91$), were instructed to evaluate the degree to which each of the words presented referred to an emotion. The ratings were made on 10-point scales ranging from 1 (*I would not say that it is an emotion*) to 10 (*I would say that it is certainly an emotion*).

Valence. Respondents ($N = 300$; 230 women), with an average age of 20.39 ($SD = 3.13$), rated the extent to which each word referred to a state that was pleasant or unpleasant on bipolar rating scales ranging from -5 (*very unpleasant*) to $+5$ (*very pleasant*); the scale contained no zero point.

Intensity. Respondents ($N = 315$; 244 women), with an average age of 21.12 ($SD = 1.91$), evaluated the intensity of the state denoted by each word on 10-point scales, where 1 indicated that the state was *not at all intense* and 10 indicated that the state was *very intense*.

Duration ratings. Participants ($N = 303$; 244 women), with an average age of 20.25 ($SD = 2.02$), estimated the duration of the subjective state denoted by each word on 9-point scales where 1 referred to *a few seconds at most* and 9 referred to *more than a few hours*. The intermediate points were: 2 = 10–20 s; 3 = 1 min; 4 = 5 min; 5 = 15 min; 6 = 0.5 h; 7 = 1 h; 8 > 2 h.

Familiarity of state. Respondents ($N = 276$; 172 women), with an average age of 21.20 ($SD = 3.35$), evaluated the extent which each word referred to a ''familiar emotional state'' on 10-point scales ranging from 1 (*a not at all familiar state*) to 10 (*a very familiar state*).

Subjective frequency. Respondents ($N = 527$; 336 women), with an average age of 19.88 ($SD = 2.17$), estimated the ''frequency of written and oral use in the

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[1] Two exceptions to this were the questionnaires measuring age of acquisition and subjective frequency of the word in written and spoken French. Those two questionnaires also contained neutral words that were matched to the emotion words on various characteristics. Those questionnaires were nearly twice as long as the others, and therefore were divided into four parts. This required the use of almost twice as many participants in order to have approximately 150 responses for each item.

French language'' on 6-point scales ranging from 1 (*unknown*) to 6 (*very frequent*).

Age of acquisition. Respondents ($N = 519$; 324 women), with an average age of 19.95 ($SD =2.21$), estimated the age at which they had learned each word in its oral and written form. The rating were made on 5-point scales ranging from 1 (0–3 yrs) to 5 (>12 yrs). The intermediate scale points were: 2 = 4–6 yrs, 3 = 7–9 yrs, 4 = 10–12 yrs.

Emotion categorisation and reaction time study

A word categorisation task was used to assess membership in the category *émotion* as well as reaction times (RTs), as two additional measures of proto-typicality. Previous work has shown that prototypicality and reaction time are negatively correlated, such that more prototypic items are categorised more quickly (Rosch, 1975).

Participants. A total of 77 (73 women) first year undergraduate students at the University of Clermont-Ferrand II, with an average age of 19.54 ($SD = 1.29$), took part in the study. They participated individually and received extra credit for an introductory psychology course in return for their efforts.

Material. The words used in this study were the 237 emotion words from the list used in the questionnaire study, and 198 neutral abstract words that were matched for word length and frequency to (83% of) the emotion words. Note that we could not find a matching neutral control word for 100% of the emotion terms. A random order of the 435 words was created and then divided in half, with only the constraint that an equal number of the emotion words and of the neutral control words were on each list, in order to shorten the length of the experimental session. In all, 40 participants saw one word list and 37 participants saw the other. Thus, the percentage of categorisations of an item as an *émotion* and the mean RTs for these categorisation were based on approximately 40 responses each.

Procedure. Participants arrived individually at the laboratory in order to participate in a ''computer-based study of the categorisation of words''. They were led by the experimenter to a sound-attenuated cubicle equipped with a Macintosh personal computer.

When participants were seated comfortably in front of the computer, they were informed that during the session they would see words appear one at a time on the computer screen. Their task was to decide as quickly as possible if that word referred to an emotion or not and to press appropriately labelled keys on the keyboard to indicate their yes or no response. Participants then performed 10 practice trials composed of 7 neutral words and 3 emotion words that did not

appear in the main part of the experiment. Words were presented one at a time, using the Psyscope program (Version 1.2.5.PPC), in black, bold Geneva 24 pt. Each word appeared for 1000 ms in the centre of the computer screen, preceded by a fixation point that appeared for 800 ms. If participants did not answer within 10 s, a message was displayed on the computer screen instructing them to respond more quickly, and the next trial was presented. The intertrial interval was 400 ms. Participants' RTs and categorisation responses were recorded for each word. The order of word presentation was randomised for each participant, and the left and right position of the yes and no keys on the keyboard was counterbalanced across participants.

RESULTS

For the reported analyses, the unit of analysis was the word, and the 237 data points for each variable were means computed over approximately 150 respondents per word for the questionnaire measures, and a maximum of 40 respondents per word for RTs and percentages of categorisation. Note that individual RTs were only used in computing the mean reaction time for a word if a respondent categorised the word as an emotion (Zammuner, 1998).

Variable transformations

Reaction times were highly positively skewed. For inferential statistics, a log transformation was thus applied to this measure of prototypicality (Fazio, 1990). The log transformation resulted in an acceptable distribution of scores, and one that met the assumptions of parametric tests. Raw response latencies are reported in the Appendix. The reader should recall that shorter RTs indicate higher prototypicality.

   The percentages of emotion categorisations were negatively skewed. Thus, these scores were subjected to a power transformation, which also resulted in an acceptable distribution. In order to create a global score of the explicit measures of prototypicality we averaged the *z*-score of the prototypicality ratings and the z-score of the (power-transformed) percentages of categorisation in the category *émotion*. Henceforth, in the text and in Table 1, we call this global score the explicit score or Explicit.

   Finally, consistent with Zammuner (1998), we calculated the absolute values of the valence ratings. The resulting scores thus reflected the degree to which a state was considered more or less hedonically saturated, and did not reflect the specific nature, positive or negative, of the state. Unless otherwise stated, the term ''valence'' is henceforth used for the *absolute value* of the valence scores.

Bivariate relationships

Table 1 presents the bivariate relationships between all prototype indicators and all state and word characteristics. As can be seen, all indicators of proto-typicality were significantly correlated with all predictor variables, with the exception that duration was not significantly correlated with the questionnaire ratings of prototypicality. In addition, all indicators of prototypicality were significantly related to each other. Not surprisingly, the two explicit measures, prototypicality ratings, and the percentages of *émotion* categorisations (Q-Rate and %Cat in Table 1) were more highly correlated with each other than either of them was with the RT measure. Thus, the creation of a summary measure of explicit judgments of prototypicality, the explicit score, which also appears in Table 1, was clearly justified.

As expected, the absolute values of the valence ratings were positively cor-related with all measures of prototypicality, such that the more hedonically saturated the state the more prototypical it was of the category *émotion*. Also as expected, the more intense the state, the more prototypical was the state of the category *émotion*. Furthermore, as can be seen in Table 1, intensity showed a higher correlation with prototypicality than any other predictor. Duration was modestly correlated with all indicators except, as mentioned, the questionnaire prototypicality ratings. The correlations between duration and prototypicality were positive (negative for RT), indicating that the longer the state the more prototypical of the category *émotion*. All of these findings are replications of

TABLE 1
Bivariate relations between prototype indicators and predictor variables

	Q-Rate	RTs	%Cat	Expl	Val	Inten	Dur	Fam	S-Freq	AoA
RTs	−.37									
%Cat	.76	−.51								
Expl	.93	−.47	.93							
Val	.36	−.28	.40	.40						
Inten	.81	−.35	.64	.76	.47					
Dur	.08	−.30	.26	.17	.45	.26				
Fam	.27	−.42	.45	.38	.30	.36	.59			
S-Freq	.29	−.59	.51	.43	.34	.36	.42	.68		
AoA	−.28	.52	−.40	−.36	−.32	−.27	−.36	−.59	−.87	
O-Freq	.34	−.34	.29	.32	.29	.39	.38	.44	.46	−.50

Notes: All correlations are significant at $p < .01$ except the correlation between Dur and Q-Rate ($p > .10$). Q-Rate, questionnaire ratings of prototypicality; %Cat, percentage of participants who categorised an item as a member of the category of emotion; Expl, average of the *z*-scores of %Cat and Q-Rate; S-Freq, subjective frequency; O-Freq, objective frequency. All correlations involving O-Freq are based on the 215 items for which objective frequencies were available (otherwise correlations were calculated over all 237 items).

Zammuner's findings for the Italian lexicon. Familiarity of the state was positively related to prototypicality such that more prototypical states were also more familiar.

Subjective frequency and objective frequency, which were highly correlated ($r = .46$) themselves, were both positively correlated with the explicit indicators of prototypicality and negatively correlated with reaction time, indicating that higher frequency emotion words were those that made reference to the most prototypical states. In addition, subjective and objective frequency of the words were positively correlated with all state characteristics, such that more frequent words denoted states that were stronger in valence and intensity, longer in duration, and more familiar. It is of interest that subjective frequency was very strongly correlated with the familiarity of the state (see below). Age of acquisition was negatively correlated with the two explicit indicators of prototypicality and positively correlated with reaction time. This indicates that the words for the most prototypical states were learned earlier than the words for less prototypical states. In addition, the correlations suggest that words that are learned earlier refer to states that are more strongly valenced and intense, longer, and more familiar.

Regression analyses

Simultaneous regressions were conducted for the reaction time measure and the explicit score using all variables (except for objective frequency in order to retain all 237 words). When RTs were regressed on the full complement of predictor variables, only intensity, $\beta = -.16$, $t = 2.52$, $p < .05$, and subjective frequency, $\beta = -.44$, $t = 3.70$, $p < .01$, emerged significant. When the explicit score was regressed on these measures, intensity, $\beta = .69$, $t = 14.28$, $p < .01$, and duration, $\beta = -.15$, $t = 2.83$, $p < .01$, were significant.

The importance of intensity compared to valence was further explored in mediational analyses. As already noted, intensity and valence had significant bivariate relations with both implicit and explicit measures of prototypicality. In addition, as can be seen in Table 1, they were themselves significantly correlated. In separate regressions we therefore used reaction time and the explicit measure as dependent variables with just valence and intensity as predictors.

Analysis of the RT measure revealed that both valence, $\beta = -.14$, $t = 2.03$, $p < .05$, and intensity, $\beta = -.28$, $t = 4.13$, $p < .01$, were significant independent predictors of prototypicality.

However, for the explicit score, only intensity emerged as a significant predictor, $\beta = .74$, $t = 15.6$, $p < .01$. When the effects of intensity were partialed out, the relationship between valence and prototypicality disappeared, $\beta = .05$, $t = 1.14$, $p > .20$.

These results are consistent with the interpretation that for implicit measures of prototypicality both valence and intensity contribute to the prototypicality

judgement (Kenny, 1998). For explicit measures, which are more sensitive to, and indeed probably largely indicative of, folk theory, the results are consistent with the interpretation that the simple relation between valence and prototypicality was mediated by intensity (Baron & Kenny, 1986). Thus, both global and mediational analyses suggest that intensity is the primary predictor of explicit beliefs about what constitutes an emotion in the French language.

Similar mediational analyses were conducted to further explore the role of familiarity and subjective frequency of the word, which were very highly correlated, in the prediction of explicit and implicit measures of prototypicality.

Analysis of the RT measure revealed that only subjective frequency was a significant predictor of prototypicality, $\beta = -.10$, $t = 7.75$, $p < .01$. When the effect of subjective frequency was partialled out, the relationship between familiarity and prototypicality disappeared, $\beta = .007$, $t = 0.65$, $p > .50$.

Using the explicit score, both subjective frequency, $\beta = .30$, $t = 4.0$, $p < .01$, and familiarity, $\beta = .12$, $t = 2.04$, $p < .05$, were significant predictors of prototypicality. For the RT measure only, then, the results are consistent with the interpretation that the simple relation between familiarity and prototypicality was entirely mediated by subjective frequency.

DISCUSSION

The present prototype analysis revealed a number of different findings, in addition to yielding a large body of data concerning the French emotion lexicon. Probably the most important finding is that the intensity component of subjective emotional experience was the most important predictor of prototypicality for the category *émotion*. In regression analyses, intensity emerged as the most important predictor of the prototypicality of an *émotion*, and it also appeared to mediate the relationship between valence and prototypicality. This finding is consistent with the recently discussed distinction between *émotion* and *sentiment* in the French language (Leyens et al., 2000). Definition and folk theory alike indicate that *émotions* are strong, primitive, unbidden reactions to eliciting, often observable, stimuli. *Sentiments* are more complex, cognitively mediated, reactions that involve the self-concept and perhaps a capacity for moral reasoning. Thus, it might not be surprising that *émotions*, in contrast to *sentiments,* are largely characterised in the present prototype analysis in terms of their intensity, and less in terms of their degree of hedonic saturation.

A second important finding was the difference between the predictors of the implicit versus explicit measures of prototypicality. Although intensity was the most important predictor of both measures, the explicit measure was also significantly predicted by duration of the state and, to some degree, by the familiarity of the state. When intensity was part of the model, the relationship between duration and prototypicality was negative. Recall that bivariate rela-

tions between duration and prototypicality (as assessed by explicit measures) were positive. One way to interpret the inconsistency in the direction of the finding is that, in folk theory certainly, intense emotions take longer to subside, thus by this reasoning, longer emotions may be more intense and therefore more prototypical. But once intensity has been controlled for, it is the case that shorter-lived reactions (like sudden fear) are most prototypical of the type of primitive reaction that one considers when one thinks of an *émotion*.

We had anticipated that age of acquisition would be a more important predictor of prototypicality than frequency of the term in the language. This expectation was not supported. Subjective frequency was the most important predictor of both implicit and explicit indicators of prototypicality, and it mediated the strong relationships between familiarity of the state and prototypicality for the implicit measure. Age of acquisition shared significant bivariate relationships with indicators of prototypicality, however these appeared to be mediated by word frequency. Although word frequency is an important predictor of many processes involved in word comprehension, this finding related to prototype judgements may be more related to Barsalou's (1985) notion of *frequency of instantiation*. In our analyses, that is, word frequency, especially subjective word frequency, may say something about the number of times the state denoted by the word has been accorded membership in the category of *émotion*.

Cross cultural research

A comment should be made concerning the study of emotion words and the categories of emotion words in different cultures and languages. The distinction between *émotion* and *sentiment* mentioned here is a distinction that has not received attention until very recently (Leyens et al., 2000, 2001). In addition to other calls for more precise definition already coming from the anthropology literature (e.g., Wierzbicka, 1986), this is an important sign that the category of what emotion psychologists are studying may be importantly different in each culture. At the very least, the possibility that different superordinate categories, or several, are present in a language helps us make this realisation concrete (Ortony et al., 1987). Analysing the components that make the category cohere, using both implicit and explicit measures, as well as a sufficient number of emotion terms, can make future cross-cultural analyses more interesting and fruitful. In other words, we believe that the presence and absence of certain words is maybe not the most important comparison. Rather, observations of the similarities and differences in the relative importance of the components of the states, that is, in their category structure, and the way in which the categories group together different words, may be the most illuminating. Such analyses, furthermore, will certainly facilitate cross-cultural understanding.

Conclusion

Frijda and colleagues asserted that "there exist things to be seen, collectively labeled by laymen and investigators in many languages, as 'emotions' or some close equivalent; and these things are given names, the various emotion words like *anger*, *ikari*, or *boosheid*'' (Frijda et al., 1995). This suggests a rather bottom-up relationship between emotional experience and emotion language. As mentioned in the introduction to the present paper, contemporary approaches to the representation of concepts, new approaches to semantics, and the under-standing of meaning, allow for concepts to be "embodied". From such an approach, then, the referent of an emotion word is the neural state that occurs during the state that that word denotes. Of course, this does not mean that emotion words and concepts do not influence and constrain emotional experi-ence, we feel sure that they do (e.g., Halberstadt & Niedenthal, 2001). But it does suggest that the study of muscular, neurochemical, and autonomic indi-cators of emotion need to go hand-in-hand with the study of its cognitive-representational processes. We suspect that they are more closely related than the current literature suggests.

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APPENDIX
Normative ratings of 237 French emotion terms including mean reaction times, objective frequency, and categorisation of the terms as an "émotion"

	Items										
French	English	Q-Rate	RT	%CAT	Intensity	Duration	Valence	Familiarity	AoA	S-Freq	O-Freq
Adoration[a]	Adoration	6.09	1158.39	83.78	6.80	6.74	2.82	5.29	3.18	3.99	1208
Affection[a]	Affection	7.09	994.79	91.89	7.07	7.28	3.90	7.28	2.80	4.86	4900
Affliction[a]	Affliction	5.19	1622.86	35.00	4.91	4.63	−1.81	2.92	4.78	1.80	174
Agitation[a]	Agitation	4.61	1115.58	51.35	5.65	5.10	0.36	5.56	2.46	4.87	2961
Aimer	To love	9.06	831.00	91.89	8.62	8.21	4.53	8.20	1.34	5.76	76,646
Allégresse[a]	Cheerfulness	5.79	1290.96	65.00	5.11	5.61	2.45	5.08	4.41	2.67	1272
Amer[a]	Bitter	4.77	1086.16	47.50	4.78	4.33	−2.66	3.66	2.97	4.49	3756
Amour[a]	Love	8.98	827.82	95.00	8.74	8.180	4.74	7.80	1.55	5.78	54285
Amusé[a]	Amused	4.82	920.75	90.00	5.25	5.35	3.38	7.13	1.80	5.07	–
Angoisse[a]	Anguish	7.67	783.81	97.30	7.13	6.13	−3.59	5.30	3.33	4.88	10,448
Anxiété[a]	Anxiety	6.79	749.94	97.30	6.87	6.41	−3.19	5.71	3.94	4.32	1642
Apathie[a]	Apathy	3.91	1352.35	45.95	4.07	5.36	−1.58	2.85	4.84	2.24	280
Ardeur	Ardour	4.71	1047.82	29.73	5.97	5.92	2.57	5.30	4.12	3.53	3207
Attentionné[a]	Caring	3.94	1078.72	90.00	5.78	6.82	3.63	7.03	3.10	4.79	38
Attirance[b]	Attraction	7.08	1060.77	81.08	6.91	6.58	4.05	6.90	3.52	4.84	327
Aversion[a]	Aversion[a]	5.01	1289.80	25.00	5.45	5.08	−1.96	2.87	4.72	2.19	782
Blessé[a]	Hurt	5.94	1126.33	56.76	5.59	5.87	−3.09	5.29	2.11	5.14	6589
Bonheur[a]	Happiness	8.30	797.25	100.00	7.98	7.59	4.56	7.64	2.00	5.61	19680
Calme[a]	Calm	3.86	1074.93	67.50	4.63	6.81	3.33	6.40	2.08	5.24	11,797
Captivé	Captivated	5.16	1242.42	70.27	5.97	5.91	2.33	5.55	3.55	3.63	–
Chagrin	Grief	8.11	943.26	94.59	7.01	6.72	−3.29	5.21	1.98	5.25	4645
Choqué[b]	Shocked	7.24	823.57	100.00	6.27	3.45	−1.90	5.07	2.98	4.96	–
Colère[a]	Anger	8.29	808.81	100.00	6.96	5.59	−2.72	5.93	1.74	5.27	11,873
Compassion[a]	Compassion	6.03	957.71	94.59	5.87	5.99	1.79	6.36	4.06	3.93	969
Confusion[a]	Confusion	4.74	1001.63	64.86	4.87	4.01	−1.54	4.80	3.66	4.40	4105

Consternation[a]	Consternation	6.01	1248.73	81.08	5.77	3.96	−2.07	4.15	4.18	3.45	285
Content	Content	7.18	859.58	89.19	6.11	6.68	3.44	7.75	1.35	5.57	8423
Contentement[a]	Contentment	5.14	1236.93	72.97	4.88	6.16	2.87	5.60	4.11	2.95	876
Convoitise	Covetousness	3.67	1807.55	29.73	5.21	5.11	−0.73	4.22	4.28	3.12	735
Culpabilité[a]	Guilt	6.51	1033.45	89.19	6.17	6.09	−3.41	5.08	3.67	4.32	833
Déception[a]	Disappointment	7.38	902.34	95.00	6.75	6.14	−3.45	5.83	3.23	4.94	2493
Déconcerté[a]	Disconcerted	5.06	1161.88	86.49	5.14	3.89	−2.13	4.69	4.11	3.75	–
Découragement[b]	Discouragement	5.10	1146.87	83.78	5.27	5.37	−3.31	5.14	3.35	4.82	880
Dédain[a]	Disdain	3.92	1245.81	56.76	4.67	4.80	−3.15	2.83	4.47	2.60	1595
Dégoût[a]	Disgust	6.22	916.67	89.19	5.92	4.94	−3.71	5.16	3.18	4.30	4071
Délaissement[b]	Neglect	3.79	1241.90	56.76	5.13	5.73	−3.77	3.77	3.99	3.15	140
Délectation[a]	Delight	5.33	1239.64	27.50	5.32	4.51	−1.94	4.25	4.63	2.27	459
Dépit	Spite	4.28	1030.53	42.50	4.75	4.75	−2.54	4.14	4.23	3.48	8882
Déplaisir	Displeasure	5.29	1069.11	75.68	4.12	4.12	−3.06	3.26	3.95	2.92	323
Dépressif[b]	Depressive	5.13	973.18	91.89	6.64	6.30	−4.13	3.88	4.18	4.47	93
Dérouté[a]	Baffled	4.64	1297.77	70.27	4.30	4.40	−1.93	4.38	4.21	2.86	–
Désespoir[a]	Despair	6.67	878.89	97.30	7.02	6.13	−3.79	3.99	3.36	4.32	7032
Désolation[a]	Desolation	5.56	1139.53	85.00	5.06	4.55	−2.58	4.68	3.77	3.59	718
Désolé[a]	Sorry (for)	5.11	901.26	91.89	4.73	4.70	−0.59	5.81	2.39	5.57	2063
Détresse[a]	Distress	6.11	852.61	83.78	6.34	5.61	−3.72	4.08	3.37	4.69	2769
Douleur[a]	Pain	6.49	920.53	90.00	6.82	5.93	−3.88	5.29	1.89	5.39	12337
Doute[a]	Doubt	4.64	960.88	80.00	5.16	4.93	−1.47	6.67	2.87	5.18	43985
Ébahissement	Astonishment	5.74	1320.23	81.08	5.36	3.17	1.89	3.82	4.37	2.48	76
Écœurement[b]	Nausea	6.83	980.34	95.00	5.87	4.62	−3.86	4.63	3.58	3.95	285
Effroi	Fright	7.35	873.00	75.68	6.08	3.04	−2.07	2.80	4.09	3.08	1969
Effusion	Effusiveness	5.66	1026.00	22.50	5.97	4.18	1.19	3.67	4.57	2.63	1046
Emballé	Thrilled	6.10	1327.57	62.16	5.78	4.55	2.44	6.14	2.89	4.50	–
Embarrassé[a]	Embarrassed	5.63	1098.22	92.50	4.91	4.79	−1.82	5.38	3.27	4.94	1863
Embêtement	Trouble	3.43	1203.00	62.16	3.98	4.91	−2.09	5.13	2.50	4.66	263
Émerveillement[a]	Marvel	7.03	1020.27	92.50	6.76	4.64	3.98	5.87	3.35	3.63	536

(Continued overleaf)

APPENDIX (Continued)

	Items										
French	English	Q-Rate	RT	%CAT	Intensity	Duration	Valence	Familiarity	AoA	S-Freq	O-Freq
Émotion	Emotion	9.01	1134.82	97.50	7.29	5.50	3.65	7.55	2.89	5.20	12,682
Émoustillé	Aroused	5.72	1016.71	85.00	5.18	3.12	1.54	4.44	4.67	2.42	–
Emportement	Carried away (in anger)	6.04	1123.79	47.50	6.18	3.58	−1.08	4.85	3.84	3.74	829
Empressement[b]	Eagerness	3.92	1049.89	45.00	5.30	3.74	−0.47	5.27	3.79	3.66	812
Ému[a]	Moved	8.57	730.08	100.00	6.44	4.78	2.35	6.47	3.13	4.84	4079
Enchanté[a]	Enchanted	7.48	919.13	95.00	5.53	5.45	3.77	6.20	2.92	4.24	1846
Enchantement	Enchantment	6.94	1061.21	75.68	6.13	5.49	3.91	5.99	3.12	4.08	1242
Énervement	Irritation	6.65	1036.75	86.49	6.58	5.61	−2.75	6.34	2.92	4.79	616
Engouement[a]	Infatuation	5.22	1227.77	59.46	5.66	5.28	2.38	4.95	4.33	3.29	221
Enjoué[a]	Cheerful	5.76	883.58	83.78	5.47	5.71	2.96	5.05	4.16	2.93	450
Ennui[a]	Boredom	4.51	904.46	70.27	4.64	6.25	−2.95	5.43	2.25	5.17	6636
Enragé	Enraged	6.20	1013.00	87.50	6.55	4.57	−2.69	4.17	3.16	4.06	978
Enthousiasme[a]	Enthusiasm	7.28	887.06	91.89	6.74	5.83	3.69	6.96	3.44	4.49	4062
Entrain	Drive	4.81	1109.57	35.00	5.37	5.23	3.38	5.84	3.85	3.22	778
Envie[a]	Envy	6.95	817.19	83.78	6.71	5.65	2.61	7.22	1.78	5.57	11,507
Envoûté	Bewitched	5.03	1019.72	78.38	6.04	5.69	1.27	4.06	3.96	3.43	–
Épaté[a]	Amazed/Impressed	5.68	1015.97	78.38	5.52	3.61	2.79	5.78	3.44	4.22	131
Épouvanté	Terrified	7.75	909.47	90.00	6.30	2.93	−3.01	3.30	3.36	3.74	–
Espérance[a]	Hope	5.11	1080.63	72.97	6.45	6.85	3.53	7.33	3.12	4.81	5815
Espoir	Hope	5.93	1089.11	92.50	6.92	6.65	2.69	7.35	2.79	5.20	11,737
Essoufflement[a]	Breathlessness	2.55	1250.42	32.43	4.07	3.28	−1.68	4.69	3.13	4.52	157
Estomaqué	Flabbergasted	6.16	1268.31	65.00	5.77	3.31	−1.01	3.45	4.39	2.46	–
Étonnement[a]	Astonishment	6.20	1006.48	89.19	5.38	3.20	2.03	6.25	2.85	4.87	3896
Euphorie[a]	Euphoria	7.58	1029.25	86.49	7.11	4.97	2.47	5.35	4.65	3.01	455
Exacerbé[a]	Exacerbated	5.58	1082.88	85.00	5.76	4.32	−1.95	4.04	4.73	2.55	–
Exaltation	Exaltation	7.34	991.54	92.50	6.63	4.37	3.25	4.48	4.45	3.36	2871

Exaspération[a]	Exasperation	5.59	1262.63	81.08	6.46	4.75	−2.75	4.63	4.39	3.46	536
Excitation[a]	Excitement	6.91	940.90	100.00	7.39	5.69	3.43	6.61	3.18	4.78	1718
Exécrer	To loath	6.43	1391.25	30.00	6.51	4.82	−2.95	3.31	4.70	2.23	216
Extase[a]	Bliss	8.12	921.44	90.00	7.81	4.72	3.83	5.69	4.35	3.93	2412
Exultation[a]	Exultation	5.99	1192.07	37.84	6.32	4.23	1.43	3.95	4.78	1.87	80
Fâché	Angry	5.74	999.19	92.50	5.35	5.96	−2.22	5.33	1.45	5.10	1646
Fasciné	Fascinated	6.73	951.59	97.50	6.83	5.52	3.57	6.13	3.72	4.17	–
Fatigué	Tired	3.40	826.90	83.78	4.40	7.14	−2.09	7.40	1.54	5.71	5798
Ferveur[a]	Fervour	3.91	1068.81	40.00	5.38	5.16	1.93	4.64	4.34	3.11	2480
Fierté	Pride	5.34	1034.94	80.00	6.11	5.71	1.95	6.29	3.34	4.85	2748
Folie	Madness	5.54	816.03	80.00	6.87	5.31	−0.39	5.02	2.79	5.03	6594
Frayeur[a]	Fright	8.06	896.97	95.00	6.09	2.67	−2.95	3.83	2.75	4.44	557
Frémissant	Trembling/Quivering	5.33	1149.68	67.57	4.90	3.46	−0.07	3.80	3.88	3.58	1331
Frénésie[a]	Frenzy	5.95	1234.86	72.50	6.42	3.86	0.82	4.16	4.56	2.64	1169
Froideur	Coldness	3.65	985.19	67.50	4.78	4.90	−3.23	4.44	3.27	4.08	1178
Froissé	Ruffled	5.15	1246.39	62.16	4.28	4.30	−2.10	4.55	2.80	4.19	–
Frousse[b]	Jitters	7.33	1127.19	80.00	5.71	3.47	−2.35	4.54	2.62	3.92	255
Frustration[a]	Frustration	6.26	997.12	91.89	6.54	5.31	−3.40	4.59	4.12	4.14	29
Fulminer	To fume	5.14	1021.56	22.50	4.47	4.47	−1.17	2.44	4.73	1.78	–
Fureur	Fury	7.82	1136.07	72.50	7.09	4.49	−1.44	5.01	3.23	3.86	4016
Furibond	Raging	4.99	1004.00	12.50	4.93	3.65	−2.16	3.08	4.46	1.91	136
Furieux[a]	Furious	7.74	840.85	89.19	6.74	5.29	−1.97	5.18	2.56	5.03	3909
Gaieté[a]	Gaiety	7.16	881.05	97.50	6.91	7.35	3.85	7.34	2.48	4.92	2663
Gêne	Embarrassment	5.64	994.07	75.00	4.99	4.75	−2.46	5.20	3.26	4.25	3126
Grognon	Grumpy	3.71	1296.84	62.50	4.25	5.97	−1.82	4.86	1.96	4.37	140
Haïr[a]	Hate	7.62	1055.21	82.50	7.59	6.21	−3.87	4.08	2.96	4.54	4943
Hantise[a]	Dread	6.42	1089.94	80.00	5.77	4.93	−3.47	4.26	4.02	3.93	680
Hésitation[b]	Hesitation	3.84	1027.76	67.57	4.65	3.75	−1.29	6.18	3.13	4.82	3190
Heureux	Happy	8.67	734.08	100.00	7.26	7.40	4.56	7.90	1.76	5.44	23743
Heurté	Offended	5.03	1063.21	51.35	5.25	3.97	−2.28	4.25	3.82	3.82	816

(Continued overleaf)

APPENDIX (Continued)

French	English	Q-Rate	RT	%CAT	Intensity	Duration	Valence	Familiarity	AoA	S-Freq	O-Freq
Honte[a]	Shame	7.46	825.66	95.00	6.35	4.71	−3.48	4.58	2.63	5.07	9236
Horreur[a]	Horror	6.87	1041.58	90.00	6.62	3.79	−3.57	3.95	2.49	5.06	9316
Hostilité[a]	Hostility	4.96	1154.10	78.38	5.38	5.26	−2.44	4.25	3.98	3.90	1820
Humiliation[a]	Humiliation	7.09	1075.33	89.19	6.70	5.05	−4.32	4.20	3.56	4.52	1978
Hystérie	Hysteria	5.70	1250.50	75.68	7.18	3.94	−3.58	3.52	4.49	3.71	251
Impassible[a]	Impassive	4.10	1238.17	45.00	4.19	5.31	−1.32	4.30	4.50	2.90	1114
Impatience[b]	Impatience	3.87	1014.67	64.86	5.70	5.19	−1.27	6.87	2.74	4.91	3896
Imperturbable	Unshakeable	2.91	1454.74	57.50	4.38	5.59	1.25	4.70	3.72	3.73	399
Impuissance	Powerlessness	4.32	1299.42	47.50	5.46	4.95	−3.51	4.55	3.61	4.45	2812
Incertitude	Uncertainty	4.01	1397.39	77.50	4.74	4.95	−1.65	6.43	3.69	4.17	2314
Indécision[a]	Indecision	2.76	1096.10	52.50	4.69	4.58	−2.52	5.72	3.94	3.22	574
Indétermination	Indecisiveness	2.48	1314.11	24.32	4.02	5.04	−2.46	4.81	4.43	3.04	672
Indifférence[b]	Indifference	3.92	946.17	62.16	4.52	5.16	−1.67	4.64	3.53	4.75	5228
Indignation[a]	Indignation	5.84	1175.23	70.27	5.87	4.42	−2.61	4.28	4.07	3.84	2195
Infect	Obnoxious	3.30	1093.08	32.50	5.62	4.09	−3.99	3.68	3.56	3.92	467
Infortuné	Hapless	2.05	1045.33	15.00	3.38	6.18	−2.14	4.01	4.09	2.88	416
Inquiétude[b]	Uneasiness	6.77	891.43	92.50	6.00	6.12	−2.40	6.50	3.04	4.96	8027
Insatisfait[a]	Dissatisfied	4.40	1159.58	64.86	4.49	5.74	−2.89	5.69	3.27	4.01	370
Insécurité[a]	Insecurity	4.52	1021.81	65.00	5.56	5.46	−3.54	4.55	3.27	4.90	165
Insensibilité	Insensibility	4.28	1047.10	78.38	4.36	4.65	−3.09	3.52	3.64	4.41	327
Insouciance[a]	Insouciance	3.26	955.00	70.00	4.17	5.64	0.67	5.05	4.05	3.88	693
Intérêt[a]	Interest	2.96	1204.33	8.11	4.90	6.11	1.62	6.17	3.28	4.91	16630
Intimidation	Intimidation	5.69	1148.82	82.50	5.31	4.54	−1.69	4.56	3.68	3.92	280
Ironie	Irony/Sarcasm	3.14	865.36	62.50	4.75	4.29	0.11	5.62	4.13	4.44	3314
Irrésolution	Irresolution	2.24	2581.67	8.11	4.16	5.38	−2.34	3.89	4.48	2.43	157
Irritation[a]	Irritation	5.82	1055.57	75.00	5.90	4.61	−2.92	5.36	3.64	4.10	1391
Jalousie[a]	Jealousy	7.27	792.49	94.59	6.92	6.52	−2.55	5.31	2.67	5.08	3305

Joie[a]	Joy	9.26	710.14	100.00	6.94	7.05	4.49	7.72	1.80	5.34	22777
Jovialité	Joviality	5.12	938.03	82.50	5.38	6.63	3.03	5.85	4.55	2.64	114
Jubilation	Jubilation	6.67	1214.60	62.50	6.73	4.48	2.28	4.72	4.59	2.61	306
Languir[a]	Languish	4.25	1168.71	45.95	4.96	5.61	−1.50	4.38	3.84	3.43	438
Lassitude	Lassitude	4.04	1001.73	75.00	4.06	6.20	−3.00	4.89	4.08	3.62	2080
Lugubre[a]	Gloomy	3.30	1002.41	42.50	4.44	4.92	−2.84	2.56	4.16	3.31	889
Malheureux[a]	Unhappy	7.97	816.47	91.89	6.04	6.58	−3.89	4.87	1.69	5.42	10823
Mécontent	Discontented	5.77	1028.90	81.08	5.03	5.50	−2.43	5.31	2.72	4.54	1757
Mélancolie[a]	Melancholy	7.33	889.19	90.00	6.03	6.32	−1.91	5.28	3.87	3.75	2535
Mensonge	Lie	3.15	997.39	45.00	5.06	5.24	−3.59	5.07	1.89	5.03	6900
Mépris[a]	Contempt	5.49	991.38	86.49	5.85	5.19	−3.65	3.78	3.76	4.49	6112
Misère	Misery/Destitution	3.07	876.50	54.05	4.87	6.30	−4.32	4.04	2.84	5.36	7653
Morosité	Moroseness	5.13	1142.08	70.27	4.69	5.51	−3.29	3.61	4.20	3.13	72
Mortifié[a]	Mortified	6.28	1182.36	70.00	5.83	3.70	−3.72	2.02	4.49	2.52	–
Navré	Sorry	5.75	854.59	72.97	4.53	4.18	−1.98	4.14	3.26	4.06	–
Nerveux[a]	Nervous/Skittish	6.64	834.76	82.50	6.35	6.12	−2.13	6.62	3.08	4.99	5832
Nonchalance	Nonchalance	2.93	946.22	24.32	3.42	5.34	−1.04	3.72	4.34	3.04	497
Nostalgie[a]	Nostalgia	6.83	1024.09	87.50	5.46	6.72	−1.00	5.91	4.15	4.13	1820
Offensé	Offended	5.92	1124.64	90.00	5.73	4.41	−2.85	3.95	3.85	3.62	867
Orgueil[a]	Arrogant pride	3.79	791.71	60.00	5.44	5.23	−2.28	4.55	3.70	4.27	8525
Outré[a]	Outraged	5.89	966.83	78.38	6.03	3.71	−2.37	3.92	4.32	3.56	361
Paisible	Peaceful	3.84	907.95	56.76	4.70	6.31	3.53	5.81	3.29	4.18	2603
Panique[a]	Panic	7.56	982.18	95.00	6.59	3.71	−3.23	4.65	2.99	4.81	1484
Paresse	Laziness	2.46	940.68	59.46	3.78	6.83	−1.47	5.60	2.46	5.02	2110
Passion[a]	Passion	8.48	879.05	97.50	8.46	7.69	4.03	7.19	3.08	5.28	17,098
Passivité	Passivity	2.60	1073.75	43.24	3.46	5.15	−1.72	3.76	3.67	4.14	914
Patience	Patience	3.22	897.50	54.05	4.76	6.22	2.67	5.82	2.53	5.48	4062
Peine[a]	Sorrow	8.39	828.17	97.30	6.32	6.48	−3.21	5.54	2.13	5.24	20803
Penaud[a]	Sheepish	3.22	1551.00	35.14	3.41	3.78	−1.04	3.19	4.19	2.81	195
Pénible	Painful	3.65	953.71	60.00	4.76	5.20	−2.74	5.01	2.37	5.01	4624

(Continued overleaf)

APPENDIX (Continued)

	Items										
French	English	Q-Rate	RT	%CAT	Intensity	Duration	Valence	Familiarity	AoA	S-Freq	O-Freq
Perplexe[a]	Perplexed	4.08	1154.24	45.95	4.04	3.66	−0.25	5.01	4.28	3.85	723
Peur[a]	Fear	8.51	858.15	89.19	6.66	4.68	−3.00	6.04	1.51	5.53	27,517
Pitié[a]	Pity	5.91	863.45	89.19	5.24	4.80	−2.53	4.87	3.06	4.71	8002
Placidité	Placidness	3.61	1219.85	32.50	3.57	4.57	−0.21	2.85	4.81	1.70	85
Plaisir[a]	Pleasure	7.34	930.59	97.50	7.77	6.88	4.43	7.63	2.26	5.40	29,380
Pressé	Hurried	2.86	835.70	27.03	5.00	4.16	−0.92	6.88	2.55	5.54	4888
Prévenance	Thoughtfulness	2.55	1534.75	10.81	4.42	5.82	2.92	5.74	4.29	2.69	319
Prudent[a]	Careful	2.19	998.57	57.50	4.21	5.87	2.09	6.85	2.50	5.24	2531
Rage[a]	Rage	7.31	1077.28	80.00	7.40	4.86	−2.86	4.78	2.85	4.90	3411
Rancœur[a]	Spite	6.11	1061.37	81.08	6.03	6.22	−3.40	4.46	4.27	3.13	404
Rancune[a]	Rancour	5.81	883.79	64.86	6.11	6.67	−3.01	4.49	3.66	4.36	2582
Ravissement	Rapture	6.87	1192.33	56.76	5.99	4.80	3.71	5.20	4.05	2.95	1233
Rebuté	Repelled	3.87	1122.79	37.84	4.42	4.54	−2.21	3.68	4.50	2.45	–
Regret[a]	Regret	6.23	968.91	87.50	5.76	6.29	−2.96	5.88	2.74	5.36	5517
Rejeté[a]	Rejected	4.11	980.38	60.00	5.46	5.36	−3.86	3.88	2.93	4.93	–
Réjouissance	Rejoicing	6.97	952.31	90.00	5.98	5.27	3.74	5.99	4.00	3.27	182
Remontrance	Remonstrance	3.13	1282.25	21.62	4.49	3.97	−2.16	4.16	3.89	3.25	208
Remords[a]	Remorse	5.92	1046.03	80.00	6.38	6.48	−3.05	5.35	3.53	4.55	3343
Repenti	Repentant	3.85	1618.20	27.03	4.07	4.89	−0.75	3.50	4.18	2.82	153
Réprimande	Reprimand	2.86	1334.67	16.22	4.13	4.08	−2.67	3.79	3.52	3.26	199
Reproche	Reproach	4.07	937.87	37.50	5.32	4.82	−2.77	5.51	2.99	4.60	4615
Répugnance	Repugnance	5.95	1210.74	62.16	5.99	4.34	−3.99	3.73	4.21	3.17	1093
Répulsion[a]	Repulsion	5.80	962.21	70.00	6.57	4.31	−3.52	3.96	4.45	3.10	570
Respectueux[a]	Respectful	3.07	872.52	56.76	5.40	7.27	4.07	7.62	3.35	4.39	1348
Ressentiment[a]	Resentment	5.84	1588.82	70.00	4.96	5.28	−1.45	4.10	4.48	2.70	923
Révolté	Revolted	7.09	890.40	81.08	7.43	6.07	−0.20	5.41	3.57	4.48	1544
Sagesse	Wisdom	3.28	783.74	62.16	5.23	6.91	4.15	6.61	3.14	4.27	5700

Saisissant	Gripping	5.26	1283.00	45.00	5.76	3.37	1.78	4.14	3.85	3.28	1272
Satisfaction[a]	Satisfaction	6.63	987.72	90.00	5.64	5.72	3.66	6.41	2.82	4.98	5139
Scandalisé	Scandalised	6.83	1229.16	95.00	7.03	4.14	−2.15	5.13	3.86	4.01	–
Séduction	Seduction	4.91	987.15	72.97	6.60	6.84	3.96	6.61	3.82	4.75	1072
Serein[a]	Serene	4.08	926.35	77.50	4.93	6.76	3.13	5.81	4.06	3.73	910
Sombre	Somber	2.93	1164.29	18.92	3.92	5.39	−2.19	3.86	2.54	4.80	10,057
Soucieux[a]	Worried	5.34	888.68	70.00	5.42	6.24	−1.61	6.47	3.44	4.56	2390
Soufflé	Flabbergasted	3.03	778.78	22.50	4.13	3.03	0.10	4.33	2.00	4.02	846
Souffrance[a]	Suffering	6.82	1044.56	97.30	7.13	6.52	−4.07	4.68	2.85	4.73	9657
Soulagement[a]	Relief	6.26	1195.839	83.7838	5.78	3.99	3.59	5.78	3.24	4.35	1629
Soupçon[a]	Suspicion	3.56	899.68	55.00	4.35	5.39	−2.41	4.70	3.40	4.35	2339
Souriant	Cheerful	4.31	810.10	72.50	5.59	5.71	3.90	7.11	2.17	5.16	5011
Stupéfaction	Stupefaction	7.14	1201.13	95.00	5.91	3.23	1.28	4.42	3.97	3.61	548
Stupeur	Amazement	6.44	1106.61	90.00	5.76	2.73	0.12	3.93	3.90	3.73	2327
Surprise[a]	Surprise	7.36	1024.93	72.97	6.11	2.91	2.97	6.33	1.67	5.42	4224
Suspicion	Suspicion	4.01	1322.27	55.00	4.75	4.98	−2.19	4.37	4.75	2.57	242
Sympathie[a]	Liking	5.72	1075.85	85.00	6.08	7.25	3.96	7.70	2.91	5.10	5007
Taciturne	Taciturn	3.67	1146.93	37.50	4.23	5.17	−2.16	3.90	4.69	2.53	591
Tendresse[a]	Tenderness	7.58	750.44	86.49	6.79	7.59	4.15	7.44	2.04	5.19	7121
Tension[a]	Tension	5.71	1283.36	37.84	6.32	5.27	−2.47	5.84	3.54	4.90	2573
Terrassé	Overwhelmed	5.50	951.73	37.50	5.85	3.40	−2.95	2.54	3.77	3.34	–
Terreur[a]	Terror	7.27	802.48	77.50	6.77	3.83	−3.58	3.97	2.88	4.31	4475
Timidité	Timidity	5.39	829.31	86.49	6.11	6.09	−1.47	6.37	2.58	5.13	2403
Timoré[a]	Timorous	3.65	1121.15	35.14	4.09	4.66	−1.32	2.97	4.60	1.96	233
Torpeur	Torpor	4.76	1495.31	35.14	5.05	4.46	−1.68	3.05	4.41	2.37	999
Tourmenté[b]	Tormented	6.55	989.42	83.78	5.83	5.66	−2.34	4.77	3.94	3.78	1578
Trac	Stage fright	8.08	1091.24	82.50	6.73	4.80	−1.85	6.22	3.28	4.89	136
Tracassé	Bothered	5.37	1110.39	83.78	5.20	6.44	−2.54	6.01	3.14	4.73	442
Tranquillité[a]	Tranquillity	4.73	939.59	80.00	4.58	7.08	3.42	6.59	2.30	5.27	1948
Tremblant[a]	Trembling	5.91	775.19	67.50	4.89	3.14	−2.09	3.96	2.81	4.10	3114

APPENDIX (Continued)

| Items | | | | | | | | | | | |
French	English	Q-Rate	RT	%CAT	Intensity	Duration	Valence	Familiarity	AoA	S-Freq	O-Freq
Tressaillir	Startle	5.56	1237.88	65.00	5.15	2.19	−0.50	4.04	4.29	2.60	1450
Triomphant[a]	Triumphant	5.49	1275.44	62.50	6.11	4.88	3.53	4.90	3.05	4.32	1220
Tristesse[a]	Sadness	8.37	809.34	94.59	6.07	6.65	−3.03	5.76	2.16	4.91	7751
Troublé[a]	Troubled	7.59	867.78	92.50	5.57	4.03	0.20	5.21	3.32	4.58	–
Trouille	Fearful anticipation (US)/Funk (UK)	7.94	1084.33	90.00	5.90	3.28	−2.50	5.24	2.62	4.91	80
Vénération[a]	Veneration	4.64	1233.84	47.50	6.19	5.20	1.11	3.24	4.30	2.71	497
Vengeance[a]	Vengeance	5.41	1048.75	70.00	7.16	6.21	−2.78	4.18	2.97	4.36	578
Vexé[a]	Vexed	7.21	847.81	92.50	5.82	5.22	−2.43	5.75	2.78	4.95	–
Victorieux	Victorious	5.50	1279.45	54.05	6.36	4.50	3.36	5.15	3.05	4.05	1352
Vigilant[a]	Vigilant	2.37	839.33	32.43	4.60	5.97	1.87	6.31	3.53	4.45	480
Violent	Violent	5.62	952.00	72.97	6.39	4.30	−3.80	4.06	2.43	5.33	6581
Zèle[a]	Zeal	2.57	1256.38	20.00	4.33	4.27	0.03	3.55	3.97	3.46	1991
Item mean		5.52	1057.03	69.50	5.65	5.18	−0.62	5.06	3.42	4.09	4153
Item SD		1.64	208.36	23.36	1.04	1.15	2.72	1.26	0.85	0.97	8191
Minimum item value		2.05	710.14	8.11	3.38	2.19	−4.32	2.02	1.34	1.70	29
Maximum item value		9.26	2581.67	100.00	8.74	8.21	4.74	8.20	4.84	5.78	76,646

Note: Q-Rate: Mean prototypicality rating on a 1 (*I would not say that it is an emotion*) to 10 scale (*I would say that it is certainly an emotion*); *RT*: Mean correct reaction time; *%Cat*: percentage frequency of correct categorisation of the term as an emotion; *Intensity*: mean intensity rating of the emotional state denoted by the term on a 1 (*not at all intense*) to 10 scale (*very intense*); *Duration*: mean duration rating of the emotional state denoted by the term on a 1 (*few seconds at most*) to 9 scale (*more than a few hours*); *Valence*: mean valence rating of the emotional state denoted by the term on a −5 (*very unpleasant*) to +5 (*very pleasant*) scale; *Familiarity*: mean familiarity rating of the emotional state denoted by the term on a 1 (*a state not at all familiar*) to 10 (*a very familiar state*) scale; *AoA*: mean Age of Acquisition rating of term in its oral or written form on a 1 (*0–3 years*) to 5 (*>12 years*) scale; *S-Freq*: mean subjective frequency rating of the term in its oral or written form on a 1 (*unknown*) to 6 (*very frequent scale*); *O-Freq*: objective frequencies as reported in Content and Radeau (1988).

[a] Words in Zammuner's (1998) list.   [b] Words in Zammuner's (1998) list, but in a different form.