Journal of Personality and Social Psychology
1999, Vol. 77, No. 2, 247–278

0022-3514/99/$3.00

Universal Development of Emotion Categories in Natural Language

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P. Shaver, J. Schwartz, D. Kirson, and C. O'Connor (1987) found that English emotion words fall into 25 categories of synonyms. To find emotion nomenclature universals, the authors used P. Shaver et al.'s taxonomy in a sample of the world's languages and found that emotion categories were added in most languages in a relatively similar generalized sequence. Labeled first were the categories of anger and guilt; followed in Stage 2 by adoration, alarm, amusement, and depression; in Stage 3 by alienation, arousal, and agony; and ending with eagerness in Stage 4. The remaining 5 stages were derivatives of Stages 1–4. Thus, in the folk taxonomy, Stages 1–4 are basic linguistic emotion categories. Motives for labeling emotions were driven possibly by the need to maintain social control, the identification of prototypical emotions elicited in interpersonal relationships, and the need for terms to identify intrapersonal emotions. Features of markedness theory were corroborated for English emotion terms.

Which categories of emotions, such as anger, fear, joy, and sadness, were labeled first, second, third, and so on? Was the encoding sequence similar in all languages, perhaps because a limited set of fundamental panhuman experiences or crises served as the fountainhead in all cultures for the encoding of emotion terms? Or was the labeling of emotions random, with each culture encoding different shades of feeling? The purpose of this study was to explore whether the sequence of naming emotion categories was uniform across cultures, and if so, what may have been the motivation for the particular naming sequence. We begin with a listing of human universals and then address some objections to the search for universals in the emotion lexicon, particularly when the search involves the use of dictionaries. In addition, we explore potential motives for naming emotions before describing our methodology.

Human Universals

The identification of universals—the search in the 20th century for the common denominator of cultures or human nature—began with the list created by Murdock (1945), which later was expanded by Tiger and Fox (1971), Hockett (1973), and D. E. Brown (1991). The search for cross-cultural similarities flourished in anthropology, linguistics, and psychology.

Universals have been demonstrated in natural language in semantics (Herrmann & Raybeck, 1981; Ullman, 1963); connotative or affective meaning (Osgood, 1964; Osgood, May, & Miron, 1975); phonology, grammar, lexicon, and kinship terminology (Greenberg, 1966); sibling terminology (Kronenfeld, 1974; Nerlove & Romney, 1967); cooking terms (Lehrer, 1974); biology (Bricker, 1976); botanical life-forms (C. H. Brown, 1977); body-parts terminology (Andersen, 1978); and zoological life-forms (C. H. Brown, 1979) and possibly also in such topics as the facial display of some emotions (Ekman, 1972; Ekman, Sorenson, & Friesen, 1969), the appraisal process in elicitation of emotions (Scherer, 1997), the personality lexicon (Goldberg, 1981), the conceptual organization of emotion terms (Russell, 1983), the use of antonyms (Raybeck & Herrmann, 1990, 1996), and subjective well-being (Diener & Diener, 1996). On the basis of a review of 15 years of cross-cultural research and ethnographic reports, Mesquita and Frijda (1992) suggested additional likely universal aspects of emotions.

Objections to Universals in the Emotion Lexicon

Perhaps the demonstration of universals best known to psychology is the study of folk color terms by Berlin and Kay (1969). They found that the order in which color terms were encoded was similar across languages. If a language had only two color terms, the terms were always for black and white. Languages with three color terms always had added red, and so on (see Witkowski & Brown, 1977, for a revision of the encoding sequence). Munroe and Munroe (1991) wrote that Berlin and Kay's study "has probably inspired more research than any other single contribution to cultural anthropology in the past two decades" (p. 28).

Despite such praise for the study of color terms, the search for universals in the folk emotion lexicon has its opponents. They contend that human beings can effectively communicate their emotions without resorting to words of emotion (e.g., Beeman,

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The sequence of authorship for Alison P. Lenton and Keith A. Hutchison was determined by the flip of a coin. This article was presented at the joint meeting of the Western Psychological Association and the Rocky Mountain Psychological Association, Albuquerque, New Mexico, April 1998.

We gratefully acknowledge the discussions with A. Kimball Romney and J. Robert Newman regarding the statistical issues raised by our data. We are indebted to Pamela Munro for her insightful comments on an earlier version of this article.

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1985). We agree, because we have observed the frequent use of exclamations, descriptive terms, or sentences in our research. For example, instead of emotion words, Zuni use different exclamations to express disgust, disappointment, pleasure, shame, and surprise (S. Newman, 1958). In Arawak, lacking a word for *disgust,* unpleasant odors are described as smelling bad, evil, or malodorous (Bennett, 1989). Having no word for *enthusiasm,* the Luganda language uses sentences such as "The person is working hard" or "The person shows strong interest in the task." Metaphors also are used. In place of the word *enthrallment,* Luganda uses the metaphor "The person left us with our mouth open." Vocal cues, in place of words of emotion, are effective communicators of emotions (Pittman & Scherer, 1993). Yet, the questions still remain: When emotions were lexically coded, was the developmental sequence of naming the emotions similar across cultures, and what was the impetus for encoding emotions?

Objections to the search for cross-cultural similarities in the emotion lexicon also are motivated by the belief that the finding of growth in emotion lexicons may revive the discredited concept of evolution: the notion of languages falling along a scale of linguistic maturity ranging from so-called primitive languages to purported advanced or complex languages (cf. Leff, 1973, 1981). We agree with R. Brown (1958) and Beeman (1985) that languages are neither advanced nor primitive. They fulfill the communication needs of their speakers.

There is ample evidence to support this claim. For example, because of particular needs, and in contrast to English, the Karok (Bright, 1957) and Yurok (Robins, 1958) languages of the California Indians have approximately 20 words related to different conditions of acorns, such as acorn dough, acorn water, acorn flour, moldy acorns, and leached acorns. The Cree language has about 30 verbs to refer to different causes of anger, such as anger resulting from insults (e.g., *kisemikoo:* "He is insulted; he is angered by his speech"), walking (e.g., *kisewuska'tāo:* "He is angry from walking"), mutual ill feeling, taking leave of an individual on a walk, and offensive visual sights (Watkins, 1938, pp. 284–285). Similarly, to make somebody angry, to become angry, to be angry at somebody, and to be angry faced are all encoded in separate words of emotion in the Shuswap language (Kuipers, 1974).

We make no claim that English is inferior to these Indian languages nor that these Indian languages are inferior to English. Instead, on the assumption that the naming of emotions was gradual rather than sudden, the goal of this study was to determine whether the need to communicate about emotion-eliciting events was sufficiently alike so that the encoding sequence progressed similarly across languages.

Whorf (1956) asserted that language shapes thoughts and perception. Whatever is not classified or labeled, claimed Whorf, the speakers of the language fail to see or attend to. There is no empirical support for the extreme version of his hypothesis (E. Hunt & Agnoli, 1991; cf. Gumperz & Levinson, 1996). Nevertheless, the specter of the hypothesis is present when objection to the search for universals is expressed on the grounds that speakers of languages with small emotion lexicons can differentiate emotions as well as speakers using large emotion lexicons (cf. Beeman, 1985). Although this assertion has not been verified empirically, given the many alternative ways of expressing emotions, it no doubt can be shown to be valid. Be that as it may, the purported skills of speakers of small lexicons in differentiating emotions do not provide compelling justification to preclude the search for creditable human universals in emotion lexicons.

Use of Dictionaries

Because we did not have access to native speakers of the languages that were used in this study, we relied on dictionaries. The use of dictionaries is questioned by some scholars because of the claim that emotion words in different languages are seldom equivalent (Abu-Lughod & Lutz, 1990; Lutz, 1988; Lutz & White, 1986; Russell, 1991; Shweder, 1994; White, 1993; Wierzbicka, 1995). The assertion is made that emotion words are not simply referential labels for putative, universal, internal feeling states but, more importantly, are about social relations, particularly power relations (Abu-Lughod & Lutz, 1990; Lutz, 1988), involving meaning-making practices of individuals engaged in ordinary conversation and interaction (White, 1993). In that vein, emotion terms may be no more than names for complex narratives, proposed Shweder, that some societies use to interpret somatic and affective experiences, whereas other societies rely on different linguistic resources to represent their feelings. For example, instead of the Western tradition of interpreting particular experiences as an indication of *sadness,* with the latter term being the name for a complex story according to Shweder, the Tahitians use general terms, such as *feeling ill, troubled,* or *fatigued* (Levy, 1984).

According to the foregoing perspectives, emotion terms (e.g., *anger, fear,* and *disgust*) are language-specific and culture-specific; therefore, they cannot identify human universals (Wierzbicka, 1995). This claim is a particular instance of a general philosophical movement currently popular in anthropology (Polier & Roseberry, 1989) and sociology (Sanders, 1995) called "postmodernism," which has as its tenet the belief that cross-cultural comparisons and the search for universals are "neither desirable, nor . . . possible" (Raybeck & Herrmann, 1996, pp. 156–157).

Setting aside the philosophical position of postmodernism, partly because much of postmodern ethnography is of limited value (Polier & Roseberry, 1989; Sanders, 1995) and partly because it is no freer of Western ethnographic semantics than traditional modes of doing ethnography (Rosenberg, 1990), the objections to the search for universals and to the assumption of translation equivalence of emotion words across languages generally are based on ethnographic publications reporting the impressions of the author. At best, such impressions may serve as the basis for future studies. They should not be cited as evidence that there are no universal categories of emotions and that the use of dictionaries falsely assumes translation equivalence. Ultimately, given the bias to find differences rather than human universals, ethnographers can find them no matter what the topic of comparison is, even when the similarities may be more striking and numerous.

Despite the absence of published studies to show that the lexical meaning of emotion words does indeed vary dramatically across languages, the influence of impressionistic ethnographic reports is so substantial that Russell (1991), in a major review of the emotion literature, was driven to warn that "the cautious researcher will no longer assumes [*sic*] that emotion words in different languages can be translated one-to-one" (p. 433). In the immediate context in which Russell made this comment, he was reviewing cross-cultural

studies using free associations and semantic differential ratings (e.g., Tanaka-Matsumi & Marsella, 1976). Not surprisingly, the connotative or affective and associative meaning of words differed across cultures. Similarities and differences in associative meaning also were found by Hupka, Otto, Tarabrina, and Reidl (1993).

But, as Russell (1991) noted, it is not known to what extent free associations and semantic differential ratings are appropriate measures of lexical meaning. For example, one could reasonably contend that lexical meaning is governed by conventional use of emotion words, whereas free associations and semantic differential ratings tend to tap personal values and individual experiences with, and reactions to, emotion words. More to the point of the influence of ethnographic reports, Russell (1991), in the absence of empirical studies, relied on them when he questioned the assumption of translation equivalence for emotion words: "Reports cited here earlier sometimes pointed out that what was once taken as a translation equivalent turned out, on closer inspection, not to be so" (p. 433). Nevertheless, in agreement with our position, Russell also cautioned that "the claims from the ethnographic method can be accepted only tentatively, until verified by other methods" (p. 435).

Since Russell's (1991) review, there have been two studies conducted on the issue of cultural universals in the semantic structure of emotion terms, both of them finding support for the cross-cultural comparability of emotion concepts (Church, Katigbak, Reyes, & Jensen, 1998; Romney, Moore, & Rusch, 1997), with one study even numerically expressing the comparability. Contrary to the ethnographic reports, Romney et al. found only a minor portion of the semantic structure to be culture-specific relative to the much larger, universally shared aspect of the semantic structure. Using judged-similarity tasks of 15 English and Japanese emotion terms by Americans and Japanese, Romney et al. found that a remarkable 66% of the semantic structure of the emotion terms was shared by Americans and Japanese. Only 6% was culture-specific. Although the latter percentage clearly supports those who selectively focus on cross-cultural differences, its significance pales in comparison with the size of the variance due to measurement error (i.e., 19%) and the variance unique to the individual (i.e., 9%), a combined effect almost five times larger than the cultural effect. These findings support the assumption of emotion words in one language roughly approximating in semantic meaning those in other languages—an expectation that is the bedrock of the construction of bilingual dictionaries. Apparently, dictionary definitions suffice, because millions of people learn foreign languages and successfully communicate with each other. As Mesquita and Frijda (1992) noted, "The fact that the meanings of emotion words in foreign languages can be explained, even when the words have no equivalents in some other language, attests to the correspondence of structural elements" (p. 201).

Motivation to Encode Emotions

If the instigation for naming emotion categories was a hodgepodge of motives, then the encoding sequence across languages would be expected to be random. Given, however, that the naming of color terms (Berlin & Kay, 1969) or folk botanical life-forms (C. H. Brown, 1977) was uniform across cultures, we hypothesized that the sequence in which folk emotion categories were added to natural language likewise proceeded in a regular manner. What may have driven the encoding process?

Facial Expressions of Emotions

Facial expressions apparently are the dominant means for recognition of emotions, having a success rate in the range of 62%–95% depending on the emotion and the culture (Russell, 1994). In comparison, recognition of emotions from vocal cues has a success rate of only about 50%.

Darwin (1872/1965) proposed that human facial expressions of emotions facilitate communication and indeed "serve as the first means of communication between the mother and her infant" (p. 364). Total absence of facial expressions of emotions would appear to sorely strain interpersonal relationships. Thus, one plausible reason for encoding emotion concepts may have been to identify common facial expressions of emotions. If this was the motivation for establishing an emotion lexicon, then one would expect all languages, in their initial stages of development, to have terms for the facial expressions of emotions that are identifiable cross-culturally, such as anger, disgust, fear, happiness, sadness, and surprise (Ekman & Friesen, 1975; Izard, 1971). Because the status of contempt (Ekman & Friesen, 1986) and Izard's additional facial expressions of interest and shame as universal emotions are controversial (Ekman, 1992), they are not included in the facial expression group of emotions.

The prediction that facial expressions of emotions may have been the spur for the initial encoding of emotions can be worded differently by altering the emphasis. Some scholars, following Darwin (1872/1965), adopted the view that affective facial expressions have biological roots (e.g., Ekman, 1992; Izard, 1977; Plutchik, 1980). Lutz and White (1986) wrote that those who propose that emotions are innate expect this innateness to be reflected cross-culturally in linguistic codes. The world's emotion lexicons, from this perspective, are expected to "be shaped in systematic ways by the biological constraints of universal core affects" (Lutz & White, 1986, p. 416). Whether the face serves as a source of affective communication or as a source of innate emotions, the prediction is that all languages have terms for facial emotions.

Social Control

If the basis for labeling emotions was to facilitate manipulation or coercion of individuals, perhaps to minimize antisocial behavior, then one would expect the emotion lexicons of all languages, primarily in their initial growth periods, to have encoded a profile of emotions such as anger, outrage, envy–jealousy, guilt–shame, and humiliation. The rationale for this hypothesis is that such emotions strongly affect individuals and cause them to change their behavior, especially when generated or expressed by someone with power over the target individuals (e.g., employer, parent, tribal chief). Although not each of the aforementioned emotions has been discussed by scholars with regard to its effectiveness in achieving social conformity, such scholarship is available for anger (Averill, 1982), envy (Foster, 1972; Schoeck, 1969), guilt–shame (Ausubel, 1955), and jealousy (Hupka, 1981).

Ego-Focused Emotions

The distinguishing feature of the social control emotions is that they imply dissatisfaction with someone—a desire to bring about change. For example, jealousy implies that someone is seeking to take away one's partner, anger implies conflict with someone, guilt implies violation of a norm, and envy implies resentment of an advantage enjoyed by others.

But there are emotions that do not imply a need to change one's behavior or an attempt to influence others. They are, to borrow a concept from Markus and Kitayama (1991), "ego-focused emotions." Such emotions "have the individual's internal attributes (his or her own needs, goals, desires, or abilities) as the primary referent" (Markus & Kitayama, 1991, p. 235). That is, whereas facial and social control emotions, in general, are more likely triggered by events external to the individual, ego-focused emotions frequently occur without any perceptible external trigger. They include concepts such as anguish, defeat, dejection, desire, hope, longing, loneliness, lust, rejection, relief, suffering, and zest. Languages with such emotion terms in the initial stages of development of the emotion lexicon would suggest that the speakers were less interested in social control than in the emotional climate within the individual.

Prototype Model

Scholars using the prototype approach suggest that categories of emotions "are formed as a result of repeated experience and become organized around prototypes" (Shaver, Schwartz, Kirson, & O'Connor, 1987, p. 1061). Prototypes are generic mental representations of the important features of a similar set of emotions. Thus, anger may be the generic representation of related emotions such as irritation, hate, and disgust. Interrelated sets of emotion categories become organized within an abstract-to-concrete hierarchy. Thus, at the most abstract level, the only meaningful distinction found by Shaver et al. was one between positive and negative emotions. Subordinate to this superordinate category, they found so-called cognitively basic-level terms: *anger, fear, joy, love, sadness,* and *surprise.* If basic-level prototypes were the driving force in the establishment of emotion lexicons, then the aforementioned concepts of emotions should be present in the initial formation of all lexicons.

Overview of This Study

Our goals were to establish whether the naming of folk emotion categories evolved in a similar sequence across languages and to determine what may have been the motivation for the naming of the initial stages. We used foreign language dictionaries to ascertain whether an English emotion term had an equivalent term in each of the foreign languages. Such information made it possible for us to rank order emotion categories from those that were present in all languages to those that were found infrequently. The underlying assumption of this study was that emotion terms that were present in all languages presumably had been encoded first, followed by those found in successively fewer languages.

English has hundreds of folk emotion words (Averill, 1975; Wallace & Carson, 1973). The large number of emotion words raised the question of which words should be searched for in other languages. Shaver et al. (1987) used a hierarchical cluster analysis to demonstrate that English emotion terms can be classified into 25 distinct categories. Thus, synonyms of *anger* comprised one category, synonyms of *depression* comprised another category, and so on. This finding prompted the proposal that the range of emotion-arousing dilemmas worthy of attention to speakers of English was limited to the 25 emotion categories. Therefore, rather than seeking equivalents for every English emotion term in other languages, we sought to determine whether similar categories had been encoded. A foreign language was deemed to have encoded a particular category if only one of the many emotion terms comprising the corresponding category in English was present in the foreign language.

When analyzing the findings, we observed that the universal emotion encoding process may have proceeded in agreement with some of the principles that had been proposed to underlie regularities in the classifications of folk botanical life-forms and color terms (C. H. Brown & Witkowski, 1980). In light of the possibility that the similarities in the lexical folk classification of natural phenomena may identify a human universal, we explore later in the *Classification by binary opposition* and *Marked and unmarked emotion categories* sections how the principle of binary opposition and aspects of markedness theory (Greenberg, 1966, 1975, 1987) may apply to the encoding of universal folk emotion terms.

Method

Languages

There are an estimated 6,000 separate spoken languages (Crystal, 1997). Creating a representative sample is made difficult by the lack of agreement among scholars in the classification of languages. Any sample is a compromise between competing theories of what constitutes separate languages and separate groupings of people. We used the Human Relations Area Files (HRAF) probability sample of 60 major geographical and linguistic groupings and Voegelin and Voegelin's (1977) classification of the world's languages.

Appendix A lists the HRAF geographical and linguistic groupings numbered 1–60, the representative languages we used, Voegelin and Voegelin's (1977) classification of the languages, and the sources of the dictionaries. The HRAF generally provided two languages for each geographical and linguistic grouping. The second language was selected only when no dictionary was accessible for the first language. Unavailability of dictionaries for both languages prompted the search for a substitute in Voegelin and Voegelin's classification in the same language grouping. For example, in the first listing in Appendix A, Kirundi was substituted for the Pygmy and Khoisan languages. The HRAF provided no recommendation for Furian, Koman, and Kordofanian speakers (No. 13 in Appendix A). Therefore, we selected Uduk, a Koman language. The unavailability of dictionaries for Trobriands and Manus (No. 38 in Appendix A) led to the substitution of Neo-Melanesian, a hybrid language increasingly spoken in the region and incorporating pidginized terms (e.g., *disappointment:* "bel i-nogut," i.e., "belly no good"). Regarding Number 41 in Appendix A, the HRAF recommended either Copper Eskimo or South Alaska Eskimo. Our dictionary did not indicate which dialect it had recorded. Regarding the HRAF recommendation of Ecuadorial Highland Quechua (i.e., No. 52 in Appendix A), we had access to a dictionary of Peruvian Quechua.

The ideal condition for determining the cross-cultural development of the emotion lexicon would be met if the world's emotion lexicons varied widely in size. Less than ideal, 26 languages (i.e., 43%) in our HRAF sample were principal languages of the world. That is, they were spoken by at least one million people (*World Almanac and Book of Facts,* 1992), a

circumstance usually correlated with large, perpetually expanding lexicons. To boost the probability of obtaining small emotion lexicons, we selected four additional languages (i.e., Dehu, Mazahua, Toaripi, and Walpiri) with fewer than one million speakers from somewhat disparate regions of the world (i.e., Polynesia, Mexico, Gulf of Papua, and Australia, respectively). These languages are added to Appendix A.

Dictionaries

To determine the growth of emotion lexicons across languages, one should ideally use the earliest available dictionary for each language. Yet, such dictionaries are frequently much smaller than modern dictionaries. Are the earlier dictionaries smaller because the lexicographers failed to record words or because the languages had not yet grown to their present sizes? The completeness of the earliest dictionaries is subject to doubt because of the possibility that the earlier lexicographers may not have been as sophisticated in eliciting words from native speakers as are modern lexicographers. We used modern dictionaries to minimize the criticism that the absence of emotion words in languages is due to errors of omission by the lexicographers. However, that decision made it difficult to find languages lacking abstract words for emotions, perhaps due to the increasing homogenization of the world's cultures nurtured by the widespread international commerce of the 20th century and the dissemination of cultural products such as art, literature, and movies. A related issue, because languages are continually growing, is that dictionaries that are published at a later date than those used in this study may contain emotion words that had not yet been formulated at the time of the earlier dictionaries that we used.

Only non-English dictionaries were available for 15 languages. Bororo and Yakut required Portuguese and Russian dictionaries, respectively. French dictionaries were used for Azande, Kirundi, Kurd, and Touareg. Spanish dictionaries were used for Aymara, Campa, Cuna, Guarani, Mazahua, Pemon, Tzeltal, Warao, and two words (i.e., *love* and *pity*) for Mataco.

Emotion Categories

Shaver et al. (1987) compiled a list of several hundred English emotion terms. American undergraduates rated the nouns on a 4-point scale according to how certain they were that each one named an emotion. Using a stringent criterion for establishing a word's emotion-naming proficiency, Shaver et al. retained 135 nouns with mean prototypicality ratings of 2.78 or higher. These nouns were then rated by a new group of students according to their similarity to each other. A hierarchical cluster analysis distributed the 135 concepts into 25 clusters of similar emotion words. Appendix B lists Shaver et al.'s findings. Presumably, these 25 discrete emotion-arousing experiences were of such significance to the English-speaking people of the past that they were encoded. We added the word *fascination* to the enthrallment category because it is a synonym for the category and it appeared more frequently in dictionaries of foreign languages than Shaver et al.'s terms of *enthrallment* and *rapture*. Shaver, Wu, and Schwartz (1992) found relatively similar cluster categories in Italy and China, thereby providing evidence that their original finding was robust and generalizable to non-English languages.

Schimmack and Reisenzein (1997) recently found evidence that so-called judgments of similarity in meaning of emotion terms may not be due to comparisons of semantic properties. Instead, they may reflect impressions of the degree to which emotions co-occur in everyday life. Because it is not currently known whether different groupings, either in number or content, would be obtained if Shaver et al.'s (1987) emotion terms were judged on the basis of co-occurrence rather than their semantic properties, we continued to use the 25 emotion categories of Shaver et al.

Given Shaver et al.'s (1987) finding, the majority of English emotion words apparently are synonyms or refer to variations in intensity of particular emotions. Because it was not informative to determine whether similar synonyms and similar variations in intensity were encoded in other languages, and because lexicographers were born in different English-speaking nations and at different time periods, each with unique preferences for particular emotion words, we judged a language as having encoded one of Shaver et al.'s emotion cluster categories if merely one of the synonyms or intensity terms listed in Appendix B, regardless of its grammatical form, was present. Even metaphors such as the Tiwi expression "for someone's heart to jump" in reference to excitement (or fright; Lee, 1993) were deemed as having encoded one of Shaver et al.'s categories (i.e., enthusiasm). Only once, in Quechua, did we not record the language as having a term for a particular category, in this instance the envy category, because the term *envidiakuy* (i.e., to be jealous or envious) was borrowed, with a minor grammatical alteration, from the Spanish term *envidia* (i.e., envy). Also, exclamations of disgust, fear, surprise, and so on were not considered to be encoded emotion terms. There is no doubt that our reliance on dictionaries rather than native speakers may have led to the selection of words in the foreign languages that were not the best exemplars of the category, as judged by current usage. Our goal was to establish whether a particular general emotion category had been encoded, not to find the best exemplars of the category.

The mere presence of emotion terms in target languages did not signify that their application was necessarily identical to that in English. A difference we observed was that in some languages the terms identified behavior rather than phenomenological states. Consider the emotion word *torment*. It is not evident what the students had in mind in Shaver et al.'s (1987) study when they established it as an emotion category. Perhaps it is the affliction that people experience when they are told disagreeable things day after day. In some languages, *torment* refers to the act of causing someone to suffer (e.g., Cree), to give pain (e.g., Tonga), or to torture (e.g., Tzeltal), whereas in other languages (e.g., Quechua), it apparently refers to the phenomenological experience of calamity, misfortune, or grief. Similar differences in meaning across languages were evident with other emotion categories, such as relief. But the fact that the emotion categories were encoded, even if in reference to instrumental behavior in one language and to phenomenological experiences in another language, makes communication possible between speakers of the different languages, and the effort to establish common meaning may be no greater than the ease with which personality traits in English can be used as emotion terms.

Procedure

Alison P. Lenton and Keith A. Hutchison each sought the emotion terms in Appendix B for one half of the languages. That is, they searched for the translation of one term for each of Shaver et al.'s (1987) cluster categories. Ralph B. Hupka verified their identifications, which are listed in Appendix C, and Alison P. Lenton and Keith A. Hutchison checked the listings.

Results and Discussion

Appendix C catalogs the emotion words of the 60 HRAF languages, followed by the 4 non-HRAF languages, for Shaver et al.'s (1987) cluster categories and the emotion concepts of *awe* and *interest*. We included the latter two emotion terms in our search because Ekman (1994) viewed them as identifying separate emotions, although in Shaver et al.'s study neither term was rated highly as representing emotions. They are not discussed further here because without knowing Shaver et al.'s cluster category to which they belong, their place in the universal sequence of development of the emotion lexicon cannot be established.

The presence of English translations in Appendix C, such as the word *love* in the adoration column for the Aymara language means that no term was available for *adoration* in Aymara, prompting a search in the dictionary for translations of the alternatives in the

adoration cluster category (see Appendix B). A blank space at the intersection of a target language and a cluster category indicates that no emotion term was found, even for the alternatives.

Words with a superscript *a* are composite words. That is, the identical word appeared in 2 or more of Shaver et al.'s (1987) cluster categories. For clarification, consider the Amhara word "səqay" in the agony column. Whereas in English a distinction is made between *agony* and *torment* with the encoding of separate words, Amhara uses the identical word.

Appendix C identifies the composite words that were included in the data analysis. However, many more composite words were found. Appendix D lists all of the composite words. Most of them did not warrant inclusion in the data analysis because of the availability of alternative emotion concepts in the target language. For example, in the Ainu language, *eyaitupa* refers to being eager to do something and to having desire. Although this particular term is a composite word for Shaver et al.'s (1987) categories of eagerness and arousal (see Appendix B), Ainu was not classified in Appendix C as a composite for the two categories because of the availability of another word for desire (i.e., *rusuike:* being desirous of) whose meaning was limited to that category. Potential composite words also were avoided by obtaining translations for alternative concepts within a particular category. For example, in the arousal category, if the concept of *desire* elicited a composite in the target language, searches were made instead for translations of *lust, passion,* or *infatuation* (see Appendix B). Because the emotion words of *awe* and *interest* were not included in Shaver et al.'s cluster analysis, they were not part of any cluster category; therefore, any purported composite in Appendix D involving those words was not considered a composite word in the data analysis.

Composite Words

We viewed composite words as having a special status. From a lexical perspective, the definition of composite category terms (e.g., *envy* and *jealousy* were encoded in only one word in 20% of our sample of the world's languages: Amhara, Bemba, Cree, Ifugaw, Klamath, Lau, Luganda, Mossi, Papago, Tiwi, Toaripi, Tonga, and Zulu) is vague to speakers of languages that differentiate them into separate concepts, necessitating further effort to determine which of the several applications of the composite terms are in use in conversations.

From a developmental perspective, on the basis of the assumption that emotion terms may possibly expand from general statements (e.g., feeling upset) to more specific emotion terms (e.g., *feeling annoyed, feeling anguished,* or *feeling insulted*) in later stages of language development, composite category labels have greater potential of spawning, or differentiating into, additional emotion categories than settled emotion terms. The composite terms carry surplus meaning in that the scope of their application is broader.

In sum, composites may have an intermediate status between the presence and absence of emotion terms in a particular language. With regard to the data analysis, we recorded languages with composites as having emotion terms for all of the cluster categories included in the composites, even though such terms are not as differentiated as they are in the elaborated emotion lexicons.

Growth Patterns of Emotion Lexicons

Table 1 summarizes the information gleaned from Appendix C. Seventeen of the 64 languages are not listed in Table 1 because, having emotion concepts for all 25 of Shaver et al.'s (1987) cluster categories, they provided no information regarding the sequence in which emotion terms were encoded (i.e., Cree, Dutch, Guarani, Hausa, Hungarian, Iban, Khasi, Maltese, Sinhalese, Somali, Thai, Tibet, Tonga, Vietnamese, Yakut, Yoruba, and Zulu). This number increases to 22 when the 5 languages at the end of Table 1 are included (i.e., Amhara, Azande, Korean, Tamil, and Serbian). These 5 languages also had emotion concepts for the 25 cluster categories but are listed in Table 1 to show that they had composite words for some categories.

Column 1 in Table 1 identifies the 46 different types of encoding sequences found in this study. Each row represents the emotion lexicon of a particular language using Shaver et al.'s (1987) cluster category labels. Table 1 specifies for each language the presence (+), absence (−), or composite (C) of emotion categories.

Of the 33,554,432 logically possible sequences of encoding emotion terms for the 25 categories (i.e., 2^{25}), 46 sequences were found with the remaining 47 languages (Iroquois and Wolof had identical encoding sequences). For 2 languages to have identical encoding sequences for 25 categories was unlikely to be due to chance. Such a finding suggests that the pressures in each language to enlarge the emotion lexicon may be similar enough to steer the encoding process in the same general direction across cultures with diverse language structures, cultural ecologies, and social organizations. This contrasts sharply with Whorf's (1956) linguistic hypothesis that each language embodies and perpetuates a particular worldview.

Implicational Universals

Our transitive data, falling into a category of unidimensional scaling known as "Guttman scaling," were analyzed with correspondence analysis (Weller & Romney, 1990). However, the low variability in the data rendered the output uninterpretable. Consequently, we used implicational universals for analyzing the data.

Scanning of the rows in Table 1 indicates that the 47 languages had emotion terms for at least 15 of the 25 cluster categories of Shaver et al. (1987). Column 2 in Table 1 lists the frequency of labeled cluster categories for each language.

What determined the unalphabetical listing of Shaver et al.'s (1987) cluster categories in Table 1? The criterion governing the sequence of cluster category labels was to establish a transitive sequence, that is, to maximize the longest unbroken string of pluses in Table 1 across languages, such that the string grows in proportion to the increase in the frequency of encoded cluster category labels (listed in column 2 of Table 1). This procedure captures the generalized encoding sequence relative to all languages in our sample rather than the idiosyncratic sequence of any particular language. It renders the common denominator, so to speak, shared universally by languages in the labeling sequence of emotion categories.

First, we found that all languages had terms for the categories of anger and guilt. An obvious transitive or universal implicational relationship is that if a language had at least one folk term for the subsequent categories (e.g., adoration, alarm), it most likely also had at least one term for the categories of anger and guilt.

Second, all languages also had folk terms for the categories of adoration, alarm, amusement, and depression. But an important dissimilarity precludes viewing the 6 categories as forming one group. Namely, the latter 4 categories were composites in some languages. In Bororo, for example (see Appendix D), the identical word (i.e., *pagúdo*) denoted *fear* and *dread,* terms found in Shaver et al.'s (1987) categories of alarm and anxiety, respectively. Similarly, Amhara and Toaripi joined the categories of alarm and dismay. Tamil combined depression with dismay, and Papago linked the categories of adoration and arousal. Because we viewed composites as having the potential to spawn new emotion category terms and because of that potential, they probably were more recently encoded than noncomposite terms; their unsettled state precluded their inclusion with single-category terms such as *anger* and *guilt.*

Third, languages with 17–18 cluster category labels expanded the folk emotion lexicon shared by our sample of languages by adding terms that were included in Shaver et al.'s (1987) categories of alienation, arousal, and agony (the latter category having composites in Amhara, Bororo, Mossi, and Truk). Fourth, it is apparent in Table 1 that languages with 19 category labels increased the number of terms that all sampled languages had encoded by a factor of one with the addition of the eagerness category.

Fifth, languages with 20 category labels enlarged the pool of folk emotion terms common to all languages with the additional cluster categories of anxiety, aggravation, and pride. An implicational universal or transitive relationship is that if a language has folk emotion terms for the category of, say, pride, it also has terms for the preceding categories listed in Table 1.

Sixth, languages with folk emotion terms for 21 of Shaver et al.'s (1987) cluster categories increased the shared pool of labeled terms by the addition of words in the contentment category. Seventh, all languages with 22 cluster categories shared having encoded additional emotion terms for the categories of amazement, envy, and disgust. Eighth, the number of mutually labeled emotion categories increased in the sampled languages with 23 and 24 cluster categories by the addition of words in the pity, enthusiasm, and dismay categories. Lastly, the final expansion to the full roster of 25 cluster categories added the emotion terms for the categories of exasperation, relief, longing, torment, and enthrallment.

We accomplished the identification of the foregoing implicational universals or transitive relationships by determining which folk emotion categories were added universally across languages as the emotion lexicon expanded. For such relationships to have been established, emotion categories must have been added to languages in a relatively specific, rather than random, order. If the implicational universal relationships of this study are interpreted diachronically, then the cluster categories of anger and guilt were encoded first in all languages, followed by adoration, alarm, amusement, depression, and so on. Figure 1 summarizes the likely developmental sequence for adding emotion categories to folk vocabularies across languages using the implicational universals as the basis for the hypothesis. Because the proposed sequence of emotion nomenclature is based on the growth of emotion categories common to all languages in our sample, some languages may deviate slightly from our model. First, we identify some features of the encoding process, and then we address several likely interpretations for the particular encoding sequence shown in Figure 1.

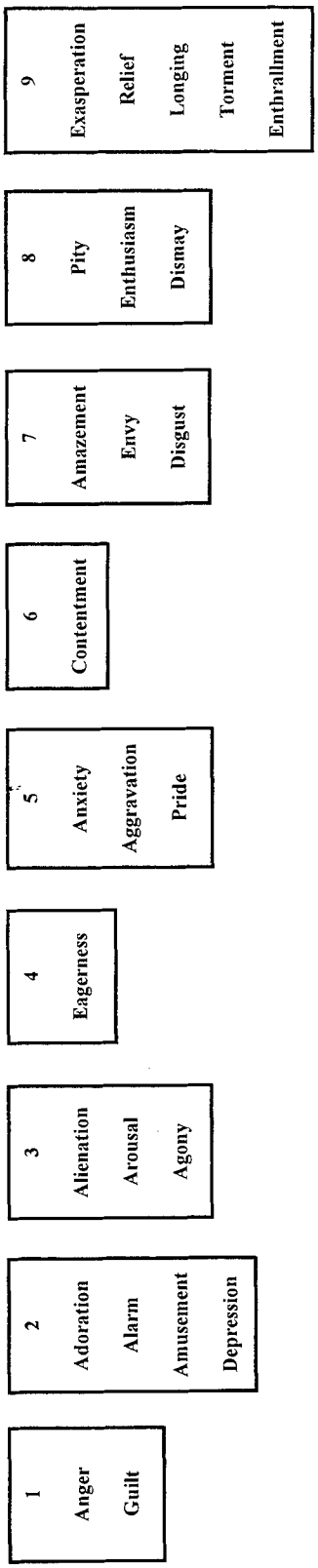

Figure 1. Universal encoding sequence of emotion categories using Shaver et al.'s (1987) cluster category labels. According to Francis and Kučera (1982), the frequency of usage in English of each emotion cluster category is (with the emotion term with the highest frequency count, as noun or verb, in parentheses): adoration (love = 179), eagerness (hope = 164), alarm (fear = 141), anxiety (worry = 89), arousal (desire = 88), amazement (surprise = 76), contentment (pleasure = 67), anger (hate = 66), relief (relief = 66), amusement (joy = 47), pride (pride = 45), pity (sympathy = 44), guilt (guilt = 33), enthusiasm (excitement = 32), alienation (neglect = 28), depression (depression = 27), agony (suffering = 18), dismay (disappointment = 17), exasperation (frustration = 15), disgust (contempt = 15), aggravation (irritation or annoyance = 10), envy (envy = 8), enthrallment (fascination = 6), longing (longing = 5), and torment (torment = 5). Numbers 1–9 refer to stages.

Table 1
Inventory of 25 English Cluster Categories in 64 Languages, With Type of Labeling Sequence (Seq.) and Frequency (Freq.) of

Seq. type	Label freq.	Language	Anger	Guilt	Adore	Alarm	Amuse	Depress	Alien	Arouse	Agony	Eager	Anxiety
1	15	Mazahua[a]	+	+	+	+	+	+	−	−	+	+	+
2	15	Tiwi	+	+	+	+	+	+	+	+	−	−	+
3	15	Walpiri[a]	+	+	+	+	+	+	+	+	−	+	+
4	17	Bororo	+	+	+	C	+	+	C	+	C	+	C
5	17	Uduk	+	+	+	+	+	+	+	+	+	+	+
6	18	Toaripi[a]	+	+	+	C	+	+	+	+	+	−	+
7	19	Campa	+	+	+	+	+	+	+	+	+	+	−
8	19	Eskimo	+	+	+	+	+	+	+	+	+	+	+
9	19	Kapauku	+	+	+	+	+	+	+	+	+	+	+
10	19	Neo-Melanesian	+	+	+	+	+	+	+	+	+	+	+
11	19	Ojibwe	+	+	+	+	+	+	+	+	+	+	+
12	20	Bemba	+	+	+	+	+	+	+	+	+	+	+
13	20	Dehu[a]	+	+	+	+	+	+	+	+	+	+	+
14	20	Ifugaw	+	+	+	+	+	+	+	+	+	+	+
15	20	Klamath	+	+	+	+	+	+	+	+	+	+	+
16	20	Masai	+	+	+	+	+	+	+	+	+	+	+
17	20	Pemon	+	+	+	+	+	+	+	+	+	+	+
18	21	Aymara	+	+	+	+	C	+	+	+	+	+	+
19	21	Lau	+	+	+	+	+	+	+	+	+	+	+
20	21	Luganda	+	+	+	+	+	+	+	+	+	+	+
21	21	Mataco	+	+	+	+	+	+	+	+	+	+	+
22	21	Mossi	+	+	+	+	+	+	+	+	C	+	+
23	21	Papago	+	+	C	+	+	+	+	C	+	+	+
24	21	Quechua	+	+	+	+	+	+	+	+	+	+	+
25	21	Tlingit	+	+	+	+	+	+	+	+	+	+	+
26	22	Cuna	+	+	+	+	+	+	+	+	+	+	+
27	22	Edo	+	+	+	+	+	+	+	+	+	+	+
28	22	Tzeltal	+	+	+	+	+	+	+	+	+	+	+
29	22	Warao	+	+	+	+	+	+	+	+	+	+	+
30	22	Yahgan	+	+	+	+	+	+	+	+	+	+	+
31	23	Blackfoot	+	+	+	+	+	+	+	+	+	+	+
32	23	Iroquois	+	+	+	+	+	+	+	+	+	+	+
32	23	Wolof	+	+	+	+	+	+	+	+	+	+	+
33	23	Kanuri	+	+	+	+	+	+	+	+	+	+	+
34	23	Touareg	+	+	+	+	+	+	+	+	+	+	+
35	24	Ainu	+	+	+	+	+	+	+	+	+	+	+
36	24	Hopi	+	+	+	+	+	+	+	+	+	+	+
37	24	Kirundi	+	+	+	+	+	+	+	+	+	+	+
38	24	Kurd	+	+	+	+	+	+	+	C	+	+	+
39	24	Lahnda	+	+	+	+	+	+	+	+	+	+	+
40	24	Tiv	+	+	+	+	+	+	+	+	+	+	+
41	24	Truk	+	+	+	+	+	+	+	+	C	+	+
42	25	Amhara	+	+	+	C	+	+	+	+	C	+	+
43	25	Azande	+	+	+	+	+	+	+	+	+	+	+
44	25	Korean	+	+	+	+	+	+	+	+	+	C	+
45	25	Tamil	+	+	+	+	+	C	+	+	+	+	+
46	25	Serbian	+	+	+	+	+	+	+	+	+	+	+

Note. Only 46 of the logically possible 33,554,432 sequences of Shaver et al.'s (1987) 25 cluster categories were found. Adore = adoration; Amuse = amazement; Enthuse = enthusiasm; Exasperate = exasperation; Long = longing; Enthrall = enthrallment; + = an emotion term is present in the language; [a] This language is not in the Human Relations Area Files. It is a language with fewer than one million speakers.

Features of Lexical Encoding of Folk Emotion Terms

Classification by binary opposition. Do principles of folk classification differ for each domain? That is, do different sets of principles govern folk classifications of colors, emotions, botanical terms, and so on? Or do similar principles operate in all domains? C. H. Brown and Witkowski (1980) proposed several principles that they believed to be language universals in folk classifications. Among them were binary opposition and marking principles. Our findings suggest that they also may apply to the universal encoding sequence for folk emotion categories.

Witkowski and Brown (1977) suggested binary opposition as a general principle of naming behavior in the encoding of colors. C. H. Brown (1977) found binary opposition to operate similarly across languages in the lexical encoding of botanical life-forms. Likewise, we propose that the findings in Figure 1 point to a

Emotion Cluster Labels

Aggravate	Pride	Content	Amaze	Envy	Disgust	Pity	Enthuse	Dismay	Exasperate	Relief	Long	Torment	Enthrall
+	+	+	−	−	−	+	+	−	−	+	−	−	−
+	−	+	+	+	−	+	+	−	−	−	−	−	−
+	−	+	+	+	−	+	−	−	−	−	−	−	−
+	−	+	+	+	−	+	−	−	−	−	C	−	−
−	+	+	+	+	−	−	+	+	−	−	−	−	−
+	+	+	+	+	−	+	−	C	−	+	−	−	−
+	+	+	+	−	+	+	+	−	−	+	−	−	+
+	+	−	+	+	+	+	+	+	−	−	−	−	−
−	+	+	+	+	+	+	−	−	−	+	+	−	−
−	+	−	+	+	+	+	+	+	−	−	+	−	−
+	−	−	+	+	+	+	+	+	−	−	−	+	−
+	+	+	+	+	+	+	+	+	−	−	−	−	−
+	+	+	+	+	+	+	−	−	−	+	−	+	−
+	+	+	+	+	+	+	−	+	−	−	+	−	−
+	+	−	+	+	+	+	−	+	+	−	+	−	−
+	+	+	+	+	+	+	+	−	−	−	+	−	−
+	+	C	+	−	+	+	+	−	+	+	−	−	+
+	+	+	+	+	+	+	+	−	−	−	+	+	−
+	+	+	+	+	+	+	−	+	+	−	+	−	−
+	+	+	+	+	+	+	+	+	−	−	−	+	−
+	+	+	−	+	+	+	C	+	−	+	−	C	−
+	+	+	+	−	+	−	−	−	+	+	+	+	+
+	+	+	+	−	+	−	−	−	+	+	+	+	+
+	+	+	+	+	+	+	+	+	−	−	−	+	−
+	+	+	+	+	+	+	+	+	−	+	−	+	−
+	+	+	+	+	+	+	−	+	−	+	−	+	+
+	+	+	+	+	+	−	+	−	−	+	+	+	+
+	+	+	+	+	+	+	+	+	−	+	+	−	−
+	+	+	C	+	+	+	+	+	+	−	+	−	C
+	+	+	+	+	+	+	+	+	+	+	+	−	−
+	+	+	+	+	+	+	+	+	+	+	+	−	−
+	+	+	+	+	+	+	+	+	−	+	+	−	+
+	+	+	+	+	+	+	+	+	−	+	+	+	−
+	+	+	+	+	+	+	+	+	−	+	+	+	+
+	+	+	+	+	+	+	+	+	+	−	+	+	+
C	+	+	+	+	+	+	+	+	C	+	−	+	+
+	+	+	+	+	+	+	+	+	+	+	C	−	+
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+	+	+	+	+	+	+	+	C	+	+	+	C	+
+	+	+	+	C	+	+	+	+	+	+	C	+	+
+	+	+	+	+	+	+	C	+	+	+	+	+	+
+	+	+	+	+	+	+	+	C	+	+	+	+	+
+	+	+	+	+	+	+	C	+	+	+	+	+	C

amusement; Depress = depression; Alien = alienation; Arouse = arousal; Eager = eagerness; Aggravate = aggravation; Content = contentment; Amaze = − = an emotion term is absent in the language; C = composite of 2 or more of Shaver et al.'s cluster categories.

universal tendency in natural language to classify emotion categories by means of binary opposition, apparently by using the quality of the emotions as the criterion for making the distinction, with the valence of one anchor frequently being positive and the opposing anchor being negative. In an effort to show that the principle of binary opposition does indeed apply to the classification of emotion categories, we suggest antonymic pairings that run counter to prevailing beliefs in the English language because, in contrast to the conventional binary oppositions of emotion terms in English, we based our hypothesized pairings on the generalized encoding sequence of the world's languages shown in Figure 1. Future research will need to establish whether the proposed pairings have merit. The concept of binary opposition is not new to the study of emotions. More than two decades ago, Solomon and Corbit (1974) proposed that the arousal of an emotion is followed at its termination by the arousal of an opponent-process emotion. In their

model, however, the particular combination of emotion opponents is unstable and changes with repetition of the arousing stimulus. The concept of binary opposition also is present in circumplex models of affect (Fromme & O'Brien, 1982; Plutchik, 1980; Russell, 1980) and in the semantic differential research of Osgood et al. (1975).

Keeping in mind that the emotion terms in Figure 1 refer to emotion categories (see Appendix B), we submit that Stages 1 and 2 illustrate the tendency toward antonymic encoding. Emotions of disapprobation (i.e., anger–hate–spite) are classified in opposition to emotions of contrition (i.e., guilt–shame–regret). Such an antonymic relation appears to be credible. In most studies of anger-inducing events, Averill (1982) found the cause of anger to be attributed to voluntary and unjustified acts by another person. He concluded that anger is an attribution of blame. Baumeister, Stillwell, and Heatherton (1994) argued that feelings of guilt are commonly engendered by violation of interpersonal and social standards.

The amusement–joy–satisfaction category in Stage 2 apparently is in opposition to the depression–despair–misery category, a bipolarity that is also a component of Plutchik's (1980) multidimensional model of emotions. Because the remaining categories in Stage 2 appear not to be logical opposites to the categories in Stage 3, by default then, we suggest that the emotions of approach (i.e., adoration–love–attraction) are opposed by the emotions of avoidance or withdrawal (i.e., alarm–fear–shock).

In Stages 3 and 4, alienation–neglect–defeat appears to oppose eagerness–hope–optimism, and the pleasant emotions of arousal–desire–passion are in opposition to the emotions of pain, agony–suffering–hurt. In Stages 5 and 6, contentment–pleasure is opposed by aggravation–annoyance–irritation, and anxiety–worry–distress opposes pride–triumph. In Stages 7 and 8, we found two anomalies. First, the amazement–surprise–astonishment category had no binary opposite in Shaver et al.'s (1987) categories, although opposing terms such as *boredom, anticipation, expectation, presentiment, foreboding,* and *intuition* are available in natural language.[1] Second, we suggest that a ternary classification may be present in the opposition of pity–sympathy to disgust–contempt–revulsion and to envy–jealousy. That is, in opposition to emotions of empathy and the offer of succor are negative attitudes toward others as expressed in the emotions of loathing, covetous embitterment, and the suspicion of losing something of value to others. The category of enthusiasm–excitement–zeal opposes dismay–disappointment–displeasure.

In Stage 9, the exasperation–frustration category opposes the enthrallment–fascination–rapture category. We propose that relief may form another ternary classification by opposing longing and torment.

Marked and unmarked emotion categories. In addition to the hypothesis of a human tendency to classify emotion categories by means of binary opposition in natural language, we found that the emotion category listed first in each pair of counterparts had at least one term (perhaps the focal emotion of the category) that occurred more frequently in English prose (using the count found in Francis & Kučera, 1982) than any term in the opposing category (see the frequency counts in Appendix B). That is, at least one word in the emotion category of, say, anger occurs more frequently in English prose (i.e., hate = 66) than any term in the opposing category of guilt (i.e., guilt = 33). What accounts for the consistency of this finding across all hypothesized category pairs? An explanation may be available with markedness theory.

Text frequency, a concept of markedness theory (Greenberg, 1966, 1975, 1987), is a characteristic of unmarked and marked categories. The latter phenomenon was first noted by Trubetzkoi (1939) and developed extensively by Greenberg (1966, 1975, 1987). Greenberg (1966) presented evidence strongly suggesting that the concept of marking applies to the phonological, grammatical, and lexical aspects of all languages. We limit ourselves to antonyms (i.e., lexical characteristics) to illustrate markedness theory because they come closest to our speculation that the naming of folk emotion categories proceeded universally in binary opposition.

Greenberg (1966) noted that "for long/short, wide/narrow, deep/shallow . . . , the first member is unmarked and the second marked" (p. 52). Typically, the unmarked term occurs more frequently in language usage and, hence, is more salient than its marked counterpart. For example, people tend to frame questions with the unmarked form, as in, "How long is the stick?" rather than "How short is the stick?" Similarly, people ask, "How deep is the lake?" rather than "How shallow is the lake?"

We are suggesting that the first member of the emotion binary opposites always has at least one term with higher prose frequency than the opposing member because, in the framework of markedness theory, the first member is unmarked (i.e., more salient to children and adults alike) and the second is marked. That is, queries, confessions, opinions, and assertions involving emotions more often are framed with unmarked forms, for example, anger–hate–spite, than marked forms, such as guilt–shame–regret. For example, we hypothesize that statements of dislike (e.g., "I hate that," "This pisses me off," or "I could kill him/her") are more common than admissions of wrongdoing (e.g., "I am ashamed," "I feel guilty," or "I made a mistake").

An additional implication of markedness theory is that "if a language has the marked value, it always has the unmarked, but not necessarily vice versa" (Greenberg, 1987, p. 368). A supportive example for the Stage 1 categories in Figure 1 (and an example that not all languages strictly adhere to the developmental sequence proposed in Figure 1) is found in the Zuni language, which has encoded the unmarked term of *anger* but not the marked term of *guilt* (S. Newman, 1958).

Given that aspects of markedness theory have been shown to be present universally in natural language (Greenberg, 1966, 1987), it seems likely that text frequency for emotion categories also may be a universal phenomenon. Unfortunately, information is not currently available to determine whether the difference in word frequency in English also may hold for the remaining languages in our sample. Moreover, because of our particular procedure for locating emotion terms in foreign languages that may be equivalent lexically to the English terms, it is unlikely that the foreign

[1] The absence of a well-developed opposition perhaps provides support for Averill's (1980) hypothesis regarding the paucity of positive emotions. People want to take credit for their good deeds but attribute their reprehensible behavior to having been seized by negative emotions. Claiming that an event was a surprise removes from the individual the responsibility of not having anticipated the event and taken steps to prevent its occurrence.

terms in Appendix C also are coincidentally the terms with the highest frequency in their respective native languages. Therefore, our hypothesis is, at best, speculative.

We speculate further regarding an additional potential implication of antonymic encoding. A characteristic of markedness theory, labeled *facultative expression,* is that the unmarked term is more general than the marked term. As an example, "note the use of the unmarked 'author' . . . to refer to a writer regardless of sex, while 'authoress' indicates only a female writer" (Greenberg, 1966, p. 51).

We propose that facultative expression also may extend to the categories of folk emotion terms. Thus, of the pairs of binary opposites listed above, we hypothesized that the first member of each pair not only would be unmarked but also would be more general. For example, we hypothesized that anger–hate–spite would have wider application in natural language than would guilt–shame–regret, at least in English. Likewise, adoration–love–attraction would be less specific than alarm–fear–shock, and so on.

To obtain a preliminary test of the hypothesis for English emotion terms, 71 students in an upper-division class on emotion (mode age = 23 years) read Greenberg's (1966) distinction between *author* and *authoress* at the top of a sheet of paper, followed by the 13 pairs of binary opposites, and the request to indicate which opposites in each pair were more general. In view of Tversky's (1977) finding that participants in similarity judgment tasks tended to place greater weight on the first member of a comparison, for approximately half of the students the position of the antonymic pairings was reversed. Also, the order of appearance of each binary pair in the sequence of 13 pairs was varied.

The hypothesis was supported. The students perceived the first member of each pair of the binary opposites listed above as more general for 12 of the 13 pairs (sign-test $p < .002$). The exception was envy–jealousy, which the students perceived to be more general ($n = 44$) than pity–sympathy ($n = 27$). In sum, the first member of each pair of binary opposites not only is unmarked but also is more frequently used in English prose and is perceived to be more general than the second member of each pair.

Declining morphologic complexity of emotion terms over time. Sapir (1912/1958) hypothesized that the morphologic development of a vocabulary tends to decrease from the earliest recorded forms to the present.[2] When applied to emotion terms, the hypothesis implies, as does markedness theory, that the grammatical structure of the most frequently used words in the emotion categories of Stages 1 and 2 in Figure 1 is less elaborate than the high-frequency terms in Stages 8 and 9. The underlying assumption is that the Stages 1 and 2 terms were encoded much earlier and therefore had lost their morphologic complexity in comparison with more recently encoded Stages 8 and 9 terms.

Consistent with the hypothesis is the demonstration of Zipf (1935, 1949) that the frequency of use of lexical items correlates with their phonological length. High-frequency items, in comparison with low-frequency items, are shorter and, hence, less complex. As lexical items increase in frequency of use (e.g., television), they tend to be shortened (i.e., TV) and presumably are learned earlier by children.

To test Sapir's (1912/1958) hypothesis, we used the terms with the highest frequency count (see Appendix B or the caption to Figure 1) in each emotion category of Stages 1, 2, 8, and 9. We substituted one emotion term. Instead of using *sadness,* with a frequency count of only 6, we substituted the grammatical variant of *sad* (frequency = 35). That removed *depression* (frequency = 27), a morphologically complex term, from holding the highest frequency count in its emotion category. The justification for the substitution was that *sad* is an older term than *depression.* According to the *Oxford English Dictionary* (1989), *sad* initially meant satiated and satisfied. Circa 1366 A.D., it acquired its modern meaning of sorrow. Not until 300 years later (circa 1665) did *depression* take on its modern meaning.

With that substitution, all of the highest frequency Stages 1 and 2 terms were morphologically and phonologically simpler (i.e., *hate, guilt, love, fear, joy,* and *sad*) than the Stages 8 and 9 terms (i.e., *excitement, disappointment, sympathy, frustration,* and *fascination*). In support of Sapir's (1912/1958) hypothesis, the difference in the mean rank frequencies of the two sets of categories (*M*s = 8.17 and 3.40, respectively) was statistically significant, Mann–Whitney $U = 2.00$, $p < .02$ (two-tailed).

Expansion of the emotion categories. Markedness theory may provide a plausible account for some features of the naming of folk emotion categories, but it cannot illuminate the motive that spawned the particular encoding sequence in Figure 1. That is, markedness theory cannot explain the motivation for naming the categories in Stage 1 before those in Stage 2, and so on. Whereas there is evidence to suggest that the lexical encoding sequence for the basic color terms of *black, white, red, yellow, green,* and *blue* may have a neurophysiological basis (for a review, see Bornstein, 1975), no similar process is currently known that could account for the implicational relationships of the naming of folk emotion terms. In other words, although the gene pool and the neuroanatomical substrates provide the physiological component of human emotions in an as yet unknown manner, it is unlikely that they governed the emotion encoding sequence.

We propose that the emotion categories of Stages 5–9 are derivatives of the antonymic pairs of Stages 1–4. Witkowski and Brown (1977) suggested that the encoding of derivatives operates in the naming of colors (e.g., gray is a derivative of the black–white antonymic pair). We believe that the same process applies in the encoding of emotions. That is, an opposition initially is perceived on a particular dimension, such as the quality of the emotion categories. Then the poles are labeled, and later possibly a middle emotion category is differentiated, usually on a different dimension than the original binary opposition, such as an intensity dimension, or the more general emotional theme of the parent category, say anger–hate–spite, is differentiated into emotion categories that identify specific instances of the parent emotional theme, as may be the case of *disgust* and *envy* being specific types of dislikes or hate.

To paraphrase a caution articulated by Frijda, Markam, Sato, and Wiers (1995), the concept of derivative emotion categories does not necessarily imply that they are variants or mixtures (Arnold, 1960; McDougall, 1926; Plutchik, 1980) of the categories encoded in earlier stages. The derivatives may well be categories in their own right and most likely evolved because the parent antonymic pair was insufficient to express newly recognized emotional themes, variations in emotional intensity, or newly evolved

[2] We thank A. Kimball Romney for bringing this citation to our attention.

intra- and interpersonal relationships. It is the shortcoming of the parent category that is the likely motivation for the spawning of new categories.

Apropos to our position that the derivatives may be separate emotions is the issue of what, in that case, motivated the similarity ratings by Shaver et al. (1987). Consider the terms in the alarm category (Appendix B). Terms such as *fear, horror, terror,* and *panic* may have in common the feeling of intense helplessness but not necessarily semantic synonymity. The experience of horror when observing a loved one being repeatedly run over by a fast-moving stream of cars on a freeway is unlikely to simultaneously elicit fear, an emotion generally aroused when personal well-being is threatened. That is, the two emotions are separate constructs. Similarly, regarding the anger category with its purported synonym of hate, Ortony, Clore, and Collins (1988) viewed hate as an example of an affective and aesthetic reaction to objects (i.e., an intense dislike of objects), whereas they characterized anger as arising when individuals simultaneously focus on the action of someone and the resulting event with its consequences. Their distinction again suggests that the synonymity rating of the two emotions may not have been based on semantic synonymity and, for that matter, also not on co-occurrence of the emotions in daily life, as Schimmack and Reisenzein (1997) proposed, in view of Averill's (1982) finding that anger is more likely to be directed at loved ones than hated individuals. *Anger* and *hate* are not interchangeable terms or emotions; they differ in their application. Thus, if terms within an emotion category can differ, then newly spawned emotion categories also can differ from the so-called parent antonymic pair without the assumption that they are variants or mixtures of them.

An instance of a middle emotion category being recognized and labeled is available in Stage 1. The bipolar pair of anger–hate–spite and guilt–shame–regret brings forth on the anger pole an intermediate intensity emotion category of aggravation–annoyance–irritation in Stage 5. Later still in Stage 9, a further differentiation is recognized by the propagation of the categories of exasperation–frustration and torment.

But the anger pole was not the sole generator of new emotions. The adjoining hate–spite pole, with its companion emotions of dislike, resentment, and vengefulness in Shaver et al.'s (1987) category, spawned the disgust–contempt–revulsion and envy–jealousy categories of Stage 7, perhaps to facilitate communication about particular dislikes, such as disgusting taste experiences and reproaches (e.g., other individuals enjoying undue favors or interlopers threatening one's love relationship). That is, the new emotions are different types of dislikes rather than variations in intensity along the hate–spite dimension. Because of their more recent encoding, markedness theory predicts that the derived emotion categories are marked (i.e., less salient) in relation to the parent antonymic pair.

In the adoration–love–attraction and alarm–fear–shock pair of Stage 2, the former pole, in addition to the affection theme, contains terms of succorance, such as *compassion, caring,* and *tenderness.* We suggest that the need to communicate about different types of caring, for example, the preventive care of mothers for their infants or the desire to alleviate the plight of people who are terminally ill, generated the pity–sympathy category of Stage 8. The alarm–fear–shock pole, in antonymic relation with adoration–love–attraction, spawned the less intense anxiety–worry–distress category along an intensity dimension.

The amusement–joy–satisfaction and depression–despair–misery opponent pair differentiated four new emotion categories: three along an intensity dimension and one as a qualitative distinction. Thus, the contentment–pleasure (i.e., Stage 6) and enthrallment–rapture categories (i.e., Stage 9), both variations in intensity, became differentiated from the amusement–joy–satisfaction pole. This pole also spawned the pride–triumph category (i.e., Stage 5), which as a qualitative differentiation represents joy and satisfaction in a particular situation. The depression–despair–misery pole produced a less intense version of itself with the dismay–disappointment–displeasure category (i.e., Stage 8).

In the alienation–neglect–defeat and eagerness–hope–optimism antonymic pair, we propose that the latter pole generated the enthusiasm–excitement–zeal category of Stage 8, possibly to encode the consequence of experiencing the emotional theme of the parent pole. We propose that the arousal–desire–passion and agony–suffering–hurt antonymic pair differentiated into the longing category (i.e., Stage 9) on the former pole, perhaps to facilitate communication about a painful type of desire and passion. The agony pole appears to have given rise to the relief category (i.e., Stage 9) as an antonymic pole.

From our perspective, the distinguishing feature of the Stages 5–9 emotion categories is that they all have antecedent parent emotion categories in Stages 1–4 that provided the springboard for further differentiation. The earlier encoded stages served as the perimeter for the derivations of the later emotion labels. The exception is the amazement–surprise–astonishment category of Stage 7, a category that is just as easily communicated by exclamations as by words. It has no parent category in Stages 1–4; therefore, we classified it as being a parent category itself and viewed it as being part of the Stages 1–4 emotion categories for the purpose of our next proposal.[3]

With that alteration, the 11 categories of Stages 1–4 may be viewed as the universal basic emotion categories in natural language from which additional emotion categories ostensibly became differentiated in later stages of encoding. By "basic emotion categories," we mean only that the 11 categories, or more accurately the experiences they label, are of such importance in human interactions that they were among the first to be named across cultures. It is a linguistic basic emotions hypothesis to contrast it with the thesis that all emotions are blends of a limited set of basic emotions (Arnold, 1960; McDougall, 1926; Plutchik, 1980) or are lower level classifications of higher order basic emotions in a hierarchical model of semantic categorization (Johnson-Laird & Oatley, 1989; Oatley & Johnson-Laird, 1987; Shaver et al., 1987).

[3] Nico H. Frijda, in his capacity as a reviewer, noted that our speculations regarding the basis for the classification of emotion categories by means of binary opposition and the basis for the expansion of Stages 5–9 could just as well, and perhaps more interestingly, have been based on the concept of emotional action readiness (e.g., Frijda, 1986; Frijda, Kuipers, & ter Schure, 1989). We agree that such an alternative analysis may well prove fruitful. However, if our hypothesis that similar principles govern the classification of colors, emotions, and botanical terms is ultimately shown to be useful and best represents human classification tendencies, then its scope of applicability will be more general than that of the concept of emotional action readiness.

They are the core emotions that laypeople cross-culturally want to talk about but a number of which, such as the adoration category and the categories of Stages 3–4, are not part of the lists of basic emotions compiled by English-speaking researchers (e.g., Ekman, Friesen, & Ellsworth, 1982; Izard, 1971; Johnson-Laird & Oatley, 1989; Oatley & Johnson-Laird, 1987; Plutchik, 1980). Arnold's list is similar to ours by covering 7 of our categories. She did not include terms for the categories of agony, amazement, amusement, and guilt. There is, of course, no requirement for the folk theory of basic emotions to resemble the theories of researchers (Fletcher, 1995). What laypeople universally consider as basic emotions is an important topic of study in its own right.

The emotions missing in the lists of various researchers (e.g., anguish, loneliness, desire, suffering, hope) are what Markus and Kitayama (1991) designated as "ego-focused emotions." Individuals' needs, goals, and desires are their primary referents in contrast to the emotions of Stages 1–2, which frequently are triggered by considerations external to individuals. Their relatively early encoding points to their significance to laypeople. And, indeed, individuals lacking hope, desire, love, and so on would be severely curbed in human affairs.

Our cross-cultural folk taxonomy of emotion words also differs considerably from the taxonomies for English proposed by other researchers (e.g., Clore, Ortony, & Foss, 1987; de Rivera, 1977; de Rivera & Grinkis, 1986; Johnson-Laird & Oatley, 1989; Oatley & Johnson-Laird, 1987; Ortony et al., 1988; Plutchik, 1980; Scherer, 1984; Shaver et al., 1987; Storm & Storm, 1987; Thamm, 1992). This difference is to be expected, given that we are studying folk taxonomies and our goal was to determine the developmental sequence of the emotion lexicon of the world's languages rather than of only English. Although we have proffered the suggestion that Stages 5–9 are derivatives of the earlier stages, the question still remains regarding what prompted the particular sequential development of Stages 1–4.

Sequence of Emotion Categories

Social control. That the anger and guilt categories were encoded first suggests that the need to maintain social control may have been a priority in all societies. The attribution of blame appears to be a fundamental component of anger across cultures (Frijda et al., 1995). The sumptuary laws of Western European societies 500 years ago are only one example of how communities seek to regulate behavior. They informed citizens of what to wear and eat and how to conduct the routine of daily life without violating public decency. Violation of standards tends to elicit the types of emotions listed in Shaver et al.'s (1987) anger and guilt categories.

If social control had been the sole motivation for the initial encoding of emotion words, then we would have expected additional encoding of the categories of alienation (i.e., humiliation, embarrassment, rejection) and envy–jealousy. Instead, they were not encoded until Stages 3 and 7, respectively, suggesting the influence of other motives.

Labeling of facial expressions of emotions. Some researchers have taken the position that affective facial expressions have biological roots (Ekman, 1992; Izard, 1977; Plutchik, 1980), which should be mirrored in the linguistic code. How the mirroring is to manifest itself is not made clear. We explore two possibilities. One plausible reason for encoding emotions may have been to identify common facial expressions of emotions (cf. Fridlund, 1997). Indeed, the majority of the emotion categories in Stage 2 include terms for identification of facial affective expressions (Ekman & Friesen, 1975; Izard, 1971), such as *fear* (alarm category), *happiness* (amusement category), and *sadness* (depression category). When they are combined with the anger category of Stage 1, then only *disgust* and *surprise* are missing from the group of emotions believed to be expressed universally on the face (cf. Russell, 1994). *Disgust* and *surprise* were not encoded until Stage 7, possibly because of the ease of communicating those emotions and conversing about them with exclamations, such as the Zuni's use of *we* for *disgust* and of *ati* for *surprise* and *shame* (S. Newman, 1958).

The hypothesis that the labeling of facial affective expressions may have driven the encoding process, not only in Stage 2 but also in Stage 1, is strengthened when we include Izard's (1977) proposal that *shame,* a term in the guilt category, is as much a facially expressed emotion as anger, disgust, fear, and so on. With that addition, five of the six categories in Stages 1–2 are accounted for by the facial hypothesis. Only the adoration category remains. It is not listed by researchers as a facially recognizable emotion category, most likely because of limitations in the current methodology for identifying facial emotions. Judging by the facial expressions and behavior of infants, they appear to feel an emotion that is variously described as affection, caring, fondness, liking, or nonsexual love. Such an emotional theme may be difficult to identify with the widespread use of still photographs in research on the facial expressions of emotions. Perhaps the distinguishing cue for affection is gazing (Kellerman, Lewis, & Laird, 1989; Rubin, 1970), a duration variable that is difficult to capture on photographs but that is probably applicable to other emotions, such as horror, which may well be a fear expression held for an extended period.

A second possibility for the biological roots of affective facial expressions to be mirrored in the linguistic code is that the encoding process emulated the ontogeny of facial emotional expressions in newborns. According to Lewis's (1993) model of the emergence of human emotions (with the stages of the folk emotion terminology in parentheses), the first 3 months of life give rise to joy (Stage 2), sadness (Stage 2), disgust (Stage 7), and surprise (Stage 7); then anger (Stage 1) and fear (Stage 2) emerge, followed in the 2nd year by embarrassment (Stage 3), envy (Stage 7), and empathy (Stage 8) and in the 3rd year by pride (Stage 5), shame, guilt, and regret (Stage 1). It is apparent that matching the folk terminology sequence with ontological development is not an improvement over the hypothesis that the labeling of facial affective expressions drove the folk encoding process. Neither hypothesis completely accounts for the encoding sequence in Stages 1–4.

Prototype model. The prototype model of Shaver et al. (1987) comes closest to matching the universal emotion encoding sequence for Stages 1–2 but not Stages 3–4. According to Shaver et al.'s prototype model, one would expect *anger* (anger), *fear* (alarm), *joy* (amusement), *love* (adoration), *sadness* (depression), and *surprise* (amazement) to be labeled first because of their status as basic-level emotions in the results of a hierarchical cluster analysis. And indeed they are in Stages 1 and 2, with the exception of the amazement category, which is not encoded until Stage 7, and the presence of the guilt category in natural language but not a basic-level emotion in the prototype model.

In sum, in response to the question of what may have motivated the encoding sequence in natural language, the emerging picture suggests that the initial impetus may have been to encode terms for two major social control categories, then terms for prototypical emotions commonly elicited in interpersonal relationships, followed by terms descriptive of intrapersonal emotions. Alternatively, our hypotheses regarding the motivation for the initial encoding stages (i.e., social control, labeling of facial expressions, and encoding of prototype emotions) may not be mutually exclusive.[4] If the so-called basic emotions have a genetic foundation, it seems likely that they would pertain to the fundamental social situations in which human beings find themselves. Equally likely is that the expression of the emotions, whether in the face, in the voice, or through instrumental responses, influenced others. Given such fundamental emotion-eliciting situations, they and the emotions commonly associated with them must have been prime candidates for encoding and the formation of prototypes. Thus, rather than affecting the encoding process sequentially, the labeling of facial expressions, social control categories, and prototypical emotions may have been simultaneous.

General Discussion

We found that the naming of emotion categories was relatively uniform across languages when English terms were used as the referents and when the establishment of the universal developmental sequence of the emotion lexicon was based on emotion category terms that all sampled languages had encoded. We also found that the encoding process may have been driven by the need to label emotions elicited in conflicts, by emotions aroused in day-to-day interpersonal relations, and by emotions that both enrich and torment personal inner life. We proposed that the principle of binary opposition may guide the universal folk classification of emotions, possibly corroborating previous research showing cross-cultural similarities in antonymic judgments (Raybeck & Herrmann, 1990, 1996). First, polar extremes are labeled, such as *anger* and *guilt,* and then derivative emotion categories fill in and subdivide the range either on an intensity dimension or by the recognition of more precisely differentiated emotional themes than are available with the polar opposites.

An additional finding, which is limited to English emotion categories until it can be corroborated across languages, was support for features of markedness theory (Greenberg, 1966, 1975, 1987). That is, for all antonymic emotion categories, one of the pairs always had at least one term that was used more frequently in English prose than any term in the opposing category. In markedness theory, the more frequently used term is rendered unmarked, is presumably acquired earlier by children, and is more salient to adults than is the less frequently used marked term. It also is encoded first, is more general in application, and is morphologically simpler than the marked term.

The list of basic emotion categories in the cross-cultural folk lexicon, we found, is longer than those proposed by English-speaking researchers (Arnold, 1960; Ekman et al., 1982; Izard, 1971; Johnson-Laird & Oatley, 1989; Oatley & Johnson-Laird, 1987; Plutchik, 1980). Researchers usually compiled their lists on the basis of the assumption that the emotions are an integral part of the human neuro–anatomic–physiological system. In contrast, lay-people worldwide appear to have used the criterion of relevance of the emotion to recurring human interactions. The encoded emotions are the ones most frequently used in conversations.

One third of our sample of languages had terms for all 25 of Shaver et al.'s (1987) emotion categories. Of the remaining languages, all had terms for at least 15 of the categories. These findings, in addition to the cross-culturally uniform sequence of labeling emotion categories, strongly suggest that the lexical regularity, if not based on social and phenomenological experiences common to the human species, surely is founded on innate principles of human language. Our findings are consistent with increasing reports of cross-cultural similarities in the emotion domain (Buunk & Hupka, 1987; Church, Katigbak, Reyes, & Jensen, 1998; Frijda et al., 1995; Gehm & Scherer, 1988; Herrmann & Raybeck, 1981; Hupka et al., 1985, 1993; Hupka & Zaleski, 1990; Hupka, Zaleski, Otto, Reidl, & Tarabrina, 1996, 1997; Mesquita & Frijda, 1992; Osgood et al., 1975; Romney et al., 1997; Russell, 1983, 1991; Russell, Lewicka, & Niit, 1989; Scherer, 1988, 1997; Scherer & Wallbott, 1994; Scherer, Wallbott, & Summerfield, 1986; Shaver et al., 1992).

Because our findings are consistent with prior studies of folk terminology in different domains, such as the labeling of colors (Berlin & Kay, 1969) and botanical life-forms (C. H. Brown, 1977), we agree with Witkowski and Brown (1977) that the encoding process in folk terminology is governed by language universals. The guiding hand of one such principle is the labeling of emotions by the process of binary opposition. Markedness theory identifies additional cross-cultural language regularities (Greenberg, 1966, 1975, 1987). Such principles facilitate division of the broad range of potential emotional responses into a relatively small number of emotion categories that human beings feel a need to talk about.

This interpretation of our findings raises the issue of what the relationship is between the language of emotions and the physiology of emotions. For example, linguistically, folk terminology distinguishes between, say, the adoration category (i.e., love, attraction, affection) and the amusement category (i.e., joy, satisfaction, delight), but such a distinction has not been shown to be present at the somatovisceral level. Even if such distinctions can be demonstrated someday, whether at the somatovisceral, hormonal, neural, or neurochemical level, the issue is that human beings are not accurate in detecting specific autonomic responses within their bodies (e.g., Pennebaker, Gonder-Frederick, Stewart, Elfman, & Skelton, 1982; Whitehead & Drescher, 1980), and on the basis of the findings with individuals with spinal cord injuries, awareness of autonomic arousal appears not even to be necessary for emotional experience (Chwalisz, Diener, & Gallagher, 1988). When these findings are viewed in the context of Averill's (1974) observation that the link between emotion and bodily change in Western philosophy and psychology is more a matter of psychophysiological symbolism than of science as well as the finding that individuals in different cultures frequently disagree as to where particular emotions are felt in the body (Hupka et al., 1996), they strongly point to the possibility that folk emotion language is governed by different principles than those regulating the neuro–

[4] We are indebted to Phillip R. Shaver for identifying this possibility in his capacity as a reviewer.

anatomic–physiological processes of emotions. But how can distinctions be made linguistically among the hundreds of emotion terms when the distinctions apparently are not matched at the physiological level?

An intriguing model by Cacioppo, Berntson, and Klein (1992) accounts for the phenomenon that identical somatovisceral attributes nevertheless may elicit different emotional labels from individuals as different emotional schemas are serially activated. They liken their model to the experience of viewing ambiguous figures, where one moment, say, the face of an old woman is recognized, and the next moment, with the identical stimulus input, the face of a young woman is seen. Analogous to the splitting of white light into different primary colors with a prism, perhaps general positive and negative feelings may be differentiable linguistically into different emotions by environmental and cognitive processes. Of significance to this topic is that the emphasis of Cacioppo et al. on cognitive operations as the determinants of different emotion labels for identical somatovisceral sensations is consistent not only with our observation of the loose connection between the language of emotion categories and the physiology of emotion but also with the finding that the encoding of folk emotion categories is influenced by linguistic principles (cf. Russell, 1980).

This was an exploratory study into the possibility of a human universal bearing on the naming of similar emotion categories across cultures and the possibility that the naming of the categories progressed in a relatively similar fashion. Future research will have to determine how accurate our initial attempt has been. Our suggestive findings touch on several issues discussed by Russell (1991). Do different cultures carve up the domain of emotion differently? On the basis of our findings and those of other researchers (Church et al., 1998; Romney et al., 1997), many languages not only have general emotion categories similar to those in English but also have as many categories. Perhaps some have even more or different ones, but we did not explore that possibility. Do the similarities in emotion categories across languages support Darwin's (1872/1965) hypothesis that the expression and recognition of emotions are part of the human biological heritage, and do they support the proposal by Johnson-Laird and Oatley (1989) that basic emotions (i.e., anger, fear, disgust, happiness, and sadness) are innately determined, undefinable semantic primitives? Our findings are consistent with those hypotheses; however, a conservative interpretation takes note that the findings do not address the hypotheses. The presence of lexical emotion categories in foreign language dictionaries does not reveal whether they are applied similarly across languages. As we have mentioned already, the emotion category terms of *torment* and *relief* appear to have different applications in various languages. Perhaps the most one can say is that the presence of similar emotion categories in many languages and the apparent cross-culturally uniform development of the emotion lexicon are compatible with the notion that human beings come into the world equipped with a fundamental emotion grammar structure that propels them to emotionalize intra- and interpersonal goals and situations and to respond to them emotionally in body and in language with far more similarity across languages than the emphasis on cross-cultural differences might lead one to expect. What is universal is not only the ability to be emotional in the cultural settings of one's society but also, according to our findings, to a large extent the perception of which emotion-arousing situations are worth encoding.

Much in this study invites additional exploration to further understanding of linguistic universals in the language of emotion. For example, are the antonymic emotion categories across languages also characterized by unmarked and marked categories as they appear to be in English? Are unmarked emotion categories more salient to children and adults across languages? Are emotion statements typically more likely to be phrased in unmarked than marked emotion terms? To what degree and under what conditions do native speakers of languages agree with the antonymic emotion pairs that are based on the generalized encoding sequence of the world's languages? Which model, the cross-cultural folk model of linguistic basic emotions or the models of basic emotions of English-speaking researchers, more accurately captures the core emotions in daily human interactions? Is there a relationship between the universal linguistic antonymic pairs of this study and Solomon and Corbit's (1974) proposal that the somatic arousal of a particular emotion is followed by the arousal of an opponent emotion? Answers to such questions may advance knowledge of the panhuman categorization of emotions in natural language, which, in turn, may facilitate understanding of how folk models differ from scientific models of emotions.

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(Appendixes follow)

Appendix A

Standard Sample of Human Relations Area Files (HRAF) and Voegelin and Voegelin's (V & V's; 1977) Linguistic Classification, Language Substitutions, and Sources of Dictionaries

HRAF sample and language used	V & V's classification	Source of dictionary
1. Pygmies and Khoisan: Kirundi (substitution)	North Eastern Bantu	Van Der Burgt (1903)
2. Southern Bantu: Zulu	South Eastern Bantu	Doke, Malcolm, & Sikakana (1958)
3. Central Bantu: Bemba	Central Eastern Bantu	Hoch (1978)
4. Northeastern Bantu: Luganda	North Eastern Bantu	Kitching & Blackledge (1952)
5. Equatorial Africa: Azande	Eastern (of Adamawa)	Lagae & Vanden Plas (1922)
6. Guinea Coast: Yoruba	Yoruba	*A Dictionary of the Yoruba Language* (1950)
7. Atlantic Bulge: Wolof	West Atlantic	P. Munro & Gaye (1991)
8. Voltaic and Songhaic speakers: Mossi	Gur	Hall (1950)
9. Northern Nigeria and Adamawa: Tiv	Bantoid	Terpstra (1968)
10. Chadic speakers: Hausa	Chadic	R. M. Newman (1990)
11. Sudanic speakers: Masai	Eastern Sudanic	Mol (1972)
12. Cushites: Somali	Chushitic	Abraham (1962, 1967)
13. Furian, Koman, and Kordofanian speakers: Uduk	Koman	Beam & Cridland (1970)
14. Kanuric and Maban speakers: Kanuri	Saharan	Cyffer (1994); Cyffer & Hutchison (1990)
15. Berbers: Tuareg	Berber	Cortade (1967)
16. Bedouin Arabs: Maltese (substitution)	Southwest Semitic	Psaila (1991)
17. Sedentary Semites: Amhara	Semitic	Klingenheben (1966); Leslau (1976)
18. Southern and Western Europeans: Dutch	Germanic	Prick Van Wely (1967)
19. Eastern Europeans: Serbs	Slavik	Cahen (1916); Grujić (1988)
20. Finno-Ugrians: Hungarian	Uralic	Biro (1957)
21. Caucasic and Iranian: Kurd	Iranian	Hakim & Gautier (1993)
22. Indic: Sinhalese	Indic	Malalasekera (1967)
23. Altaic: Yakut	Turkic	Афанасьева & Харитонова (1968)
24. Paleo-Siberians: Ainu	Ainu	Batchelor (1938)
25. Korean-Manchu and Japanese-Ryukyuan: Korean	Altaic	Jones & Rhie (1995); Song (1993); Underwood (1954)
26. Sinitic, Annam-Muong, and Miao-Yao: Vietnamese	Viet-Muong	Nguyễn (1967, 1980)
27. Tibeto-Burman: Tibet	Tibetan	Goldstein (1984); Norbu Chophel (1985); Tashi Tsering & Liu (1988)
28. Dravidian and Kolarian: Tamil	Dravidian	Winslow, Hutchings, Knight, & Spaulding (1989)
29. Mon-Khmer: Khasi	Mon-Khmer	Singh (1988)
30. Thai-Kadai, Malays, and Malagasy: Modern Thai (substitution)	Kam-Tai	*Modern Standard English–Thai Dictionary* (1966)
31. Negritos and Veddoids: Lahnda (substitution)	Indic	Jukes (1961)
32. Philippines and Formosa: Ifugaw	Northwest Austronesian	Lambrecht (1978)
33. Western Indonesia: Iban	West Indonesian	Bruggeman (1985)
34. Eastern Indonesia: Edo (substitution)	Central and Southern Celebes	Agheyisi (1986); D. A. Munro (1967)
35. Australians: Tiwi	Australian Macro-Phylum	Lee (1993)
36. Papuans: Kapauku	West New Guinea Highlands	Doble (1960)
37. Micronesians: Truk	Micronesian	Goodenough (1990)
38. Western Melanesians: Neo-Melanesian (substitution)	Admiralty Western Islands	Mihalic (1957)
39. Eastern Melanesians: Lau	Eastern Oceanic	Fox (1978); Ivens (1934)
40. Polynesians: Tonga	Polynesian	Churchward (1995)
41. Arctic Coast: Eskimo	Eskimo-Aleut	Thibert (1970)
42. Boreal Forest: Ojibwe	Algonquian	Nichols & Nyholm (1995)
43. Northwest Coast and Plateau: Tlingit	Nadene	Story & Naish (1973)
44. California and Great Basin: Klamath	Penutian	Barker (1963)
45. Plains: Blackfoot	Algonquian	Frantz & Russell (1989)
46. Prairie: Cree (substitution)	Algonquian	Watkins (1938)
47. Eastern Woodlands: Iroquois	Iroquois	*Zeisberger's Indian Dictionary* (1887)
48. Pueblos and Apache: Hopi	Uto-Aztecan	Albert & Shaul (1985); Seaman (1985)
49. Yumans, Pimans, and Taracahitians: Papago	Uto-Aztecan	Saxton, Saxton, & Enos (1983)
50. Middle America: Tzeltal	Mayan	Slocum & Gerdel (1965)
51. Central America and the Antilles: Cuna	Chibchan	Erice (1985)
52. Highland and Coastal Colombia and Ecuador: Peruvian Quechua (substitution)	Andean	Hornberger & Hornberger (1977)
53. Andean Peru, Bolivian, and Chile: Aymara	Andean	Ayala Loayza (1988)
54. Patagonia and Tierra del Fuego: Yahgan	Andean	Bridges (1933/1987)
55. Gran Chaco: Mataco	Mataco	Hunt (1937); Viñas Urquiza (1974)
56. Southern and Eastern Brazil: Guarani	Tupi	Guasch & Diego Ortiz (1986)
57. Mato Grosso and the Ge: Bororo	Bororo	Rondon (1948)
58. Amazonia: Campa	Maipuran	Kindberg (1980)
59. Guiana: Pemon	Carib	de Armellada & Salazar (1981)
60. Marginal Peoples of Venezuela		
Warao	Macro-Chibchan	de Barral (1979)
Dehu[a]	Loyalty Islands	Tryon (1967)
Mazahua[a]	Otomian	Kiemele Muro (1975)
Toaripi[a]	Toaripi	H. A. Brown (1968)
Walpiri[a]	Ngarga	Reece (1975)

[a] This language is not in the HRAF. It is a language with relatively few speakers, suggesting the possibility that the emotion lexicon is less elaborated than the majority of languages in the HRAF.

Appendix B

Emotion Terms in Shaver et al.'s (1987) 25 Cluster Analysis Categories, With Francis and Kučera's (1982) Frequency Analysis of English Usage in Parentheses

1. Adoration (5) Affection (22) Love (179) Fondness (4) Liking (4) Attraction (24) Caring (10) Tenderness (4) Compassion (5) Sentimentality (1)	2. Aggravation (2) Irritation (10) Agitation (6) Annoyance (10) Grouchiness[a] Grumpiness[a]	3. Agony (10) Suffering (18) Hurt (12) Anguish (8)	4. Alarm (11) Shock (33) Fear (141) Fright (2) Horror (21) Terror (26) Panic (20) Hysteria (7) Mortification (1)	5. Alienation (22) Isolation (16) Neglect (28) Loneliness (9) Rejection (12) Homesickness (1) Defeat (25) Dejection (1) Insecurity (5) Embarrassment (8) Humiliation (7) Insult (8)	6. Amazement (10) Surprise (76) Astonishment (5)	7. Amusement (9) Bliss (4) Cheerfulness (1) Gaiety (13) Glee (4) Jolliness (4) Joviality (1) Joy (47) Delight (29) Enjoyment (21) Gladness (1) Happiness (23) Jubilation (1) Elation (2) Satisfaction (32) Ecstasy (6) Euphoria (2)
8. Anger (48) Rage (17) Outrage (7) Fury (19) Wrath (9) Hostility (11) Ferocity (2) Bitterness (18) Hate (66) Loathing (1) Scorn (4) Spite (48) Vengefulness[a] Dislike (22) Resentment (18)	9. Anxiety (43) Nervousness (2) Tenseness (6) Uneasiness (5) Apprehension (16) Worry (89) Distress (16) Dread (8)	10. Arousal (3) Desire (88) Lust (6) Passion (40) Infatuation (4)	11. Contentment (1) Pleasure (67)	12. Depression (27) Despair (20) Hopelessness (3) Gloom (14) Glumness[a] Sadness (6) Unhappiness (6) Grief (10) Sorrow (11) Woe (5) Misery (17) Melancholy (5)	13. Disgust (6) Revulsion (10) Contempt (15)	14. Dismay (5) Disappointment (17) Displeasure (4)
15. Eagerness (3) Hope (164) Optimism (15)	16. Enthrallment (2) Rapture (4) Fascination[b] (6)	17. Enthusiasm (29) Zeal (8) Zest (5) Excitement (32) Thrill (6) Exhilaration (1)	18. Envy (8) Jealousy (5)	19. Exasperation (5) Frustration (15)	20. Guilt (33) Shame (21) Regret (19) Remorse (1)	21. Longing (5)
22. Pity (13) Sympathy (14)	23. Pride (45) Triumph (24)	24. Relief (66)	25. Torment (50)			

Note. The particular sequential listing of the emotion terms in each category was the product of Shaver et al.'s (1987) cluster analysis. The listed frequency from Francis and Kučera (1982) is for either the noun or the verb version of the emotion term, whichever was higher. The emotion terms are from "Emotion Knowledge: Further Exploration of a Prototype Approach," by P. Shaver, J. Schwartz, D. Kirson, and C. O'Connor, 1987, *Journal of Personality and Social Psychology, 52,* p. 1067. Copyright 1987 by the American Psychological Association. Adapted with permission.

[a] Not listed in Francis and Kučera (1982). [b] Not included in Shaver et al.'s (1987) study.

(Appendixes continue)

Appendix C

Cross-Cultural Emotion Concepts for 25 English Cluster Categories

Language	Emotion category						
	Adoration	Aggravation	Agony	Alarm	Alienation	Amazement	Amusement
Ainu	Airamye	Ramu-toksetokse: agitated	Ikonire	Eyaitoki	Ekottanu-shomoki: to neglect	Homature	Shinot
Amhara	Afäqqärä	Bəsəčč̣ət	Səqay[a] (torment)	Dənəggate[a] (dismay)	Allägayyä	Tädännäqä	Čäwata
Aymara	Munasiña: love	Turiyaña: to annoy	T'aqesiña	Mullachaña	Wajcha tukuña: loneliness	Musphaña	Kusisiña: to cheer up.[c] (contentment)
Azande	Tạngbwa	Dindika	Kpyo	Gundesi	Nzạnga	Hiliwo	Zoga mbaro
Bemba	Pepa	Pimpila: to annoy	Pumbuka	Tĩnya	Lekelesha: to neglect	Lupapo	Musamwe
Blackfoot	Waakomimm: love	Yoohsiníína	Ókohkoyi: suffer	Ikkio'to	Sskahsi'tsi: neglect	Ipisatsi'taki[a] (enthrallment)	Ikiaahpiksistoto: make cheerful
Bororo	Aído: to love	Códogôbo: to irritate	Quearigôdo: to suffer[a] (alienation + longing)	Pagúdo: fear[a] (anxiety)	Quearigôdo: homesickness[a] (agony + longing)	Pagudúdo	Aídoguíri: happy
Campa	Nonintero: to love	Nachorecaqueri: to annoy	Noatsinaaqueri: to suffer	Nopincatsatiro: to have fear	Niotaca: isolated	Cavaco	Noveshireaca: to be happy
Cree	Kéka´täyimewäwin	Kisewa´hão: he irritates him	Wesukä´yétumowin	Ko´skohão	Mantä´wetotowão	Mamuskasétum: he is surprised	Wuweyutä´yétum
Cuna	Sabgúet: love	Ourrue: to irritate	Uile íttoe: to suffer	Tobet: fear	Nega akkigana: lonely	Abdaile sulit-gi úkkiar makale: to surprise	Tule nabir íttoget: happy
Dutch	Aanbidding	Tergen	Angst	Verontrusten	Vervreemding	Verbazen	Amusement
Edo	Hoẹmwẹn: to love	Sọnnọ	Ibaro: suffering	Ohan: fear	Fiyekegbe: to neglect	Oyunnua	Oghọghọ: joy
Eskimo	Nertormarikpok	Ôminisartok: is agitated	Ânertok: is suffering	Kappianartok: is fearful	Kipingôyok: is lonesome	Koksadlakpok: is surprised	Tipsinartok
Guarani	Tupâ rerohory	(A)mbopoḥýi	(A)jepy'apy: to suffer	(A)myangekói	(A)ñeṃbojara'o	Ñepirîṃba	Vy'a
Hausa	Yi kàunà	Àbin f'ìtinā	Ŕàdàdī	Gīgĩtā: shock	Kadaicī: isolation	Àbin māmākī	Ban dāriyā
Hopi	Pasi'ta	Yuuyuyna: to annoy	Tuutuya: hurting	Wuupu	Nu'antuva: to reject	Kyaatyanum-a: surprised	Hohonaq-a
Hungarian	Imádás	Sulyosbítás	Haláltusa	Fellármáz	Elidegenités	Ijedtség	Mulatni
Iban	Sumbah	Kachau: to annoy	Pemerinsa ke balat	Takut	Ngicha ke: neglect	Tekenyit	Geli ati
Ifugaw	Wahík: affection	Hulún: to irritate	Hammíyo	Ágol: fear	Balaúng: isolation	Aydón	Ay-ayám
Iroquois	Ne niòh unterœnajì	Òras st: wahetkéchte	Ne jonigóchriac ajaiehéje	Tiagocharéchta	Untechninùchk	Ne jonochrácu	Ne owisquat
Kanuri	Kərawo: love	Səgələkcin: be irritated	Bane: suffering	Ringin: be frightened by	Firngin: isolate	Ajabba	Biskengin
Kapauku	Ei gai-a: love		Gabai-a: hurt	Tokii	Inimugi: neglect	Egó takuu	Ideide: joy
Khasi	Ka jingainguh	Pynjur	Ka jingsaja	Ba don jingma	Ka jingaiti	Ka jinglyngngoh	Ka jingpynsngewbha
Kirundi	Mapendo: affection	Hasira: irritation[a] (exasperation)	Kusongwa	Kutia oga	Kuuza	Msangao	Mchezi
Klamath	Stin: love	Tma'k': annoy	ḲaL: be hurt	Toḳ: be frightened	Saḳamsine'': be lonesome	Sǰim	Ḳoysẻwi': be glad
Korean	Sung-bae ha-da	Ak-hwa sĭ-k'i-da	Ko-mĭn	Nol-la-un	So-won-hi ha-da	Nol-la-um	Nak
Kurd	Peristin	Xeter	Giyan kêshan	Sedme: shock	Dûr xistinewe: to isolate	Sersurman	Keyf hênanewe
Lahnda	Pújaṇṛ	Hatheṇ powaṇṛ	Bhoġ: suffering	Raṇg pilá thíwaṇṛ	Kalhe ḍukalhe: in complete loneliness	Khauf zada	Vindolá
Lau	Hasi diena: to love	Rake fii: to be annoying	Bulufi	Bio: to be in fear	Fä'afetai: to embarrass	Tona: surprise	Elea: joy
Luganda	Kw-agala: love	Ku-saakaanya	Ku-tabunkana	Kw-esansabuga	Ku-galabanja: neglect	Kw-ewuunya	Sanyùfu: joy
Maltese	Qima	Titqil	Qagħda għallmewt	Sejħa għall-armi	Tbegħid minn	Stagħġib	Mogħdija tażżmien
Masai	E-omonunoto	A-iriran: to annoy	En-kisilisiloto: suffering	Ol-kiyioi	E-liyio: loneliness	En-king'asia: wonder, surprise	En-kuenia
Mataco	Humnajeh: love	Chatsitej: annoyed	Thai läte: suffer	Nowayaj: fear	Läkw'thi: insult	Sethkanyaj: surprise	Koj-thi: cheerful
Mossi	Noñolem: love	Yalé: annoy	Namsego: suffering[a] (torment)	Dabèm: fear	Pògeré: humiliation	Yèesé: surprise	Sounogo: joy

Neo-Melanesian	Adorim		Pen: suffering	Pret: fear	Mi krai long ples bilong mi: I am homesick	Kalap nogut	Amamas: joy
Ojibwe	Zaagi': love	Migoshkaaji': annoy	Aanimendam: suffer emotionally	Amaniso	Gashkendam: be lonely	Maamakaadendan	Minawaanigozi: be joyous
Papago	Tachchuithag: love[a] (arousal)	Toliant	Sho'igchuthadag: suffering	Tohsith	Pi ap nuhkuthadag: neglect		Ap tahhathkam
Pemon	Puete: affection	Manemba: to annoy	Etuarima: to suffer	Narikenak: fearful	Epuirikandok: embarrassment	Etinipui: to be astonished	Esewampa: to enjoy
Quechua	Múch'ay	Tarantachiy: annoy	Wañuy p'itiy	Manchariy: fear	Sapanchasqa: isolated	Qonqayllamanta q'aqchay: surprise	Hawkay
Serbian	Obožavati	Otežati	Ropac	Uzbuna	Otudjiti	Čudjenje	Zanimanje
Sinhalese[b]	Namaskaraya: adoration	Barapathalakama	Ḳatuka weedanawa	Anaturu angaweema	Unsathu kireema	Mawitha kireema	Vinodaya
Somali	Je'el: love	'Aḍonayya: annoyance	Ħanúunayya: suffering	Báqdíin: fear	Dáyy'ay: neglect	Yabayya: surprise	Qoslínayya
Tamil	Vaṇakkam	Athikabâram	Upâthi	Achchakkuṙippu	Manamurivu	Thigaippu	Kondâṭṭam
Thai	Kwam boo cha	Karn tam hai yae loung	Kwam puad rao	Kwam tok jai	Kwam hang heun	Kwam pra lad jai	Kwam kob kan
Tibet	Chạmpo chḛ̀: to be affectionate	Tshīqpə sạ: get/be irritated	Tụqu chụụn: suffer	Ṭɔɔ̀	Sēmthaà rịŋru tāān	Hā lḛ̀: surprise	Ū qɔ̄ɔ̄
Tiv	Dọọshima: love	Za ... i̱yọ̀l: irritate	Mnyoonom	Mciem: fear	Mtswenɑm: loneliness	Cier ... i̱yọ̀l	Ahạn
Tiwi	Puranji -miringarra: to love	-Aparri		-Kiyarri: to shock	Wangatamiya: lonely	-Warntirrikiyi: to be surprised	Kukunari: to be happy
Tlingit	Si-x̱án: love	Si-gaax': annoy	A+tu-yanook: suffer	A-x'+a-ka-dli-x̱eetl': fear	Li-teesh: be lonesome	Ḳaa yáa+ḳut ya-nee	Ḳaa toowáa+ḳ'a-si-goo: enjoy
Tonga	'Ofa mamahi	Faka'ita: irritating	Mamahi: suffering	Lilifu	Ta'e lata: lonely	Ofo: feel surprise	Va'inga
Touareg	Arabad	Areṛoui: irritation	Toussist: suffering	Toukseḍa: fear	Asouf: loneliness–isolation	Tekount: surprise	Imehlân
Truk	Féng: affection	Máángngaw: be irritated	Riyáfféw: suffering[a] (torment)	Mááyiná	Nikinó	Ésúkúsúk	Amwaaraar
Tzeltal	Ch'uhuntayel	Uts'inel: to irritate	C'ax swocol: to suffer	Xiwel: fear	Ixta'c'op: insult	Toj xiwel: to be amazed	C'axunc'ahc'al
Uduk	Mish: to love		Anan	Ḳo: to be fearful	Ṭa'c bwa: to be insulted	Mer pem caaca	'Bora bwa ki 'bor: to be happy
Vietnamese	Sùng bái	Chọc tức: to irritate	Nỗi đau-đớn: anguish	Báo nguy	Sự bản dí	Sửng sốt	Vui chơi
Warao	Mare tane: affectionately	Yamonibú	Ajerá: to suffer	Deta: fear	Noko warao ekidaja: loneliness	Detane tane naká	Kotobú
Wolof	Sopp[c]: to like	Ṯaxawu: to annoy	Metti: to hurt	Ṯiitànge: fear	Wéét: to be lonely	Waar: to be amazed	Nguuru: to enjoy things
Yahgan	Tunna-na: to love	Ūkāl-āmöni: to annoy	Halāš-ū	Ūmēa-könata: to cause to fear	Mūtal-amöšu-n: to treat a person with neglect	Tönnaka-tr.i	Šōateka-na
Yakut	Олус таптааһын	Сытыырхатыы	Эрэй-мун: suffering	Куттал: fear	Тэйсии	Бэркиһээһин	Са а та тыы
Yoruba	Ìfẹ́: love	Bíninu: to cause him annoyance	Jẹ́rora: to suffer pain	Dánfjì	Adádo: isolation	Ìyanu	Ìdárayá: cheerfulness
Zulu	Thando: affection	Ncokoloza: irritate	Duma	Bhelu	Qhinga: isolate	Khómololo	Dlalo
Dehu[d]	Ihnim: to love	Hnöhni: irritable	Iakötë: sufferings	Xou: fear	Thipetij: to reject	Sesëköt: to be astonished	Nyimo
Mazahua[d]	S$^{?}$iya: love	Üd$^{?}$ü: to irritate	Sëči: to suffer	Sü$^{?}$ü: fear			Jñänbä: satisfied
Toaripi[d]	Haikakare: love	Maea sesea: irritation	Hasiavai: to hurt	Haiisoi[a] (dismay)	Haiiri pasou: dejected	Haihava loi	Hailareva: joy
Walpiri[d]	Kurrulmaṇi: loves	Tjiliwiṛi: annoy		Kilyiṛngaṇi: fright	Yiṛaṛu: loneliness		Ngampu-ngamputjaṛi

(*appendix continues*)

Appendix C (*continued*)

Language	Emotion category						
	Anger	Anxiety	Arousal	Contentment	Depression	Disgust	Dismay
Ainu	Irushkaha	Yaikeshnukara	Rusuike: being desirous of	Yaiyainuwere	Iramtoine: sadness	Etunne ambe: contempt	Rat: to feel disappointed
Amhara	Nəddet	Səgat	Mɛgʷägʷät	Tädässätä	Bəsəčč̣ət	Aställa	Dənəggaṭe[a] (alarm)
Aymara	Phiña	Jasi jasi: nervous	Munaña: to desire	Kusisiña: to have pleasure[a] (amusement)	Llakita: sad	Millasiña	
Azande	Zĩnga	Zaza: nervousness	Yému: desire	Zeresa ngbwaduse: pleased	Rụngërụngë: sad	Hiliwohiliwo	Hiliwo
Bemba	Cipyu	Isakamika	Lunkumbwa: lust	Temwa	Cililishi: sadness	Citendwe	Fulwa: displeased
Blackfoot	Sataimm: wish evil on due to anger	Ipikkssi	Onootsi: have sexual desire	I'táám: pleasant, happy, enjoyable	Soohtsimm	Sáwohkoimm	Ohkona'pssi: be a disappointment
Bororo	Macódo: hate	Pagúdo: dread[a] (alarm)	Queraído: to desire	Ɨeripôdo: to please	Bi: sad		
Campa	Quisaantsi		Shemerenti: lustful	Noquimoshivetaca	Niraashiretaca: to be sad	Nopiinqueri	
Cree	Kisewa´sewin	Otumā´yėtumoowin	Pukosā´yėtum: he desires it	Tāpā´yėtumowin	Pekiska´chehão	Mayā´yėtumowin	Woweyu´sehewāwin: disappointment
Cuna	Urruet	Sur pinsa ittoet	Bíe: to desire	Ueliguale: pleased	Pukipinsaet: sad	Ima ittolege	Tule pait oakkue: to displease
Dutch	Gramschap	Benauwdheid	Begeerte: desire	Tevredenheid	Neerslachtigheid	Walg	Verslagenheid
Edo	Mohu	Osi	Khọọn: to be desired	Isọkẹn	Irhiaeko: unhappiness	Ghan: to be contemptuous	Ikhọẹko: displeasure
Eskimo	Ningartok	Niviorpok	Tussuyok: desires		Annutpok: is sad	Issumariyaeksaungitok: is contemptable	Kuviasungitok: is displeased
Guarani	Pochy	Angata	Pota: passion	(A)vy'a	Naha'arôvẹ́i: to despair	Jeguaru	Kyhyje guasu
Hausa	Fushī	Jũyãyī	Sôn mātā	Gàmsu	Bakin cikī	Kyāmà	Fādùwaī gàbā
Hopi	Itsivu'iw-ta	Unangwmok-i	Kyaanawakna: to strongly desire	Tsuya: be pleased	Ookwa'y-ta	Tututsiwhoya: contempt	Okiwna-vota: be disappointed
Hungarian	Harag	Gond	Vágyérzéki: lust	Megelégedés	Levertség	Undor	Csalódás: disappointment
Iban	Pengeringat	Pemabal: nervousness	Peneka: desire	Rindu: to take pleasure	Runggok-runggok	Puas	Tenati ati
Ifugaw	Boh-ól	Kágu: worrying	Balága	Balág	Aplít: despair	Higá	Ungú: disappointment
Iroquois	Jonaquèchsera	Ne untachtèro	Enuchwes: desire	Jonigochrio	Hechtàge st: wasquàserak	Ne Wazánis	Jáchte enúchwes: displease
Kanuri	War	Rindəkin	Mangər: desire	Kurnotəkin: be pleased	Fəranngin: lose hope	Kunongin	Nonguro yikkəkin: I disappoint
Kapauku	Badaa	Apaapu tai: worry	Idé gai-a: desire	Juma dege: to be pleased with	Uwapai-i: to be gloomy	Nokíí gai-a	
Khasi	Ka jingbitar	Ka jingbukhoh	Ka jingkwah: desire	Ka jinghun ka mynsiem	Ka jingleh diaw	Ka jingbym sngewbha	Pynsheptieng
Kirundi	Kurakka	Masikitiko	Tamaa: desire	Razi	Bonde	Machukio	Situko
Klamath	QiLo·	Wič	Qo·ỳi		Ya·nWa': be gloomy	Qoy'	Dat gikanga: is disappointed
Korean	No-yŏ-um	Kŏk-jŏng	Gae-u-da	Man-jok	Nak-sim	Yŏm-jŭng	Nol-la-um
Kurd	Tûr̲eyî	Shipirzeyî	Arezû: desire[a] (longing)	Dil̲xosh: pleased	Bêzar	Nefrîn	Naumêdî: disappointment
Lahnda	Riṇj	Dil haul: nervousness	Maqṣad: desire	Dil dá ghaní	Hath dhowaṇr: to despair	Betáb	Dil ḍahaṇr: be disappointed
Lau	Angoango rake	'Abo	Ele: to desire	Ongaonga: rich and pleasant	Bokonu: to be sad	Bae ausuli: contempt	
Luganda	Ku-sunguwala	Kw-eraliikirira	Kw-egomba: desire	Kw-esiima	Ku-kekejjuka	Kyenyinyalo	Ku-saalirwa: be disappointed
Maltese	Għadba	Taqtiq ta' qalb	Qajjem	Kuntentizza	Tagħfis	Ħass ta' stmerra	Mela bil-biża'
Masai	En-goro	Ol-oilole	E ng'uarata: desire	A-shipa: to be pleased	A-isina: to be sad	E-manata: contempt	
Mataco	Tawakwai	Howatne: to dread	Nechetayaj: desire	Konit-thi: to cause pleasure	Ni-kojathi: unhappy	Yuthnek	Ni-kojayej-thi: displeased
Mossi	Souyikeré	Yiré: worry	Datem: desire	Sousèkeré	Nèñwoko: sad	Pòŋgeré: contempt	Sousaoñgo: disappointment

Neo-Melanesian	Kros	Guria: to be nervous	Bel i-kirap		Bel i-pas: to be sad	Givim baksait: to show contempt	Bel i-nogut: disappointed
Ojibwe	Nishkendam	Ojaanimendam	Ondendam: desire		Maanendam	Gagwaanisagendan	Minjinawezi: be disappointed
Papago	Bagachuth	Wabsh kehk	Tachchuithag: desire[a] (adoration)	Hohho'ithadag: pleasure	Oh'ith: sadness	Uhwaithag	Pi hohho'ithachuth: displease
Pemon	Ewan-ma: to hate	Tataimerumpasen: uneasy	Pai: desire	Auchin	Pokoi: sad	Ruinaru: repugnance	
Quechua	Phiñakuy	Sonqoyakuy	Munay: desire	Añaka: pleasure	Q'amparmanakuy	Millapakuy	
Serbian	Srditost	Strah	Želja: desire	Zadovoljstvo	Očajavati: to despair	Gadjenje	Bojažljvost
Sinhalese[b]	Kopaya	Kaansaawa	Pubudu Kireema	Santhustiya	Avanathiya	Pilikula	Bhayakaranawa
Somali	'Adaysán	Qás^nahay´: feel uneasy	Ka'sanayya: feel urge for sexual intercourse	'Ajebinayya: pleasing	Qulbínayya	Qúudsı: contempt	Wàan nafsad^ jábay: disappointed
Tamil	Erichchal	Kavalai	Ezhuppu	Manarammiyam	Manakkalakkam[a] (dismay)	Veṟuppu	Manakkalakkam[a] (depression)
Thai	Kwam groath	Kwam kra won kra wai jai	Karn kra toon	Kwam poa jai	Kwam hod hoo	Karn rung kiat	Kwam tou jai
Tibet	Tshīqpə sɛ̱è	Sēmṭɛɛ	Qǖǖloǹ chɛ̱è	Chɔ̄ɔ̄sheè	Yi̱imuù	Kūŋmee la̱anyaà	Lōphaṁ chu̱un: to be disappointed
Tiv	Iyugh	Nyi̱an i̱shima	Isharɛ̱n: desire	Kiva kiva	Zudu̱u	Mla̱ha̱: contempt	Vi̱hi i̱shima: to be disappointed
Tiwi	-Kupiyawumi	-Mampa: to be nervous	-Wutimarti: desire	-Angirraji: to be pleased with	Putuputuwamini + -akirayi: to grieve		
Tlingit	Ka-li-x'aan	Ka̱a tóo-t+ya-xeex: worry	A-da̱x+ji-di-nook: desire	Ka̱a tòowoo+li-k'ei: please	A-x'+a-ya-xaach: be despaired of		Ka̱a tòowoo+ka-ya-waal': be disappointed
Tonga	'Ita	Loto-mo'ua	Holi: desire	Topono	Loto-ta'ota'omia	Fakalili'a	Fakaofoofo: disappointment
Touareg	Iblis	Elhem: worry	Dîrân: desire	Tédaouit	Ikraż: sad	Ikkeḍ	Meloulet: causing displeasure
Truk	Chchow	Ekiyekingngaw	Eyinimwey: sexual desire	Pwaapwa: pleasure	Chowuchow	Nnoow	Weyit-ffengenniiy
Tzeltal	C'ahc'ubel	Ma' spisiluc yo'tan: apprehension	C'anel: to desire	Tse'el (y)o'tan	Mel'o'tan: grief	Xehxon q'uinal	Ti'ti'o'tantayel: to displease
Uduk	War	Abubur	O bwa ki: to desire	'Kunya bwa: to be pleased	Di̱a bwa: sad		Ye is: to disappoint
Vietnamese	Sự phẫn nộ	Mỗi lo	Dục vọng: lust	Vui lòng	Tuyệt vọng: in despair	Chán ghét	Hoâng-hồ't
Warao	Obonona asida	Najomó: to worry	Obojona: passion	Dorò	Obojona dubujirá: despair	Jorojera	
Wolof	Mer	Aajo	Bëgg-bëgg: desire	Bànneex: pleasure	Xolam . . . neexul: to be depressed	Sééxlu: to be disgusted	Yaakaaram . . . tas: to be disappointed
Yahgan	Šālap-a	Kököl-īna	Čīyaūmina-lagöna: desiring	Čkausina	Ārūgat-a: sad	Mūič-e-nata	Šatamba̱a: disappointed
Yakut	Уор	Дьиксинии	Кобүтүү	Дуоһуйуу	Са ньыйыы	Сиргэнии	Симиттии
Yoruba	Ìrunú	Ãjò	Ìfę́kufę́: lust	Ìtę́rùn	Ìdoríkodò	Àikasí: treating with contempt	Ìmófo: disappointment
Zulu	Láka	Tweletwele	Khánu	Enama	Dana	Cunula	Fuphazo: disappointment
Dehu[d]	Hmenigoj	Kukehnin	Mun: to desire sexually	Xeputh: to be pleased with someone	Pateun: despair	Ixanadro: a contemptuous person	
Mazahua[d]	Nžōküte: vengefulness	Čana: uneasiness		Mäjä	Čju?u: sad		
Toaripi[d]	Kitou	Haikavora	Haikakare loi: to desire	Haiiri safefeapai	Murumuru: gloom		Haiisoi[a] (alarm)
Walpiri[d]	Kili-	Rdumu-rdumuka̱ri: worrying	Ngampurrpa: to desire	Ngu̱rtjulkuka̱na-nyinami: I am pleased	Ma̱ri: sad		

(*appendix continues*)

Appendix C (*continued*)

Language	Emotion category						
	Eagerness	Enthrallment	Enthusiasm	Envy	Exasperation	Guilt	Longing
Ainu	Eyaitupa	Nupetne ambe: rapture	Tattarake: to be excited	Eyaitunnap		Yaikateaikapte: to feel ashamed	Yaikatekara
Amhara	G^{w}agg^{w}a	Tämäsṭo: rapture	Yägalä səmmet	Məqqäẳẳňənnät	Abbäsaççä	Ṭəfat	Nafqot
Aymara	Suyaña: to hope	Layqaña: to fascinate	Majti: zeal		Qollu: to frustrate	Jucha	
Azande	Boro haḷamana	Hiliwosi: to fascinate	Yému pay: zeal	Sanza: jealousy[a] (longing)	Zaṇgasa: to frustrate	Zẽ: shame	Sanza[a] (envy)
Bemba	Fwaisha		Cincila ku milimo: zealous	Mufimbila		Lapila: regret	
Blackfoot	Iksisttssi	Ipisatsi'taki: be fascinated[a] (amazement)	Wattsisskisatoo: be overzealous	Isttsikaanimm	Onakisttsimm: frustration	Ikook: regret	Waawaahsatoo: feel absence of
Bororo	Butúdo: to hope			Ĭmarédo: jealousy		Pogúro: shame	Quearigôdo[a] (agony + alienation)
Campa	Oyaacotatsiri: hope	Yoitsaviantiri: to fascinate	Oposhinitanaqueri: excitement			Nopashiventaca: to feel shame	
Cree	Asponā´yimoowin	Mamata´kosewin: rapture	Chékā´yétum: he is zealous	Ota´yétoowin	Puchepu´yétaw: he frustrates it	Muchayé´wewin	Kewusä´yimão
Cuna	Abdake: to hope		Oal-le: to excite	Nobet	Oúrrue	Nosat	
Dutch	Gretigheid	Boeien	Enthousiasme	Nijd	Verbitterdheid	Schuldbesef	Verlangend
Edo	Erhiọ̃		Oyaya	Ikhuiwu: jealousy	Ọkpankpan: anger born of frustration	Irriabe	Da
Eskimo	Nerriungnerk: hope		Assiminik: is zealous	Idluigosuktok		Kangusungnerk: shame	
Guarani	Tẹmbipota	(Ai)py'ạreraha	Akâraku	Terekose	(A)mbopy'a hái	Teko ạngaipa	Tembipota
Hausa	Dōkī	Shà'awā: fascination	Kùzārī	Yi hassadàř	Tàkâicī: frustration	Kunyā: shame	Yi kēwā
Hopi	Unangvas-ta: hope for	Peleleta	Pahinti: get a thrill	Kyan'ew	Unangwmokna: frustrate	Ohihi-ta: be regretting	Kwangwtoya
Hungarian	Mohóság	Leigáz	Lelkesedés	Irigység	Haragitani	Bünössèg	Sóvárgás
Iban	Tengok	Ngerindu: fascinate	Kenanas	Begedi	Lebu: frustrate	Berasai salah	Pengeran
Ifugaw	Gawágo			Áhol		Dup-í	Abtú
Iroquois	Essowotschik enuchwes		Sch: jonigochrachseróni awallie: to excite	Ne jeshwáche	Ne jorihóni sch: ahonáquu	Ne watelichwàtewacht	Ne joniẻhnte
Kanuri	Təma: hope	Hangal gərnjin: it is fascinating	Kəjiro dio	Nəmkəndəli: jealousy		Nongu: shame	Luwawo
Kapauku	Dimi kotopijawii: hope			Bokọ egepumai-i: jealous		Anaanibeu: guiltless	Didi
Khasi	Ba kwah eh	Pynlong mráw	Ka jingshit jingmut	Bishni	Ka jiagpynbitar	Ka jingpalat	Kaba sngew hir hir
Kirundi	Pupa	Kutisha: to fascinate	Msangạo	Uivu	Hasira[a] (aggravation)	Haya: shame	
Klamath	ʔam: hope that			Sqas: be jealous	Nčegi	Sombal: regret	Yordga
Korean	Yŏl-sĭm[a] (enthusiasm)	Hyugŏ: rapture	Yŏl-sĭm[a] (eagerness)	Pu-rŏ-um	Yok-gu-bul-man: frustration	Choe	Yŏl-mang ha-da
Kurd	Tema'kar	Esîr	Dilgermi	Beghîlî pê birdin	Zor tûre	Gunah	Arezû[a] (arousal)
Lahnda	Umeṇd: hope	Ṭoṇṛáṇ: fascination	Juhad: zeal	Ḥasaddí	Bachá karaṇṛ: to frustrate	Ḥayá: shame	Cháṭ
Lau	Maasi ngado: hope		Fane: excited, angry	Ngunungunu		Maasia: shame	Toe
Luganda	Katiiko			Buggya	Ku-fubira: frustrate	Kibi	Ku-wankawanka
Maltese	Xewqan bosta	Jassar	Ħeġġa kbira	Għira	Ħarrax	Ħtija	Xenqa
Masai	O-isiligi: hope		A-rua: be excited	O-lom: jealousy		O-laro: shame	En-kipang'ipang'
Mataco	Ni hayaj: hope		Nomhi: excited	Länthi		Nafw'li: shame	
Mossi	Sageré: hope			Souǹkiri		Koñé bouem	Volem

Neo-Melanesian	Bisipasin		Hot	Manggal		Sem: shame	Daiman
Ojibwe	Gwaashkwezi		Baapinakamigizi: be excited	Ondenim		Agadendaagozi: be ashamed	
Papago	Huh wo: one hopes		Che'owith: excite[a] (torment)	Hehgamthadag		Chu'ichig	
Pemon	Nemueki: to hope	Taremba: to fascinate	Enupen: zealous	Ekeimurun		Puirika: to shame	
Quechua	Suyakuy: hope	Utirayay: be fascinated			K'arallikuy	Hucha	Munapakuy
Serbian	Nadanje: hope	Oduševljenje: rapture[a] (enthusiasm)	Oduševljenje[a] (enthrallment)	Zavist	Lišiti: frustrate	Sramota: shame	Žudnja
Sinhalese[b]	Lolbawa	Waseekaranaya		Eershyawa	Balawath kopaya	Warada	Dadi aasaawa
Somali	Rajaynayya: hope	Waallgu soo daguy: rapture[c]	Udyogaya	Hásad	Taládaydıı bùu khárrı-bay: he frustrated me	'Ebaynayya: shame	Wehélkaagıı bàan u báahaday: I missed you in your absence
Tamil	Avâ	Adimaippaduththu	Argagahayya: excited	Porâmaippadu	Kôpam	Kuttam	Âsai
Thai	Kwam yak dai	Karn tam hai loung	Bakthivairâkkiyam	Kwam it cha	Kwam oud ud	Kwam pid	Kwam prathana
Tibet	Tö̈ö̈ shipuci	Lo-tse chig-dril: rapture[f]	Kwam ka toe roe ron	Ṭhātɔɔ tshāpo	Khong tro long wa[f]	ŋọ tshạpo: shame	Yee-la Ihang-Ihang khor-wa[f]
Tiv	Ishima i veren kegheh: hope		Sīmshuù	Iwuhe	Bundẹ: frustrate	Ibo	Isharẹn
Tiwi			Ishima i mọ̀m				
			Ruwuti kutupi yimi: heart jumps as when excited	Marntumpungwari		Jirti purnikapa -ma	
Tlingit	Á-+a-di-shee: hope	Ka-li-tées'shan: be fascinated		Ya-si-teey: be jealous		Ka-ya-déix': be ashamed	A-+sa-dli-t'aan
Tonga	Loto-fiefai	Fakakāvealoto	Loto-māfana	Meheka	Pāhia	Fakamā: shame	Faka'amua
Touareg	Edel: to hope		Aouechchen: excitation	Enkeż		Oukchef: shame	Anakaż
Truk	Nóómwun aawit		Kkes	Wumwu	Nnú	Tipitipingngaw	Ffóón
Tzeltal	Smuc'ul (y)o'tan: hope	A'beyel chamel: to fascinate		Ti'ti'o'tantaywanej		Smulinej	
Uduk	'Teg kape: hope		Wo'th wo'th: excitedly	'Thoth bwa		'The is: to be ashamed	
Vietnamese	Khí diễm	Quyến rü	Phẫn chí	Ghen ghét	Như chü	Tội	Khao khát
Warao	Waká: to hope	Bitajoró: to fascinate	Yamajabá	Asami		Tomana: shame	Turu
Wolof	Yàkkamti: to be eager for		Rëp: to be exciting	Kañaan: jealousy	Saalit: to be frustrated[c]	Tooñ: to be guilty	Namm: to miss someone
Yahgan	Katega-gadiïa		Kāgat-ēagata: to be greatly excited	Tümūšaii-üa		Ūun-nusiü: to cause shame	Annü-na
Yakut	Омун	Кулут ностуу	Haḥaa үөр	Ордугурҕааһын	Күүрдүү	Буруй	Дьулуһуу
Yoruba	Ìwára	Ayọ̀ nla: rapture	Ìtara: zeal	Ìlara	Ìmúbinu	Ẹ̀bi	Dálọ́rùn
Zulu	Maganga	Huha: fascinate	Dlandla	Ona	Cosula	Hloni: shame	Babelo
Dehu[d]	Mejiun: hope			Ieḳ̈hni		Gelen	
Mazahua[d]	K?ü teb?e: hope		K?ü y?a ne?e kjo randōk?ü: zeal			Tsjeje: shame	
Toaripi[d]				Hilisi		Maeamariti: shame	
Walpiri[d]	Ngurtjutjapa: hope			Mulamaṇi		Kuntu: shame	

(*appendix continues*)

Appendix C (*continued*)

Language	Emotion category					
	Pity	Pride	Relief	Torment	Awe[g]	Interest[h]
Ainu	Erampokiwen-ki	Yaisarama	Kaobiuki ambe	Arakare ambe	Ramu-tui	Akonuptek: interesting
Amhara	Hazäneta	Kurat	Fata	Səqay[a] (agony)	Akbərotawi fərhat	Wäddädä
Aymara	Q'uyapayaña	Kh'elli	Chuyma llamp'uchaña			
Azande	Rụngë	Ḷukë	Ñasa rụngë	Mbugo		Dika
Bemba	Languluka	Cilumba				
Blackfoot	Ohksssamm	Itsiiyihka'si			Ikkstsáánisi	Ippat
Bororo	Cugúdo					Jócu aquêmo
Campa	Neshinoncatantatsiri	Noneaperota	Noavisaacotiri			
Cree	Kitema´kāyimewāo	Kistā´yimoowin	Wechehe´wāwin	Wesukā´yętumehāo	Nunėchē´win	Chėkāyetak: interesting
Cuna	Uilesakua daket	Tule ye sogedi		Tummat pukipinsaet		
Dutch	Medelijden	Hoogmoed	Verlichting	Foltering	Ontzag	Belang
Edo	Tohan	Hio				Agiẹngiẹn
Eskimo	Nikâyok	Piosurinerk				Sudluarnartok: is interesting
Guarani	Tupâvy'a	Py'a guasu	Pytu'u	(A)jeṛereko asy	Hechapyrâ	Ahenduṣe
Hausa	Tàusàyī	Jī-jī dà kâi	Saukī	Àzābā	Àbin àl'ajàbī	Shà'awā
Hopi	Unangwtapna	Himu'iwta		Okiwsahsana	Kyaa-tayta	Qapeevewna
Hungarian	Szánalom	Büszkeség	Enyhülés	Gyötörni	Félelem	Érdekeltség
Iban	Sayau	Penyumbong	Ngelempong	Penusah		
Ifugaw	Homók	Dagtú				
Iroquois	Agotœri	Ne jagonáje	Ne wajehnewāsch			Onóchste
Kanuri	Kanjino	Rokura	Nəske		Danggin	Tamtam
Kapauku	Ipa gai-a	Boko ibo	Utugu ekegai-a			
Khasi	Ka jingsngewsyn-ei	Ka jingsarong	Ka jingpynjem	Jingkordit	Ka jingiphieng	Ka jingiadei
Kirundi	Huruma	Kiburi	Kuseidia	Kusumbua		Kupa faida
Klamath	Yo	Sẹ' ya'mị'a				
Korean	Yŏn-min	Cha-rang	Ku-je	Ko-t'ong	Tu-ryŏ-um	Hŭng-mi
Kurd	Bezeyî	Xobînî	Ṛehetî			Calîb: interesting
Lahnda	Ḅájh	Ákaṛ	Madat ḍewaṇṛ		Bha	
Lau	Laloi	Samolā		Fā nonifī	Mamasā	
Luganda	Ku-saasira	Malala			Okutya: fear[i]	Ku-fayo[i]
Maltese	Ħniena	Kburija	Tinqis	Kien fgħawġ	Beżgħa	Impenn
Masai	Oing'ur	Ol-wuasa			En-kanyit	
Mataco	Palcen	Thai chäj thi		Yethkat no yej		Thakal thi
Mossi	Ninbanzwéré	Titam		Namsego[a] (agony)		

Neo-Melanesian	Marimari	Hambak				
Ojibwe	Gidimaagenim			Aanimi': to make someone suffer	Maamakaadendan: wonder	
Papago	Ho'ige'ith	Gimaimadag	Hewajith	Che'owith[a] (enthusiasm)	Elitha	Chu kaihama
Pemon	Kataiku: sympathy	Tanno-pe tekusen				
Quechua		Apuskachay	Allinyay	Piñas	Manchachikuyniyoq	
Serbian	Sažaljenje	Oholost	Olakšanje	Mučenje	Strah	Zanimljiv
Sinhalese[b]	Anukampawa	Adambaraya	Sahanaya	Mahath peedawa	Wismaya	Prayojanawath: interesting
Somali	Garabayya: sympathy	Kibrinayya: conceit	Fududáynayya	Cadaawad	Amakaag[c]	Hĩísó
Tamil	Irakkam	Perumai	Sagâyam	Vêthanai	Achcham	Paṭcham
Thai	Kwam song san	Kwam poom jai	Kwam poṇdklai	Kwam toramarn	Kwam kreng kahm	Kwam son jai
Tibet	Yaṇa ñĩṇcè	Pōpa	Meèpa söö	Tuqu tĕĕ	Shhey-nang kūl-wa[f]	Yĩŋ
Tiv	Mhộônọm	Imangẹr	Ishima pẹvẹr	Icạn	Mciom	
Tiwi	Putuputuwu					Karrikamini yinkirra
Tlingit	Eeshandéin+ḳaa dàa+tu-ya-tee	Ḳaa tòowoo+ka-li-gei		Eesháan-ch+li-jaaḳ		
Tonga	Mānava'ofa: sympathetic	Loto-pōlepole	Fakamālōlō	Fakamamahi'i	Ofoofo: wonder	Loto-manako
Touareg	Tamella	Aḍhour	Ezz adker	Toussist		
Truk	Mú	Ennimet	Ngaséseni	Riyáffέw[a] (agony)	Kinissowiiti	Piit: lose one's interest
Tzeltal	C'uxultayel	Toybahil	Lecuben	Ch'aquisel		Laj yipin yo'tan
Uduk		Kar is ki wathi				
Vietnamese	Lòng thương	Kiêu căng	Hét lo-âu	Thống khổ	Sợ	Chú ý
Warao		Ajitoma	Río daitá	Isanamatá		A mejowaitu ja
Wolof	Njaal: sympathy	Tiitër	Coonoom . . . jééx[c]: to feel relieved		Doy na keeman[c]: it is awe-inspiring	Xelam . . . mungi ci[c]: to be interested in
Yahgan	Önimāgū	Šūwönat-ata	Ūpulla-teka			
Yakut	Аһыныы	Киэн	Чэпчэтии	Эрэй	Титирэстээһин	Кэрэхсэбил
Yoruba	Ãnú	Ìrera	Ìranlọ́wọ́	Ìdáloro		Kán
Zulu	Hawu	Lunda	Mpumuzo	Fakabili	Esabeka	Nako
Dehu[d]	Imeku: to sympathize	Pi tru	Sajuën	Aeaen		
Mazahua[d]	Jwënts'ete	Ñambga	Tjisi			
Toaripi[d]	Maeaforoe	Maeamarōva	Safefeapai			
Walpiri[d]	Kanaṛutjaṛi					

[a] Identifies Shaver et al.'s (1987) composite cluster categories. The superscripted emotion term identifies the linked term of the composite category. [b] We are indebted to H. Navaratne at the Embassy of the Democratic Socialist Republic of Sri Lanka for romanizing the Sinhalese script. [c] P. Munro, personal communication, December 26, 1996. [d] The language is not in the Human Relations Area Files. It is a language with fewer than one million speakers. [e] Personal communication with a speaker of Somali. [f] We are indebted to Lobsang Jamyang Lama of the Thubten Dhargye Ling Buddhist Center in Long Beach, CA, for romanizing the Tibetan script. [g] This emotion category was not included in Shaver et al.'s (1987) categories. Ekman (1994) considered awe to be an emotion. [h] This emotion category was not included in Shaver et al.'s (1987) categories. Izard (1977) viewed interest as a fundamental emotion. [i] Personal communication on February 3, 1997, with a speaker of Luganda, B. Ssensalo.

(*Appendixes continue*)

Appendix D

Emotion Words in the Target Language That Refer to More Than One of Shaver et al.'s (1987) Cluster Categories

Target language and emotion word	Cluster category
Ainu	
Eyaitupa[a]	To be eager to do (eagerness); to desire (arousal)
Ramu-tui	To be awed[b] (awe[b]); to be frightened (alarm)
Yaikatekara[a]	To long for (longing); to feel anxious about (anxiety); to love (adoration)
Amhara	
Dənəggaṭe	Alarm (alarm); dismay (dismay)
Səqay	Agony (agony); torment (torment)
Aymara (Spanish)	
Kusisiña	To have pleasure (contentment); to enjoy (amusement)
Azande (French)	
Sanza	Jealousy (envy); longing, desire for (longing)
Bemba	
Fulwa[a]	To be angry (anger); displeased (dismay)
Fwaisha[a]	To be eager (eagerness); desire much (arousal)
Languluka[a]	To be sad, be sorry for (depression); pity (pity); feel compassion for (adoration)
Temwa[a]	To love (adoration); be happy, satisfied (amusement); be content, pleased (contentment)
Blackfoot	
Ipisatsi'taki	Be amazed (amazement); be fascinated (enthrallment)
I'táám[a]	Pleasant (contentment); happy (amusement)
Bororo (Portuguese)	
Pagúdo	Fear (alarm); dread (anxiety)
Quearigôdo	To suffer (agony); homesickness (alienation); longing (longing)
Campa (Spanish)	
Neshinoncatantatsiri[a]	Compassion (adoration); pity (pity)
Cree	
Chéka'yétum[a]	Happy (amusement); zealous (enthusiasm)
Kewusā'yimāo[a]	Longing (longing); grief (depression)
Kisewa'hāo[a]	Anger (anger); irritate (aggravation)
Kisewa'sewin[a]	Anger, wrath (anger); passion (arousal)
Kitema'kāyimewāo[a]	Pity (pity); compassion (adoration)
Nunéchēwin[a]	Awe (awe[b]); dread (anxiety); fear (alarm)
Otumā'yetumoowin[a]	Anxiety (anxiety); care (adoration)
Wesukā'yétumehāo[a]	Torment (torment); make suffer (agony)
Edo	
Da[a]	Longing (longing); desire (arousal)
Ikhọẹko[a]	Displeasure (dismay); unhappiness (depression)
Ikhuiwa[a]	Jealousy (envy); hatred (anger)
Hausa	
Bakin cikì[a]	Depression (depression); dejection (alienation); regret (guilt)
Shà'awà	Interest[b] (interest[b]); fascination (enthrallment)
Hopi	
Okiwsahsana[a]	Annoy (aggravation); torment (torment)
Hungarian	
Félelem[a]	Horror (alarm); awe (awe[b]); dread (anxiety)
Ifugaw	
Gawágo[a]	Desire (arousal); eager (eagerness)
Homók[a]	Compassion (adoration); pity (pity)
Kágu[a]	Worry (anxiety); fear (alarm)
Kanuri	
Kurnotəkin[a]	Be happy (amusement); pleased (contentment)
Luwawo[a]	Longing (longing); desire (arousal)
Nongu[a]	Shame (guilt); embarrassment (alienation)
Səgələkcin[a]	Be unhappy (depression); irritated (aggravation)
Kapauku	
Didi[a]	Hurt (agony); to long for (longing); sick,[b] ache[b]
Idé gai-a[a]	Like, love (adoration); desire (arousal)
Ipa gai-a[a]	Pity (pity); to have compassion (adoration)
Tokii[a]	To be alarmed (alarm); surprised (amazement); to be startled[b]
Utugu ekegai-a[a]	To be relieved (relief); happy (amusement)

Appendix D (*continued*)

Target language and emotion word	Cluster category
Kirundi (French)	
Hasira	Irritation (aggravation); exasperation (exasperation)
Razi[a]	Content, pleased (contentment); glad (amusement)
Klamath	
Nčegi[a]	Become exasperated (exasperation); angry (anger)
Q'oy'[a]	Be disgusted (disgust); annoyed (aggravation); hate (anger)
Wič[a]	Be anxious (anxiety); desirous (arousal)
Korean	
Yŏl-sĭm	Eagerness (eagerness); enthusiasm (enthusiasm)
Kurd (French)	
Arezû	Desire (arousal); longing (longing)
Lahnda	
Bha[a]	Fear, terror, alarm (alarm); dread (anxiety); awe (awe)[b]
Lau	
Fane[a]	Excited (enthusiasm); angry (anger)
Mamasā	To be in awe[b] (awe[b]); afraid (alarm)
Toe[a]	To long for (longing); desire (arousal); want[b]
Mataco	
Koj-thi[a]	Pleased, contented (contentment); satisfied, cheerful, happy (amusement); merry[b]
Yethkat no yej[a]	Torments me (torment); annoys me (aggravation)
Mossi	
Namsego	Anguish, suffering (agony); torment (torment)
Sousaoñgo[a]	Unhappiness, sorrow (depression); disappointment (dismay)
Volem[a]	Desire (arousal); longing (longing)
Neo-Melanesian	
Bel i-nogut[a]	To be sad (depression); disappointed (dismay); uneasy (anxiety); penitent,[b] to feel remorse for having done something wrong (guilt)
Daiman[a]	To long for (longing); to desire (arousal)
Guria[a]	To be nervous (anxiety); afraid (alarm)
Kalap nogut[a]	To be astonished, amazed (amazement); horrified (alarm)
Manggal[a]	To long for (longing); envy (envy); desire strongly (arousal); to covet[b]
Sem[a]	Shame (guilt); embarrassment (alienation)
Ojibwe	
Agadendaagozi[a]	Be ashamed (guilt); be embarrassed (alienation)
Gashkendam[a]	Be lonely (alienation); be sad (depression)
Maamakaadendan	Be amazed, astonished (amazement); wonder[b] at (awe[b])
Minjinawezi[a]	Have regrets (guilt); be disappointed (dismay)
Papago	
Che'owith	Excite (enthusiasm); torment (torment); offend[b]
Hohho'ithadag[a]	Enjoyment (amusement); pleasure (contentment); admiration,[b] appreciation[b]
Tachchuithag	Love (adoration); desire (arousal); a need[b]
Pemon (Spanish)	
Auchin[a]	Content (contentment); happy (amusement)
Enupen[a]	Zealous (enthrallment); jealous (envy)
Quechua	
Manchachikuyniyoq	Frightening (alarm); awe-inspiring[b] (awe[b])
Munapakuy[a]	Desire (arousal); longing (longing)
Munay[a]	Desire (arousal); love (adoration)
K'arallikuy[a]	Be furious (anger); exasperated (exasperation)
Piñas[a]	Grief (depression); torment (torment)
Q'amparmanakuy[a]	Depression (depression); dejection (alienation)
Utirayay[a]	Be amazed (amazement); be fascinated (enthrallment)
Serbian	
Oduševljenje	Rapture (enthrallment); enthusiasm (enthusiasm)
Tamil	
Manakkalakkam	Depression of mind (depression); dismay (dismay)
Tibetan	
ŋo tshapo[a]	Shame (guilt); embarrassment (alienation)

(*Appendix continues*)

Appendix D (*continued*)

Target language and emotion word	Cluster category
Tiwi	
-Mampa[a]	To get fright (alarm); to be nervous (anxiety)
Putuputuwu[a]	Feel sorry, sorrow (depression); pity (pity)
Ruwuti kutupi yimi[a]	For someone's heart to jump as when excited (enthusiasm); frightened (alarm)
Tlingit	
Á-+a-di-shee[a]	Hope (eagerness); desire (arousal)
Tonga	
Mānava'ofa[a]	Compassionate (adoration); sympathetic (pity)
Ofoofo	To be in a state of surprise (amazement); to be in a state of wonder[b] (awe[b])
Truk	
Amwaaraar[a]	Be pleasure-giving (contentment); amusing, delightful (amusement); entertaining,[b] interesting,[b] charming,[b] wonderful,[b] praiseworthy[b]
Mááyirú[a]	Alarmed, frightened (alarm); astonished, surprised (amazement); scared[b]
Mú[a]	Feel pity (pity); feel sad (depression); be full of emotion
Riyáffέw[a]	Torment (torment); anguish, suffering (agony); misery (depression); distress (anxiety)
Weyit-ffengenniiy[a]	Astonish (amazement); dismay (dismay); startle,[b] astound[b]
Uduk	
'The is[a]	To be ashamed (guilt); to be saddened (depression)
Vietnamese	
Lòng thương[a]	Compassion (adoration); pity, sympathy (pity)
Quyến rũ[a]	To attract (adoration); enthrall (enthrallment); enchant,[b] seduce[b]; captivate[b]
Sợ'[a]	To stand in awe[b] of (awe[b]); to feel frightened (alarm); to dread (anxiety)
Thống khổ[a]	Suffering (torment); unhappy (depression)
Vui lòng[a]	Content, pleased (contentment); glad (amusement)
Wolof	
Bànneex[a]	Pleasure (contentment); happiness, satisfaction (amusement)
Yoruba	
Ãnú[a]	Pity (pity); compassion (adoration)
Ìfẹ́[a]	Love (adoration); desire (arousal)
Ìtẹ́lọ́rùn[a]	Contentment (contentment); satisfaction (amusement)
Zulu	
Babelo[a]	Desire (arousal); longing (longing)
Cosula[a]	Irritate (aggravation); exasperate (exasperation)
Dana[a]	Be sad, depressed (depression); worried (anxiety)
Enama[a]	Be happy (amusement); contented (contentment)
Huha[a]	Attract (adoration); fascinate (enthrallment); entice[b]
Khánu[a]	Desire, lust (arousal); envy (envy)
Maganga[a]	Passion (arousal); eagerness (eagerness)
Thando[a]	Affection, love (adoration); desire (arousal)
Toaripi[c]	
Haiiri safefeapai[a]	To be satisfied (amusement); to be content (contentment)
Haiisoi	To be alarmed (alarm); dismayed (dismay)
Haikakare loi[a]	To love (adoration); to desire (arousal)
Haikavora[a]	Anxiety, worry (anxiety); care (adoration)
Kitou[a]	Anger, wrath (anger); annoyance (aggravation)

[a] This word is not categorized in the data analysis as a composite of two or more of Shaver et al.'s (1987) cluster categories because an alternative, noncomposite word is available for the other category or categories. [b] Neither a Shaver et al. (1987) cluster label nor an emotion category. [c] This language is not in the Human Relations Area Files. It is a language that has fewer than one million speakers.

Received April 14, 1998
Revision received February 16, 1999
Accepted February 25, 1999 ■