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Acquisition of Emotion-Descriptive Language: Receptive and Productive Vocabulary Norms for Ages 18 Months to 6 Years

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Normative data on children's ability to understand emotion-descriptive adjectives when used by adults and their own use of these words in productive vocabulary were collected in nine age ranges from 18 months to 71 months. Within each age range, 30 parents reported on comprehension and use of 125 adjectives that adults had rated most basic (vs. derived) among the complete set of 518 adjectives that describe emotion in the English language. Split-half reliabilities for norms on the percentage of children understanding and percentage of children using the 124 adjectives ranged from .91 to .96 and from .92 to .96, respectively. In addition to their obvious applications in the study of semantic development and use of emotion-related verbal labels, these norms enable researchers to take vocabulary development into account when selecting stimulus materials or preparing verbal instructions for research on mood and emotion in very young children.

Emotion-descriptive language has recently received a great deal of attention in developmental research. This has been especially true in research concerned with relations between affect and cognition in emotional development. For example, the connotative meanings of emotion-descriptive adjectives and their use in description of facial expressions have been investigated by Izard (1971), Russell and Ridgeway (1983), and Bullock and Russell (1984). Children's responses to role play labeled *fear, anger, sadness,* or *happiness* have been employed in developmental studies of empathy (e.g., Farber & Moley, 1979; Trabasso, Stein, & Johnson, 1981) and in studies of children's attributions regarding the antecedents, expression, and consequences of emotional states (e.g., Bretherton & Beeghly, 1982; Weiner, Graham, Stern, & Lawson, 1982). Finally, emotion-descriptive labels have been used as stimuli in a number of studies on mood induction and the effects of induced mood on children's behavior (e.g., Barden, Garber, Duncan, & Masters, 1981; Masters, Barden, & Ford, 1979; Ridgeway & Waters, 1985).

In a recent longitudinal study of 30 children, Bretherton, McNew, and Beeghly (1981) and Bretherton and Beeghly (1982) collected maternal reports on the use of emotion-descriptive language during the second and third year of life. Their data indicated that emotion-descriptive language first emerges at around 20 months of age and increases rapidly during the third year. The goals of the present study were to identify the emotion-descriptive adjectives that are most likely to be understood and used in early childhood and to collect cross-sectional norms on age of acquisition for receptive and productive vocabulary. Previous research with both adults (Russell, 1980) and children (Russell & Ridgeway, 1983) has demonstrated that the domain of emotion-descriptive adjectives has a distinctive circumplex structure organized around two bipolar axes (pleasure–unpleasure and arousal–unarousal). For the present research, we collected data on a large enough set of words to insure good representation of the entire domain. Reports of both receptive and productive vocabulary were collected because this distinction encourages parents to consider the basis for their reports carefully and because one type of data or the other might be more useful in a particular application.

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Method

Subjects

Twelve psychology graduate students participated in the rating procedures used to select items for this study. The parents of 270 toddlers, preschoolers, and kindergarten children provided data on 30 children in each 6-month age period from 18 to 71 months. The mean ages for the nine 6-month age groups were 20.8, 26.4, 32.9, 38.2, 44.0, 50.4, 62.6, and 69.3 months. The families that participated in the study were suburban, white, middle-class, and high school or college educated. English was the first language for every child included in the study. Approximately equal numbers of boys and girls were included at each age.

Materials

Taxonomic research (e.g., Wiggins, 1979) has indicated that the vocabulary of emotion-descriptive adjectives in English is quite large. The materials for the present research were selected from the list of 518 mood-descriptive adjectives compiled by Wiggins (1979) and Russell (1980). The list of 518 words had been compiled by reviewing an unabridged dictionary for terms referring to emotion and eliminating obscure, archaic, and inappropriate entries. The remaining words include conventional emotion-descriptive terms (*happy, sad, angry,* etc.); synesthetic terms that draw upon analogies between sensory experiences (e.g., the color *blue*) and mood states (e.g., *sad*); and words that refer to emotions experienced during particular activities or circumstances by referring to the activities or circumstances themselves (e.g., *messy, cruel*).

The Thorndike and Lorge (1944) general word count and juvenile word count indicated that most mood-descriptive adjectives occur at very low frequencies in the written language. Moreover, Carroll and White (1973) have indicated that age of acquisition is not necessarily highly correlated with either frequency of exposure at a particular age or cumulative exposure across age. Because word frequency did afford a suitable criterion for selecting materials, we asked 12 psychology graduate students to indicate how basic or derived each of the 518 items in the initial item pool was, using a 1–8 Likert format. A *derived* word was defined as one that is typically defined by qualifying more basic mood-descriptive adjectives. A more *basic* word is one that cannot be defined in terms of combinations of other emotions. The mean intercorrelation among raters across the 518 words was $r(516) = .72$, $p < .001$, and the internal consistency reliability of the mean ratings was .84. The correlation between our basic–derived scores and data on how prototypical these terms are as descriptions of emotion (Fehr & Russell, 1984) was $r(516) = .52$, $p < .001$. In consideration of (a) how many items we anticipated parents would agree to complete, (b) how difficult words appeared to be toward the more derived end of the scale, and (c) the degree to which the terms became atypical emotion descriptors as they became more derived, we selected the 125 most basic words from the list of 518 for inclusion in this study. Owing to a typographical error (*bitter* mistyped as *better*) the data for one word had to be discarded.

Age of Acquisition Norms

To assess children's knowledge and use of emotion-descriptive adjectives, parents were provided with a checklist of the 125 most basic items from the Wiggins (1979) and Russell (1980) item pool and were asked to indicate which words their child (a) would understand when someone else used them to describe a mood or feeling and (b) ever used to refer to his or her own or to other people's moods or feelings. The parents were instructed that they should only check a word if their child understood or used the exact word listed (i.e., they were not to credit synonyms). In addition, they were told that repeating a word immediately after an adult uses it should not be counted as use by the child. Finally, instructions to the parents emphasized that some of the words on the checklist (e.g., *clean, blue*) can be used in ways that do not refer to mood or emotion and that they should only check words that were understood or used specifically in reference to mood or emotion.

Results

Basic-Derived Ratings

The mean basic–derived rating was 4.81 ($SD = 1.08$, range = 2.50–8.00). To clarify the basis for selection of items included in these norms, the complete list of 518 mood-descriptive adjectives was rank ordered in terms of mean basic–derived ratings and divided at intervals of 60 words. The first 5 words in each interval are presented in Table 1. The 125 most basic items include most of the mood-descriptive adjectives that are used or understood in early childhood, and the words that are more derived than these rapidly become abstract and less relevant for research applications in this age range.

In the full set of 518 words, the correlations between basic–derived ratings and Thorndike and Lorge (1944) frequencies were $r(454) = .40$, $p < .001$, for 456 words included in the general count, and $r(450) = .36$, $p < .001$, for 452 words included in the juvenile count.

Receptive and Productive Vocabulary

The proportion of the 30 children described as (a) understanding and (b) using each word was computed for each age. The reliability of the data was estimated from the correlation between randomly selected sets of 15 subjects at each age using the Spearman-Brown formula (Ghiselli, Campbell, & Zedeck, 1981). Norms for receptive and productive vocabulary development are presented along with the

Table 1
The Basic–Derived Distinction: Representative Items

Rank order of mean basic–derived rating	Items
1–5	Happy, afraid, angry, mad, sad
61–65	Calmed, rested, quiet, lost, active
121–125	Unafraid, free, fed up, weary, mild
181–185	Slow, ungrateful, unsafe, rough, still
241–245	Bound up, controlled, intense, roused, peppy
310–305	Collected, despising, strained, willful, untroubled
361–365	Resolved, woeful, unshaken, on edge, stumped
421–425	Badgered, activated, infatuated, unoffended, wistful
481–485	Lulled, tantalized, jarred, gloating, enlivened
514–518	Ablaze, bemuddled, clutched up, diverted, encumbered

reliability data in Table 2. The items are presented in order of difficulty (age at which 50% of the sample reportedly understood the word).

Across the entire age range, basic–derived ratings were correlated .50 with the ages at which 50% of the children were said to understand the words, and .50 with the ages at which 50% of the children were reported to use the words. Thorndike–Lorge general count and juvenile count frequencies correlated .39 ($n = 121$, $p < .001$) and .43 ($n = 119$, $p < .001$) with age of 50% understanding, and .42 ($n = 121$, $p < .001$) and .45 ($n = 119$, $p < .001$) with age of 50% use.

Intercorrelations Among Descriptive Measures

To summarize the relations among basicness ratings, frequency in written (Thorndike & Lorge, 1944) and spoken (Kucera & Francis, 1967) language, prototypicality (Fehr & Russell, 1984), and the present acquisition norms, correlations among these scores were computed across the complete set of 124 terms. Within age ranges, correlations between mean age of acquisition and prototypicality were small (range = .15 to .25). Correlations between mean age of acquisition and frequency in the spoken language were consistently higher and statistically significant (range = .22 to .39, $p < .01$). Prototypicality and basicness were correlated −.05 and .07 with frequency. Across all ages, the multiple correlation relating basicness and Kucera–Francis frequency norms to age of acquisition was .56, $F(2, 121) = 27.64$, $p < .001$.

Discussion

The English language offers an impressive array of terms for describing emotion. The present study provides normative data on children's knowledge and use of a significant subset of these terms. The words included in the study represent each of the quadrants of the bipolar semantic space (pleasure–unpleasure and arousal–unarousal) identified in research on adults (e.g., Russell, 1980) and elementary age children (Russell & Ridgeway, 1983). Within each quadrant, they cover the full range of basic (e.g., *sad, mad, happy, excited*) and derived (e.g., *worthless, stubborn, satisfied, tense*) words that might be of interest in research on preschool-age children. Moreover, the items cover the full range of difficulty within each of nine age ranges. Finally, the sample sizes were large enough to yield extremely reliable data on both receptive and productive vocabulary at each age. Furthermore, our findings are consistent with previous data on published diaries (Bretherton et al., 1981), maternal report (Bretherton & Beeghly, 1982), and natural language transcripts (Kuczaj & Clark, 1982).

The generalizability of these data is not limited by the particular social class of the sample studied. Although the exact ages of acquisition may vary according to social class, ethnic background, and so forth, the order of acquisition will be similar. In practical application, selection of words from a younger range will ensure the words known or used by the sample being investigated.

A catalog of words together with age norms can be extremely useful to researchers in early emotional development. The role of emotion language has become very important in the study of children's understanding of emotion.

(*text continued on page 907*)

Table 2
Percentage Knowing and Percentage Using (in Parentheses) Mood-Descriptive Adjectives

BR	Item	AR	Age in months								
			18–23	24–29	30–35	36–41	42–47	48–53	54–59	60–65	66–71
47	Sleepy	107	83.3 (36.7)	93.3 (60.0)	96.7 (86.7)	86.7 (83.3)	100.0 (96.7)	100.0 (90.0)	96.7 (90.0)	100.0 (86.7)	100.0 (96.7)
54	Hungry	70	83.3 (36.7)	90.0 (73.3)	90.0 (86.7)	100.0 (100.0)	100.0 (96.7)	96.7 (93.3)	93.3 (93.3)	100.0 (93.3)	93.3 (93.3)
21	Good	60	76.7 (50.0)	93.3 (73.3)	93.3 (86.7)	100.0 (100.0)	93.3 (93.3)	96.7 (96.7)	93.3 (93.3)	96.7 (90.0)	100.0 (96.7)
1	Happy	62	76.7 (36.7)	90.0 (73.3)	93.3 (86.7)	100.0 (96.7)	96.7 (93.3)	100.0 (100.0)	93.3 (90.0)	100.0 (96.7)	100.0 (96.7)
101	Clean	29	70.0 (26.7)	70.0 (60.0)	73.3 (63.3)	93.3 (93.3)	73.3 (70.0)	83.3 (83.3)	73.3 (73.3)	76.7 (63.3)	86.7 (80.0)
42	Tired	116	56.7 (23.3)	90.0 (66.7)	90.0 (83.3)	96.7 (93.3)	100.0 (96.7)	96.7 (96.7)	100.0 (96.7)	100.0 (90.0)	96.7 (93.3)
5	Sad	101	50.0 (6.7)	63.3 (50.0)	96.7 (73.3)	90.0 (86.7)	93.3 (90.0)	100.0 (93.3)	93.3 (90.0)	100.0 (90.0)	100.0 (93.3)
2	Afraid	3	46.7 (10.0)	66.7 (50.0)	90.0 (73.3)	86.7 (83.3)	96.7 (93.3)	100.0 (93.3)	93.3 (83.3)	100.0 (86.7)	100.0 (93.3)
38	Busy	22	46.7 (6.7)	53.3 (43.3)	83.3 (80.0)	86.7 (83.3)	90.0 (86.7)	96.7 (86.7)	93.3 (93.3)	93.3 (83.3)	96.7 (93.3)
62	Quiet	95	43.3 (13.3)	90.0 (56.7)	90.0 (73.3)	96.7 (90.0)	100.0 (90.0)	93.3 (93.3)	86.7 (86.7)	96.7 (86.7)	100.0 (90.0)
3	Angry	10	43.3 (10.0)	63.3 (23.3)	90.0 (70.0)	90.0 (80.0)	96.7 (76.7)	100.0 (86.7)	96.7 (73.3)	96.7 (83.3)	100.0 (96.7)
75	Helpful	65	26.7 (10.0)	70.0 (13.3)	83.3 (30.0)	83.3 (66.7)	93.3 (60.0)	86.7 (50.0)	76.7 (56.7)	86.7 (73.3)	96.7 (70.0)
4	Mad	84	36.7 (13.3)	66.7 (50.0)	80.0 (73.3)	90.0 (80.0)	100.0 (100.0)	100.0 (100.0)	90.0 (90.0)	96.7 (80.0)	96.7 (86.7)
12	Scared	104	23.3 (10.0)	60.0 (56.7)	93.3 (80.0)	93.3 (83.3)	93.3 (90.0)	96.7 (93.3)	96.7 (86.7)	96.7 (90.0)	100.0 (96.7)
14	Loving	81	33.3 (6.7)	53.3 (23.3)	73.3 (46.7)	83.3 (50.0)	80.0 (50.0)	90.0 (50.0)	86.7 (50.0)	86.7 (46.7)	96.7 (63.3)
48	Warm	122	23.3 (16.7)	50.0 (26.7)	60.0 (46.7)	66.7 (60.0)	66.7 (60.0)	60.0 (46.7)	76.7 (56.7)	66.7 (56.7)	70.0 (56.7)
99	Strong	108	13.3 (6.7)	46.7 (20.0)	70.0 (50.0)	73.3 (60.0)	80.0 (73.3)	83.3 (76.7)	90.0 (83.3)	90.0 (66.7)	86.7 (80.0)
73	Liking	77	23.3 (6.7)	46.7 (23.3)	66.7 (50.0)	73.3 (53.3)	73.3 (40.0)	76.7 (50.0)	80.0 (50.0)	86.7 (63.3)	90.0 (66.7)
51	Friendly	52	26.7 (3.3)	40.0 (10.0)	76.7 (40.0)	90.0 (53.3)	86.7 (73.3)	93.3 (66.7)	90.0 (70.0)	96.7 (83.3)	96.7 (83.3)
40	Alone	9	26.7 (3.3)	40.0 (30.0)	73.3 (53.3)	96.7 (76.7)	86.7 (73.3)	100.0 (83.3)	86.7 (80.0)	100.0 (86.7)	93.3 (83.3)
24	Mean	85	23.3 (0.0)	36.7 (23.3)	76.7 (50.0)	80.0 (56.7)	76.7 (66.7)	76.7 (70.0)	86.7 (83.3)	90.0 (73.3)	90.0 (80.0)
57	Surprised	99	10.0 (3.3)	20.0 (13.3)	76.7 (43.3)	73.3 (60.0)	83.3 (60.0)	93.3 (70.0)	83.3 (80.0)	83.3 (76.7)	100.0 (90.0)
74	Gentle	57	40.0 (3.3)	40.0 (20.0)	63.3 (53.3)	70.0 (50.0)	80.0 (63.3)	80.0 (60.0)	83.3 (70.0)	86.7 (63.3)	96.7 (66.7)
26	Comfortable	30	20.0 (3.3)	40.0 (13.3)	63.3 (36.7)	80.0 (70.0)	86.7 (63.3)	80.0 (73.3)	93.3 (73.3)	83.3 (76.7)	86.7 (80.0)
10	Excited	48	26.7 (3.3)	36.7 (6.7)	63.3 (30.0)	83.3 (46.7)	83.3 (60.0)	83.3 (66.7)	86.7 (60.0)	86.7 (76.7)	96.7 (80.0)
59	Cooperative	35	3.3 (0.0)	16.7 (6.7)	63.3 (23.3)	50.0 (30.0)	56.7 (33.3)	56.7 (33.3)	56.7 (16.7)	60.0 (30.0)	83.3 (56.7)
63	Lost	80	16.7 (10.0)	36.7 (23.3)	56.7 (50.0)	73.3 (56.7)	76.7 (66.7)	73.3 (66.7)	83.3 (60.0)	80.0 (63.3)	76.7 (63.3)
91	Awful	18	3.3 (0.0)	16.7 (6.7)	56.7 (50.0)	60.0 (33.3)	66.7 (36.7)	56.7 (46.7)	53.3 (46.7)	76.7 (66.7)	83.3 (60.0)
34	Upset	121	10.0 (0.0)	30.0 (3.3)	53.3 (10.0)	60.0 (36.7)	83.3 (46.7)	83.3 (43.3)	73.3 (26.7)	76.7 (50.0)	96.7 (76.7)
13	Glad	58	3.3 (0.0)	30.0 (3.3)	50.0 (26.7)	80.0 (53.3)	86.7 (63.3)	76.7 (63.3)	83.3 (56.7)	96.7 (76.7)	96.7 (90.0)
7	Frightened	53	6.7 (0.0)	33.3 (13.3)	50.0 (13.3)	80.0 (56.7)	76.7 (53.3)	76.7 (56.7)	80.0 (33.3)	93.3 (53.3)	93.3 (66.7)
77	Uncomfortable	119	6.7 (0.0)	16.7 (0.0)	50.0 (23.3)	63.3 (23.3)	63.3 (33.3)	70.0 (50.0)	70.0 (33.3)	70.0 (50.0)	83.3 (60.0)
16	Unhappy	120	3.3 (0.0)	10.0 (3.3)	50.0 (13.3)	50.0 (30.0)	66.7 (30.0)	56.7 (30.0)	66.7 (33.3)	90.0 (46.7)	80.0 (60.0)
32	Relaxed	97	6.7 (0.0)	16.7 (6.7)	46.7 (10.0)	63.3 (33.3)	56.7 (23.3)	66.7 (26.7)	70.0 (26.7)	76.7 (46.7)	83.3 (60.0)
44	Enjoying	46	6.7 (0.0)	13.3 (3.3)	43.3 (6.7)	70.0 (30.0)	46.7 (13.3)	63.3 (26.7)	70.0 (36.7)	66.7 (40.0)	96.7 (53.3)
11	Bored	21	13.3 (3.3)	6.7 (6.7)	36.7 (13.3)	63.3 (50.0)	70.0 (53.3)	83.3 (56.7)	76.7 (60.0)	93.3 (80.0)	100.0 (93.3)
28	Healthy	64	3.3 (0.0)	6.7 (6.7)	33.3 (13.3)	63.3 (36.7)	56.7 (26.7)	76.7 (50.0)	60.0 (30.0)	86.7 (56.7)	93.3 (60.0)

Table 2 (*continued*)

BR	Item	AR	Age in months								
			18–23	24–29	30–35	36–41	42–47	48–53	54–59	60–65	66–71
25	Lazy	76	3.3 (0.0)	16.7 (3.3)	20.0 (6.7)	60.0 (26.7)	60.0 (26.7)	76.7 (36.7)	76.7 (40.0)	73.3 (56.7)	80.0 (70.0)
65	Safe	102	13.3 (0.0)	26.7 (3.3)	40.0 (20.0)	56.7 (33.3)	66.7 (33.3)	73.3 (40.0)	76.7 (43.3)	86.7 (66.7)	86.7 (60.0)
6	Lonely	78	3.3 (0.0)	10.0 (6.7)	43.3 (23.3)	56.7 (36.7)	63.3 (40.0)	66.7 (40.0)	80.0 (60.0)	86.7 (66.7)	76.7 (46.7)
70	Alive	8	3.3 (0.0)	20.0 (10.0)	20.0 (16.7)	56.7 (43.3)	63.3 (50.0)	70.0 (53.3)	60.0 (43.3)	76.7 (50.0)	76.7 (50.0)
61	Rested	99	10.0 (0.0)	16.7 (3.3)	43.3 (16.7)	53.3 (20.0)	66.7 (46.7)	66.7 (36.7)	63.3 (30.0)	70.0 (26.7)	66.7 (30.0)
115	Interested	72	3.3 (0.0)	10.0 (3.3)	40.0 (3.3)	53.3 (30.0)	56.7 (30.0)	50.0 (20.0)	36.7 (20.0)	63.3 (40.0)	76.7 (50.0)
85	Annoyed	11	13.3 (0.0)	10.0 (0.0)	33.3 (0.0)	53.3 (23.3)	53.3 (23.3)	53.3 (20.0)	63.3 (26.7)	83.3 (36.7)	90.0 (50.0)
96	Lucky	83	0.0 (0.0)	20.0 (10.0)	36.7 (16.7)	53.3 (40.0)	50.0 (40.0)	73.3 (53.3)	80.0 (56.7)	80.0 (73.3)	86.7 (90.0)
81	Disappointed	40	0.0 (0.0)	16.7 (0.0)	36.7 (6.7)	50.0 (10.0)	46.7 (23.3)	60.0 (23.3)	63.3 (20.0)	66.7 (30.0)	96.7 (60.0)
87	Ashamed	14	0.0 (0.0)	3.3 (0.0)	10.0 (0.0)	46.7 (26.7)	30.0 (13.3)	33.3 (13.3)	36.7 (13.3)	63.3 (23.3)	63.3 (30.0)
29	Shy	106	20.0 (0.0)	30.0 (10.0)	36.7 (16.7)	43.3 (26.7)	66.7 (50.0)	73.7 (60.0)	60.0 (53.3)	86.7 (73.3)	93.3 (63.3)
106	Pleased	93	0.0 (0.0)	20.0 (3.3)	40.0 (3.3)	43.3 (23.3)	60.0 (26.7)	60.0 (13.3)	43.3 (16.7)	76.7 (16.7)	80.0 (43.3)
35	Worried	124	0.0 (0.0)	6.7 (3.3)	26.7 (6.7)	40.0 (23.3)	60.0 (36.7)	66.7 (33.3)	60.0 (40.0)	66.7 (50.0)	86.7 (56.7)
9	Calm	23	10.0 (0.0)	6.7 (3.3)	30.0 (6.7)	33.3 (23.3)	56.7 (26.7)	73.3 (50.0)	66.7 (36.7)	60.0 (26.7)	80.0 (56.7)
46	Embarrassed	45	3.3 (0.0)	6.7 (0.0)	16.7 (6.7)	36.7 (23.3)	53.3 (23.3)	63.3 (16.7)	53.3 (23.3)	76.7 (43.3)	76.7 (43.3)
17	Hating	63	0.0 (0.0)	6.7 (0.0)	33.3 (20.0)	43.3 (36.7)	46.7 (26.7)	60.0 (40.0)	63.3 (46.7)	76.7 (63.3)	80.0 (53.3)
53	Lonesome	79	0.0 (0.0)	10.0 (6.7)	36.7 (16.7)	30.0 (16.7)	46.7 (33.3)	43.3 (20.0)	50.0 (26.7)	60.0 (40.0)	60.0 (36.7)
52	Affectionate	2	10.0 (0.0)	3.3 (0.0)	16.7 (0.0)	26.7 (0.0)	46.7 (6.7)	30.0 (3.3)	30.0 (3.3)	20.0 (3.3)	43.3 (10.0)
33	Confused	33	6.7 (0.0)	3.3 (0.0)	33.3 (0.0)	26.7 (20.0)	43.3 (16.7)	56.7 (23.3)	53.3 (13.3)	70.0 (36.7)	80.0 (53.3)
49	Nervous	90	0.0 (0.0)	10.0 (3.3)	6.7 (3.3)	36.7 (10.0)	33.3 (6.7)	53.3 (30.0)	26.7 (6.7)	53.3 (33.3)	83.3 (46.7)
121	Free	51	10.0 (3.3)	6.7 (6.7)	23.3 (10.0)	23.3 (10.0)	36.7 (6.7)	50.0 (23.3)	46.7 (16.7)	63.3 (46.7)	70.0 (46.7)
83	Disgusted	41	0.0 (0.0)	6.7 (0.0)	30.0 (6.7)	36.7 (20.0)	30.0 (16.7)	36.7 (16.7)	56.7 (33.3)	46.7 (36.7)	60.0 (30.0)
15	Caring	26	6.7 (0.0)	3.3 (0.0)	20.0 (6.7)	16.7 (6.7)	33.3 (13.3)	43.3 (13.3)	36.7 (13.3)	63.3 (10.0)	56.7 (30.0)
37	Cheerful	28	10.0 (0.0)	10.0 (3.3)	23.3 (0.0)	33.3 (13.3)	36.7 (6.7)	40.0 (10.0)	40.0 (10.0)	60.0 (26.7)	86.7 (33.3)
8	Jealous	73	13.3 (3.3)	10.0 (0.0)	3.3 (0.0)	16.7 (3.3)	36.7 (10.0)	33.3 (6.7)	33.3 (16.7)	50.0 (30.0)	60.0 (26.7)
58	Peaceful	91	0.0 (0.0)	0.0 (0.0)	13.3 (0.0)	20.0 (3.3)	26.7 (10.0)	10.0 (3.3)	43.3 (6.7)	46.7 (20.0)	66.7 (23.3)
104	Furious	55	0.0 (0.0)	3.3 (0.0)	6.7 (3.3)	16.7 (3.3)	30.0 (13.3)	26.7 (13.3)	43.3 (16.7)	36.7 (16.7)	56.7 (30.0)
18	Cruel	36	3.3 (0.0)	6.7 (0.0)	6.7 (0.0)	16.7 (0.0)	23.3 (6.7)	26.7 (3.3)	33.3 (3.3)	46.7 (10.0)	63.3 (33.3)
114	Delighted	38	0.0 (0.0)	3.3 (0.0)	6.7 (0.0)	26.7 (10.0)	23.3 (10.0)	23.3 (3.3)	26.7 (0.0)	46.7 (20.0)	60.0 (20.0)
92	Powerful	94	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	10.0 (3.3)	10.0 (0.0)	13.3 (6.7)	20.0 (10.0)	46.7 (23.3)	46.7 (20.0)
120	Unafraid	118	0.0 (0.0)	0.0 (0.0)	6.7 (0.0)	10.0 (3.3)	3.3 (0.0)	13.3 (3.3)	16.7 (10.0)	46.7 (16.7)	33.3 (3.3)
118	Stubborn	109	3.3 (0.0)	6.7 (0.0)	16.7 (0.0)	26.7 (10.0)	40.0 (0.0)	43.3 (3.3)	40.0 (3.3)	43.3 (10.0)	56.7 (26.7)
123	Fed up	50	3.3 (3.3)	6.7 (0.0)	20.0 (0.0)	26.7 (10.0)	36.7 (13.3)	36.7 (13.3)	33.3 (13.3)	43.3 (23.3)	53.3 (30.0)
80	Low	82	0.0 (0.0)	10.0 (3.3)	10.0 (3.3)	13.3 (10.0)	10.0 (6.7)	16.7 (6.7)	16.7 (10.0)	43.3 (20.0)	26.7 (16.7)
50	Pleasant	92	3.3 (0.0)	3.3 (0.0)	6.7 (0.0)	20.0 (0.0)	26.7 (0.0)	23.3 (0.0)	23.3 (3.3)	40.0 (6.7)	63.3 (26.7)
110	Drowsy	43	3.3 (0.0)	3.3 (0.0)	3.3 (0.0)	13.3 (6.7)	13.3 (3.3)	13.3 (6.7)	26.7 (3.3)	36.7 (6.7)	66.7 (20.0)
71	Agreeable	5	0.0 (0.0)	0.0 (0.0)	10.0 (0.0)	20.0 (0.0)	20.0 (3.3)	3.3 (0.0)	20.0 (0.0)	26.7 (6.7)	63.3 (10.0)

(*table continued*)

Table 2 (*continued*)

BR	Item	AR	Age in months								
			18–23	24–29	30–35	36–41	42–47	48–53	54–59	60–65	66–71
112	Concerned	31	0.0 (0.0)	6.7 (0.0)	23.3 (0.0)	13.3 (3.3)	13.3 (0.0)	10.0 (0.0)	23.3 (3.3)	30.0 (10.0)	56.7 (26.7)
109	Miserable	88	3.3 (0.0)	10.0 (0.0)	10.0 (0.0)	33.3 (13.3)	43.3 (6.7)	26.7 (13.3)	36.7 (6.7)	40.0 (20.0)	53.3 (20.0)
64	Active	1	10.0 (0.0)	0.0 (0.0)	13.3 (0.0)	30.0 (3.3)	33.3 (0.0)	33.3 (0.0)	30.0 (3.3)	30.0 (16.7)	53.3 (33.3)
67	Aware	17	13.3 (0.0)	0.0 (0.0)	6.7 (0.0)	13.3 (0.0)	13.3 (0.0)	13.3 (0.0)	23.3 (6.7)	23.3 (0.0)	53.3 (16.7)
30	Guilty	61	3.3 (0.0)	6.7 (3.3)	3.3 (3.3)	16.7 (0.0)	10.0 (3.3)	3.3 (3.3)	13.3 (6.7)	23.3 (0.0)	50.0 (16.7)
39	Frustrated	54	0.0 (0.0)	6.7 (3.3)	13.3 (0.0)	20.0 (3.3)	23.3 (6.7)	13.3 (3.3)	23.3 (6.7)	33.3 (13.3)	46.7 (20.0)
60	Calmed	24	3.3 (0.0)	0.0 (0.0)	3.3 (3.3)	16.7 (6.7)	6.7 (0.0)	30.0 (3.3)	33.3 (13.3)	30.0 (3.3)	43.3 (16.7)
76	Cautious	27	3.3 (0.0)	3.3 (0.0)	10.0 (0.0)	10.0 (0.0)	30.0 (0.0)	23.3 (3.3)	10.0 (3.3)	26.7 (0.0)	43.3 (13.3)
89	Thoughtful	114	0.0 (0.0)	3.3 (0.0)	10.0 (0.0)	10.0 (3.3)	13.3 (3.3)	23.3 (6.7)	20.0 (0.0)	20.0 (3.3)	43.3 (6.7)
23	Anxious	12	0.0 (0.0)	0.0 (0.0)	10.0 (3.3)	16.7 (6.7)	16.7 (6.7)	10.0 (3.3)	10.0 (6.7)	16.7 (13.3)	43.3 (23.3)
27	Fearful	49	6.7 (0.0)	3.3 (0.0)	6.7 (0.0)	10.0 (0.0)	16.7 (3.3)	20.0 (0.0)	23.3 (0.0)	36.7 (36.7)	40.0 (10.0)
98	Troubled	117	6.7 (0.0)	3.3 (0.0)	13.3 (0.0)	6.7 (0.0)	13.3 (0.0)	6.7 (0.0)	20.0 (0.0)	20.0 (10.0)	40.0 (16.7)
116	Daring	37	6.7 (0.0)	0.0 (0.0)	0.0 (0.0)	6.7 (3.3)	6.7 (0.0)	0.0 (0.0)	16.7 (10.0)	10.0 (3.3)	40.0 (16.7)
68	Blue	20	10.0 (3.3)	6.7 (3.3)	6.7 (3.3)	10.0 (6.7)	16.7 (13.3)	30.0 (23.3)	6.7 (6.7)	40.0 (20.0)	36.7 (13.3)
66	At rest	16	3.3 (0.0)	0.0 (0.0)	23.3 (13.3)	20.0 (10.0)	13.3 (3.3)	23.3 (13.3)	30.0 (10.0)	33.3 (23.3)	36.7 (6.7)
56	Joyful	74	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	10.0 (0.0)	10.0 (0.0)	13.3 (3.3)	26.7 (3.3)	30.0 (16.7)	36.7 (10.0)
55	Helpless	66	0.0 (0.0)	0.0 (0.0)	6.7 (0.0)	13.3 (0.0)	6.7 (0.0)	0.0 (0.0)	16.7 (10.0)	16.7 (3.3)	36.7 (20.0)
41	Satisfied	103	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	33.3 (6.7)	26.7 (3.3)	23.3 (3.3)	16.7 (3.3)	10.0 (6.7)	36.7 (16.7)
111	Drunken	44	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	13.3 (3.3)	10.0 (0.0)	10.0 (6.7)	23.3 (6.7)	23.3 (10.0)	33.3 (13.3)
20	Depressed	39	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	13.3 (13.3)	20.0 (6.7)	3.3 (0.0)	6.7 (0.0)	20.0 (3.3)	33.3 (16.7)
72	Moody	89	0.0 (0.0)	6.7 (3.3)	6.7 (0.0)	6.7 (0.0)	13.3 (0.0)	26.7 (3.3)	23.3 (6.7)	13.3 (3.3)	33.3 (3.3)
90	Gloomy	59	0.0 (0.0)	3.3 (3.3)	6.7 (6.7)	20.0 (6.7)	13.3 (0.0)	3.3 (0.0)	10.0 (0.0)	10.0 (0.0)	33.3 (3.3)
69	Alert	7	6.7 (0.0)	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	6.7 (0.0)	6.7 (0.0)	10.0 (3.3)	3.3 (0.0)	33.3 (6.7)
105	Merry	86	0.0 (0.0)	3.3 (0.0)	10.0 (0.0)	20.0 (10.0)	10.0 (6.7)	10.0 (3.3)	20.0 (3.3)	20.0 (6.7)	30.0 (10.0)
100	Terrified	113	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	20.0 (3.3)	3.3 (0.0)	6.7 (3.3)	20.0 (0.0)	20.0 (6.7)	30.0 (3.3)
45	Joyous	75	3.3 (0.0)	0.0 (0.0)	6.7 (0.0)	6.7 (0.0)	10.0 (0.0)	13.3 (0.0)	20.0 (6.7)	10.0 (3.3)	30.0 (3.3)
95	Shocked	105	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	10.0 (3.3)	3.3 (0.0)	10.0 (3.3)	16.7 (3.3)	13.3 (3.3)	23.3 (6.7)
36	Confident	32	0.0 (0.0)	0.0 (0.0)	6.7 (3.3)	6.7 (0.0)	6.7 (0.0)	0.0 (0.0)	3.3 (3.3)	6.7 (0.0)	23.3 (10.0)
79	Hopeful	67	0.0 (0.0)	0.0 (0.0)	10.0 (3.3)	13.3 (6.7)	10.0 (6.7)	13.3 (3.3)	16.7 (3.3)	33.3 (10.0)	20.0 (6.7)
122	Mild	87	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	3.3 (0.0)	3.3 (0.0)	16.7 (6.7)	13.3 (0.0)	20.0 (13.3)
113	Relieved	98	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	10.0 (0.0)	6.7 (6.7)	3.3 (0.0)	10.0 (3.3)	20.0 (10.0)
31	Content	34	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	6.7 (0.0)	3.3 (0.0)	3.3 (0.0)	16.7 (3.3)	16.7 (16.7)
22	Aggressive	4	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	6.7 (0.0)	6.7 (3.3)	16.7 (6.7)
119	Tender	111	3.3 (0.0)	0.0 (0.0)	3.3 (0.0)	13.3 (6.7)	3.3 (0.0)	3.3 (0.0)	20.0 (0.0)	10.0 (10.0)	16.7 (10.0)
78	Worthless	125	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (3.3)	0.0 (0.0)	0.0 (0.0)	16.7 (6.7)
43	Hostile	69	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	0.0 (0.0)	6.7 (0.0)	0.0 (0.0)	0.0 (0.0)	16.7 (3.3)
103	Restless	100	0.0 (0.0)	6.7 (0.0)	10.0 (0.0)	13.3 (6.7)	13.3 (0.0)	0.0 (0.0)	20.0 (6.7)	20.0 (10.0)	13.3 (3.3)
88	Alarmed	6	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	0.0 (0.0)	10.0 (0.0)	13.3 (3.3)	13.3 (0.0)

Table 2 (*continued*)

BR	Item	AR	Age in months								
			18–23	24–29	30–35	36–41	42–47	48–53	54–59	60–65	66–71
82	Hopeless	68	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (3.3)	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	3.3 (0.0)	13.3 (3.3)
117	Timid	115	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	6.7 (6.7)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	3.3 (0.0)	13.3 (0.0)
108	Gay	56	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	10.0 (0.0)	0.0 (0.0)	10.0 (0.0)	6.7 (0.0)	20.0 (10.0)	10.0 (6.7)
84	Insecure	71	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (3.3)	6.7 (0.0)	10.0 (0.0)
124	Weary	123	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	16.7 (6.7)	3.3 (3.3)	3.3 (0.0)	10.0 (0.0)	3.3 (3.3)	10.0 (3.3)
93	Rejected	96	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	10.0 (3.3)
97	Carefree	25	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	6.7 (0.0)	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	10.0 (3.3)
86	At ease	15	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	0.0 (0.0)	3.3 (0.0)	3.3 (0.0)	10.0 (6.7)
94	Envious	47	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	10.0 (6.7)
19	Tense	112	3.3 (0.0)	0.0 (0.0)	3.3 (3.3)	3.3 (3.3)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	0.0 (0.0)	10.0 (3.3)
102	Dominant	42	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	6.7 (0.0)
107	Aroused	13	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	3.3 (0.0)	0.0 (0.0)	0.0 (0.0)
	Reliability		.91 (.93)	.95 (.92)	.95 (.94)	.93 (.94)	.95 (.95)	.95 (.95)	.95 (.95)	.95 (.94)	.96 (.96)

Note. BR = basicness rank; AR = alphabetic rank.

For example, to adequately assess the developmental changes in the conceptual structure underlying emotion concepts, a representative sample of the domain must be obtained. In addition, these concepts must be in the vocabulary of the subjects being investigated. That is, developmental differences may be due to a particular sample of words studied rather than the properties of the child's implicit taxonomy. In addition, recent studies (Kuczaj & Clark, 1982; Bullock & Russell, 1984) have suggested that word meaning acquisition is directly related to the acquisition of this system.

Information regarding children's understanding and use of emotion terms has not only theoretical significance but also methodological value. For example, emotion terms are useful in the design of self-report measures. Verbal self-report is a frequently used technique in assessing affective responses in studies with adults. Adjective checklists have also been used as a validation check for treatment manipulations. Self-report data have not been used as often in research with children owing in part to the lack of data on children's knowledge and use of emotion terms. In the absence of these data, it has been difficult to design measures that are age appropriate and comparable to measures used with adults.

Emotion-descriptive terms can also be important in research on social perception, attribution, and social cognition. Although the primary focus of research in these areas is the development of social understanding, emotion language is used as an assessment tool. For example, in studies of empathy, children have been asked whether they feel the fear, anger, sadness, or happiness expressed by another (Farber & Moley, 1979). Emotion terms may also be useful in the design of experimental treatments such as mood induction. Research has suggested that there is a highly contingent relation between emotion concepts and emotional behavior. In fact, experimental studies with children (Barden et al., 1981; Masters et al., 1979; Ridgeway & Waters, 1985) have shown that an individual's cognitions and subsequent affective states can be changed via language. However, researchers in the area of mood induction typically have used subjects who are over 4 or 5 years of age and have induced only very basic affective states (e.g., happy and sad). The present data have im-

portant implications for extending this work to toddlers and preschool children.

In brief, the normative data collected in this study are sufficiently extensive and reliable to be of use in a wide range of developmental research on the connotative meaning of emotion-descriptive language, learning and memory, mood induction, attribution, and social cognition.

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