Behavior Research Methods, Instruments, & Computers
1999, 31 (4), 578-602

Concreteness, context availability, and imageability ratings and word associations for abstract, concrete, and emotion words

JEANETTE ALTARRIBA, LISA M. BAUER, and CLAUDIA BENVENUTO
University of Albany, SUNY, Albany, New York

Normative values on various word characteristics were obtained for abstract, concrete, and emotion words in order to facilitate research on concreteness effects and on the similarities and differences among the three word types. A sample of 78 participants rated abstract, concrete, and emotion words on concreteness, context availability, and imagery scales. Word associations were also gathered for abstract, concrete, and emotion words. The data were used to investigate similarities and differences among these three word types on word attributes, association strengths, and number of associations. These normative data can be used to further research on concreteness effects, word type effects, and word recognition for abstract, concrete, and emotion words.

A robust finding in the concreteness effects literature is that concrete words (e.g., *desk*, *computer*) are understood better than abstract words (e.g., *liberty*, *freedom*) (Schwanenflugel, Harnishfeger, & Stowe, 1988). The advantages for processing concrete words over abstract words have been referred to as *concreteness effects* and have been found in a variety of cognitive tasks, including paired associate learning, translation, comprehension tests, lexical decision, and free recall (e.g., Day, 1977; de Groot, Dannenburg, & van Hell, 1994; Holmes & Langford, 1976; James, 1975; Paivio, 1971, 1986). These concreteness effects are commonly explained by either a dual coding theory (Paivio, 1971, 1986) or a context availability theory (Schwanenflugel, Akin, & Luh, 1992). According to the dual coding theory there are two functionally independent yet interconnected representational systems: (1) verbal and (2) imaginal. The verbal system processes verbal information, whereas the imaginal system processes nonverbal information. These representations are differentially available in memory contingent on the concreteness of the words. Both concrete and abstract words are represented in the verbal system, but only concrete words are connected to the imaginal system. Since the image provides an additional means through which concrete words can be stored and retrieved, concrete words are more likely to be recalled better than abstract words that lack representation in the imaginal system.

The work reported here was funded by a Faculty Research Award from the University at Albany, State University of New York. The authors thank Peter Dixon, Janet van Hell, and an anonymous reviewer who provided helpful comments and suggestions on an earlier version of this paper. The authors also thank Noah Balanoff, Allyse Scher, and John Sears for their assistance with data collection and data entry. Correspondence should be addressed to J. Altarriba, Department of Psychology, SS 112, University of Albany, SUNY, Albany, NY 12222 (e-mail: ja087@csc.albany.edu).

The context availability hypothesis emphasizes the ease with which a context or circumstance can be recalled for a particular word (Kieras, 1978; Schwanenflugel et al., 1992; Schwanenflugel et al., 1988). The context availability explanation states that it is easier to retrieve a context in which a concrete word appears than to retrieve a context in which an abstract word appears. For example, the context availability hypothesis would say that it is easier to think of a context for the word *desk* (concrete) but much more difficult to retrieve a context for the word *folly* (abstract). Researchers have often compared ratings of abstract and concrete words on various characteristics. Published word norms include Paivio, Yuille, and Madigan's (1968) concreteness, imagery, and meaningfulness ratings for 925 words, Rubin and Friendly's (1986) free recall, availability, goodness, emotionality, and pronounceability ratings for the same 925 nouns, Toglia and Battig's (1978) normative data for 2,854 words on concreteness, imagery, categorizability, meaningfulness, pleasantness, familiarity, and number of attributes, Gilhooly and Logie's (1980) age of acquisition, imagery, concreteness, familiarity, and ambiguity ratings for 1,944 words, Friendly, Franklin, Hoffman, and Rubin's (1982) imagery, concreteness, orthographic variables, and grammatical usage measures for 1,080, and Kerr and Johnson's (1991) normative data for familiarity, concreteness, meaningfulness, imageability, imagery modality, and word associations for blind and sighted participants. However, it is important to note that there are no published normative studies that provide concreteness, context availability, and imagery ratings and word associations for abstract, concrete, and emotion words.

Additionally, we have found that there are no normative studies that provide concreteness, context availability, or imagery ratings and word associations for a large set of emotion words. This lack of data for emotion words is unfortunate since the ability to recognize and label emo-

tions is essential to emotional understanding and has been linked to decreases in self-reports of sadness and depression, decreases in anxiety and withdrawal, cessation of eating disorders, and a reduction in mental illness (Goleman, 1995). While understanding emotions is extremely important in everyday social functioning, little attention has been paid to understanding how these words are stored in memory and the characteristics that distinguish emotion words from other types of words. Rather, we have found that, in both the concreteness effects literature and the normative literature, emotion words are often classified as "abstract" with no justification for this classification. Studies in which emotion terms are categorized as abstract may be confounded. It may be that emotion words placed within the abstract category increase or decrease the influence of concreteness on language processing.

This possibility was explored by Altarriba and Bauer (1999). In the second experiment, participants were asked to rate 144 abstract, concrete, and emotion words (48 words in each category) on one of the following 7-point scales: concreteness, context availability, or imageability. The ratings showed significant main effects of scale type and word type. Additionally, there was a significant interaction between these two variables, indicating that there was a difference between all three word types (abstract, concrete, and emotion) on each of the three scales (concreteness, context availability, and imageability). Specifically, the results indicated that the three word types are reliably different from each other when rated on concreteness, context availability, and imageability. Analyses revealed that, for concreteness, concrete words received the highest ratings, followed by abstract, and then by emotion words. For both the context availability scale and the imageability scale, concrete words received the highest ratings, followed by emotion, and then by abstract words. These findings were extremely important since they indicated that emotion words are rated differently from both abstract words and concrete words on all three scales. This result suggests that emotion words may be represented in memory differently from either abstract or concrete words.

Given the evidence indicating that concreteness, imagery, and context availability play a role in the representation of words, ratings on these three scales were collected for abstract, concrete, and emotion words. These ratings, from which a subset of words was selected for use in Altarriba and Bauer's (1999) Experiment 2, are provided here for future investigations in the area of concreteness effects and in the representation of abstract, concrete, and emotion words.

The major objective of the present Experiment 1 was to provide ratings for abstract, concrete, and emotion words (on attributes that are considered relevant by researchers interested in studying concreteness effects: concreteness, imageability, and context availability) so that the relationship between the three word types and the three scales can be examined by other researchers. The norms obtained will be useful to researchers who are interested in studying concreteness effects and the similarities and differences between various word types (i.e., abstract, concrete, and emotion words) and scales (i.e., concreteness, context availability, and imageability). The major objective of the present Experiment 2 was to provide word associations for abstract, concrete, and emotion words. These data should enable researchers to examine the number of and strength of the associations for various word types. In addition, researchers can use these data to equate stimuli on mean association strength in future experiments.

EXPERIMENT 1
Word Ratings

Method

Participants. Seventy-eight University at Albany undergraduates participated in this experiment either for partial fulfillment of a course requirement or for extra credit. All participants were native English speakers.

Materials. Abstract, concrete, and emotion words were classified a priori. Abstract and concrete words were taken from existing research on concreteness effects. Concrete words were operationally defined as words that denote something material and represent an actual substance or thing. Terms referring to something considered apart from some material basis or object (and not classified as emotion words) were classified as abstract. In order to distinguish emotion words from other word types, the *Dictionary of Affect in Language* (Whissell, 1989) and previous studies investigating emotions (e.g., Shaver, Schwartz, Kirson, & O'Connor, 1987) were used as sources for emotion words. In order to be considered an emotion term, the words had to have an affective meaning and have pleasantness/unpleasantness and arousal components. Using these operational definitions, 155 abstract words, 100 concrete words, and 71 emotion words were selected from Bleasdale (1987), Chiarello, Senehi, and Nuding (1987), Clore, Ortony, and Foss (1987), Nelson and Schreiber (1992), Shaver et al. (1987), and Whissell (1989). These words were matched in frequency and length, randomized, and typed into a list.

Procedure. The participants were asked to rate the words on one of three scales: concreteness, imageability, or context availability. Each participant rated all 326 words on a single attribute determined randomly by the experimenter. The scales ranged from 1 to 7, in which 1 indicated *highly abstract*, *difficult to image*, or *difficult to think of a context*, and 7 indicated *highly concrete*, *easy to image*, or *easy to think of a context*.

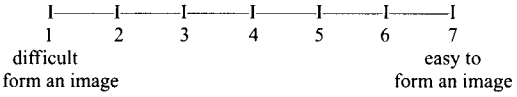
Instructions. The instructions for each of the three scales supplied the participants with examples, providing them with anchors in which to make their ratings. All of these instructions were similar to the instructions that previous investigators have provided (e.g., Campos, 1990; Friendly et al., 1982; Gilhooly & Logie, 1980; Schwanenflugel et al., 1992).

Concreteness instructions. The concreteness instructions were as follows:

> Below you will see a list of words. Your task is to enter a number between "1" and "7" (you can use "1" and "7" as well) next to each word. Please use the following scale to rate the words:
>
> I——I——I——I——I——I——I
> 1 2 3 4 5 6 7
> abstract concrete
>
> This is a concreteness scale. You are to rate the words on how abstract or concrete you believe the words are. For example, you might rate the word "chair" as a 6 or 7, while the word "charity" might be rated a 1 or a 2.

Imageability instructions. The imageability instructions were as follows:

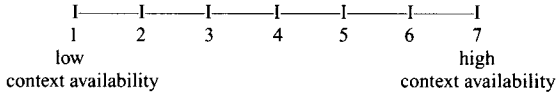
Below you will see a list of words. Your task is to enter a number between "1" and "7" (you can use "1" and "7" as well) next to each word. Please use the following scale to rate the words:



This is an imageability scale. You are to rate the words on how difficult or easy it is to form an image of the word. For example, you might rate the word "flag" a 6 or a 7 because it is easy to form an image of the word flag in your mind. The word "charity" on the other hand, might be rated a 1 or a 2 since it is difficult to form an image for the word charity.

Context availability instructions. The example provided for this scale was taken from a previous study conducted by de Groot (1992) to ensure that the participants understood what is meant by context availability.

Below you will see a list of words. Your task is to enter a number between "1" and "7" (you can use "1" and "7" as well) next to each word. Please use the following scale to rate the words:



This is a context availability scale. You are to rate this word on whether or not you can associate this word with a context or circumstance in which the word would appear. If you can *easily associate this word with a certain context* or circumstance you would give the word a *high rating*. If on the other hand, you have a *difficult time thinking of a context* or circumstance in which this word would appear, you would give the word a *low rating*.

For example, a participant who was shown the word "ceiling" said that he immediately thought of a song, "Dancing on the Ceiling." So the word ceiling came to mind immediately and quickly. The word "cry" might receive a rating of 6 or 7, if you immediately think of a baby crying in his crib.

In contrast, the word "heritage" might be rated a 1 or a 2, since it might take several minutes to come up with a context in which the word might appear.

Remember, if a context can IMMEDIATELY come to mind, then the word has a HIGH context availability. If it takes some time to come up with a context, then the word has a LOW context availability.

Results and Discussion

The mean rating for each word on each of the three scales is presented in Appendix A. Descriptive statistics are provided in Table 1. Planned comparisons revealed that all three word types were rated as significantly different (all $ps < .05$) from one another on all three scale types. As Table 1 shows, the participants rated emotion words as being significantly less concrete and lower in context availability than both abstract and concrete words. However, the participants rated emotion words as more imageable than abstract words but less imageable than concrete words.

Table 1
Mean Concreteness, Imageability and Context Availability Ratings (Scale: 1 = *low*, 7 = *high*) for 326 Words in Experiment 1 ($n = 78$)

	Rating Scale					
	Concreteness		Imagery		Context Availability	
Word Type	*M*	*SD*	*M*	*SD*	*M*	*SD*
Concrete	6.3	0.39	6.6	0.55	5.7	0.62
Emotion	3.0	0.27	4.7	0.92	3.4	0.92
Abstract	3.6	0.67	2.9	1.0	4.8	0.74

Note—*All $ps < .05$, for all comparisons of interest.

On the concreteness and context availability scales, emotion words were rated as significantly lower than abstract and concrete words. On the imagery scale, abstract words were rated as significantly lower than concrete and emotion words. These results indicate that abstract, concrete, and emotion words possess significantly different degrees of concreteness, context availability, and imageability. Owing to these significant differences, emotion words should not be included in an abstract category. Previous research that has categorized emotion words as abstract words may have added a confound in that the inclusion of emotion words may have raised the overall ratings of the abstract words on imageability and may have decreased the overall ratings of the abstract words on the concreteness and the context availability scales. Therefore, the addition of emotion words to the abstract category in previous studies may have biased the concreteness effects. Further investigations of these differences between both the word types and the scale types are needed.

Correlations for all variables are provided in Table 2. Correlations were calculated using the mean rating of each word in each word type (abstract, concrete, and emotion) for each scale (concreteness, context availability, and imageability). Abstract, concrete, and emotion words were classified a priori, using the operational definitions discussed in the Method section. The only statistically significant correlations were between abstract words rated on concreteness and context availability, abstract words rated on imageability and context availability, abstract words rated on imageability and concreteness, concrete words rated on concreteness and context availability, and emotion words rated on concreteness and context availability. These results show a consistent finding that, within each word type, there is a significant positive relationship between context availability and concreteness. It appears that words that rate highly on the concreteness scale also rate highly on the context availability scale. This result is consistent with previous research. For example, Schwanenflugel et al. (1988) found a correlation of .69 between concreteness and context availability across abstract and concrete words.

Reliability estimates were derived from the 26 completed lists obtained for each scale. These data were used to calculate Cronbach's alpha, a measure of internal consistency based on the average correlation of participants' ratings. Cronbach's alpha was .98 for abstract words rated on context availability, .99 for abstract words rated on concreteness, .98 for abstract words rated on imageability, .95 for concrete words rated on context availability, .98 for concrete words rated on concreteness, .95 for concrete

Table 2
Pearson Correlations Among Word Attributes

	ACA	ACON	AIM	CCA	CCON	CIM	ECA	ECON	EIM
ACA	1.0								
ACON	.25*	1.0							
AIM	.59*	.57*	1.0						
CCA	−.06	−.04	−.08	1.0					
CCON	−.11	−.02	−.12	.68*	1.0				
CIM	.06	−.08	−.04	.16	.02	1.0			
ECA	−.04	−.04	−.00	.02	.09	.12	1.0		
ECON	−.12	−.20	−.20	.03	.16	−.07	.41*	1.0	
EIM	.10	.06	.03	.07	.18	−.10	−.12	−.02	1.0

Note—ACA, abstract words on context availability; ACON, abstract words on concreteness; AIM, abstract words on imageability; CCA, concrete words on context availability; CCON, concrete words on concreteness; CIM, concrete words on imageability; ECA, emotion words on context availability; ECON, emotion words on concreteness; EIM, emotion words on imageability. *$p < .05$.

words rated on imageability, .97 for emotion words rated on context availability, .99 for emotion words rated on concreteness, and .98 for emotion words rated on imageability. Thus, the internal consistency of the ratings was high.

At first glance our results of no significant correlations between the concreteness and imageability scales for the concrete and for the emotion words appear to be contrary to the findings of high correlations typically reported in the literature. The correlations between concreteness and imagery reported by Benjafield and Muckenheim (1989), Christian, Bickley, Tarka, and Clayton (1978), Friendly et al. (1982), Gilhooly and Logie (1980), Paivio (1986), Paivio et al. (1968), Rubin (1980), Rubin and Friendly (1986), Schwanenflugel et al. (1988), and Toglia and Battig (1978) range from .64 to .95. These correlations were calculated across word types. That is, the ratings of both the concrete and the abstract words were combined, and the correlation between imagery and concreteness was then computed. In the present experiment, the correlations between the scales were calculated for each word type individually. This leads to the results presented in Table 2. To enable a comparison between previous results and the present results, further analyses were conducted. When the correlation between concreteness and imagery is calculated across word types (abstract, concrete, and emotion), a correlation of .63 ($p < .05$) emerges. These results appear in Table 3. A correlation even more consistent with the previous literature emerges when the abstract and concrete words (the emotion words are not included) are combined and the correlation between imagery and concreteness is calculated (see Table 4). This correlation is .87 ($p < .05$).

Similarly, our results of no significant correlations between the context availability and the imageability scales for the concrete and for the emotion words appear to be inconsistent with the previous literature. De Groot et al. (1994) found a correlation of .82, and Schwanenflugel et al. (1988) found a correlation of .68. To enable comparisons between previous results and the present results, additional analyses were conducted. When the correlation between context availability and imageability was calculated across word types (combining abstract, concrete, and emotion words) a correlation of .41 ($p < .05$) was found (see Table 3). Additionally, when combining only the abstract and concrete words, which are the word types that were used in previous studies, a correlation of .82 ($p < .05$) was obtained (see Table 4). This result is consistent with the previous research (de Groot et al., 1994; Schwanenflugel et al., 1988).

These additional analyses indicate that the results of the present experiment are consistent with the literature when the correlations among scales are calculated across word types (and especially when they are calculated across abstract and concrete words, which were the word types predominantly used in prior research). However, the present experiment is the first to our knowledge that looked at correlations between scales for individual word types. When this is done, the correlation between concreteness and imageability and the correlation between context availability and imageability were not significant for both concrete and for emotion words. However, the correlation between concreteness and imageability and the correlation between context availability and imageability were significant for abstract words. These results provide additional evidence that the three word types have different characteristics. While previous studies have combined abstract and concrete words when investigating correlations among scales, this may be masking contributions made by individual word types. For instance, combining abstract words with concrete words increases the correlation between the concreteness and imageability scales. However, when looked at separately, the correlation between concreteness and

Table 3
Pearson Correlations for Scales, Calculated Across the Three Word Types (Abstract, Concrete, and Emotion)

	Concreteness	Context Availability	Imageability
Concreteness	1.0000		
Context availability	.8086*	1.0000	
Imageability	.6276*	.4138*	1.000

*$p < .01$.

Table 4
Pearson Correlations for Scales, Calculated Across Abstract and Concrete Words

	Concreteness	Context Availability	Imageability
Concreteness	1.0000		
Context availability	.8048*	1.0000	
Imageability	.8712*	.8237*	1.000

*$p < .01$.

imageability is significant for abstract words but not for concrete words. Therefore, by combining the two word types, the individual contributions are masked. Future investigators of concreteness effects and word type differences should keep these possibilities in mind when analyzing data.

EXPERIMENT 2
Word Associations

Method

Participants. Fifty-five University at Albany undergraduates participated in this experiment either for partial fulfillment of a course requirement or for extra credit.

Materials. One hundred fifty-four abstract words, 100 concrete words, and 98 emotion words were selected form Bleasdale (1987), Chiarello et al. (1987), Clore et al. (1987), Nelson and Schreiber (1992), Shaver et al. (1987), and Whissell (1989). These words were randomized and typed into a list.

Procedure. In order to provide norms for future priming experiments, the participants were asked to perform a discrete word association task in which they should respond to the stimulus with the first word that comes to mind that is meaningfully related to the stimulus. In the present experiment, the participants received a list of 372 words and were instructed to write beside each stimulus word the first word that came to mind that was meaningfully related to the stimulus word. The participants were orally instructed to exclude proper nouns and abbreviations from their responses. The written instructions appeared as follows:

> Below is a list of words that you should be familiar with. In the spaces provided, please write down the FIRST word that comes to mind that is MEANINGFULLY related to the presented word. Please write down only a single word. Please do not include any proper nouns. Please make sure that you write down words that are meaningfully associated to the presented word. Additionally, please write clearly.
>
> Example: canary feathers
> clown laughs

Results and Discussion

The associations provided by the participants are presented in Appendix B.[1] Associations that were more than single words, abbreviations, illegible, or proper nouns were excluded. Misspelled words were corrected when the provided spelling was clear enough for accurate interpretation. Of the 10,971 responses, 55 were excluded (0.5 %) for the aforementioned reasons. Examples of exclusions include *ice cream*, *hot air*, *New Year*, *pms*, and *Moses*. Owing to these exclusions, to the participants' failing to provide an association, and to rounding to the nearest tenth, not all of the association strengths for each stimulus will sum to 1.00. Appendix B provides the proportions of participants who generated a given association for a stimulus. The associations are arranged alphabetically in decreasing association strength order. The higher the number, the more participants provided that association to the stimulus word.

The proportion associated with the word most often generated in response to the stimulus word is considered the highest association for a given stimulus word. The mean highest association for each of the three word types was computed. It was found that, on average, concrete words have the mean highest association ($M = 35.39$), followed by abstract words ($M = 29.80$), and then by emotion words ($M = 28.62$). Planned comparisons revealed that the mean highest associations between concrete and abstract words and between concrete and emotion words were significantly different from one another ($ps < .01$). The mean highest association for abstract and emotion words was not significantly different. Literature concerning the relative frequency and strength of associations for emotion words as compared with concrete and abstract words is nonexistent. However, a few comparisons exist between concrete and abstract words, and the results tend to differ on the basis of the exact method used to gather word associations as described below.

The number of associations generated for each stimulus word was tabulated. The mean number of associations for each word type was computed. It was found that, on average, emotion words have the greatest number of different associations ($M = 23.48$), followed by abstract words ($M = 21.40$), and then by concrete words ($M = 17.34$). Planned comparisons revealed that the mean numbers of associations for all of the word types were significantly different from each other (all $ps < .05$). Although it would appear at first glance that the finding of smaller associative sets for concrete words than for other word types is anomalous, similar findings were reported by Nelson and Schreiber (1992) in their normative study. An important note to make here is that, in both the present study and Nelson and Schreiber's study, a discrete word association task was used. Participants were asked to provide a single word for each stimulus word—the first one that came to mind. In contrast, continuous word association tasks are those in which participants are asked to provide as many associates as possible during a specific length of time. Using a continuous task, de Groot (1989) reported that the number of associations was higher for concrete words than for abstract words.[2] Whereas the discrete task may lead to responses that are consistent (i.e., the strongest associate is most often generated), the continuous task provides more time for the retrieval of associates both strongly and weakly related.

These findings have great implications for researchers investigating retrieval of various word types. Research has shown that the more paths that are associated with a concept, the more difficult it is to retrieve information from any one of these paths (Anderson, 1974). The present results would therefore predict that concrete words would be the easiest to retrieve from memory, whereas emotion

words would be the most difficult to retrieve from memory. Using the present norms, reaction time experiments can be conducted to investigate these predictions.

GENERAL DISCUSSION

The normative data presented here were used to investigate whether emotion words have characteristics different from those of either abstract or concrete words. Experiment 1 examined the nature of emotion words in memory by comparing the ratings of abstract, concrete, and emotion words on concreteness, context availability, and imageability scales. On both the concreteness and the context availability scales, emotion words were rated lower than abstract and concrete words. However, on the imagery scale, emotion words were rated higher than abstract words but lower than concrete words. These results indicate that emotion words possess characteristics different from those of either abstract or concrete words. Therefore, the inclusion of emotion words in an abstract category may have biased the results of previous research on concreteness effects. The addition of emotion words, which are significantly less concrete and lower in context availability than abstract words, may have decreased the abstract category ratings; however, the concrete words were unaffected by the addition of emotion words in the abstract category. Because the overall ratings of the abstract category decreased and the concrete category remained unchanged, concreteness effects among abstract and concrete words are reported as being larger than they actually were (because the emotion words lowered the abstract category ratings). These findings suggest that emotion words should not be included in abstract categories in future investigations of concreteness effects.

Previous researchers have documented positive correlations between concreteness and context availability, between concreteness and imageability, and between imageability and context availability (Benjafield & Muckenheim, 1989; Christian et al., 1978; Friendly et al., 1982; Gilhooly & Logie, 1980; Paivio, 1986; Paivio et al., 1968; Rubin, 1980; Rubin & Friendly, 1986; Schwanenflugel et al., 1988; Toglia & Battig, 1978). Results of the present study replicate these findings when the correlations among scales are calculated across word type. However, the present study is the first study to look at correlations between scales for individual word types. When this was done, an interesting pattern of results emerged. Within each of the three word types (abstract, concrete, and emotion), a significant positive relationship between concreteness and context availability was found. Therefore, it appears that words rated highly on concreteness are also highly rated on context availability not only as a set of words but also within each word type. However, the correlations between context availability and imageability and the correlations between concreteness and imageability were not significant for concrete and emotion words but were significant for abstract words. Here, it appears that the correlations among the scales is contingent on word type. These results provide additional evidence that abstract, concrete, and emotion words have different characteristics. While previous researchers have typically combined word types when calculating correlations among scales, the present results suggest that this combination masks the contributions made by individual word types. Future investigations of concreteness effects and of word type differences should further explore these differences, and researchers should keep these findings in mind while analyzing their data.

Experiment 2 provided word associations for abstract, concrete, and emotion words. The data were used to examine the strength and the number of associations for each of the three word types. The results revealed that the highest mean association was significantly different between concrete and abstract words and between concrete and emotion words but not between abstract and emotion words. These results reveal a similarity between abstract and emotion words in terms of the mean of the word most often generated in response to a stimulus word.

The number of associations for each of the three word types revealed that the mean numbers of associations for all three word types were significantly different from one another. Emotion words had the highest mean number of associations, followed by abstract words, and then by concrete words. In the word retrieval literature, it has been found that the more paths associated with a concept, the more difficult it is to retrieve information from any given path (Anderson, 1974). The results of the present study would predict that concrete words would be the easiest to retrieve, whereas emotion words would be the most difficult to retrieve from memory. The normative data provided here can be used as stimuli to explore word retrieval as a function of word types in reaction time experiments.

In conclusion, the present article is the first to provide concreteness, context availability, and imageability ratings and word associations for abstract, concrete, and emotion words. It is particularly distinctive in that it provides the aforementioned ratings for a large set of emotion words. These normative data may be used to further research in areas such as concreteness effects, word type effects, and word recognition and retrieval for abstract, concrete, and emotion words.

REFERENCES

ALTARRIBA, J., & BAUER, L. M. (1999). *Emotion words vs. abstract words: Distinct representations in semantic memory*. Manuscript submitted for publication.

ANDERSON, J. R. (1974). Verbatim and propositional representation of sentences in immediate and long-term memory. *Journal of Verbal Learning & Verbal Behavior*, **13**, 149-162.

BENJAFIELD, J., & MUCKENHEIM, R. (1989). Dates of entry and measures of imagery, concreteness, goodness, and familiarity for 1,046 words sampled from the *Oxford English Dictionary*. *Behavior Research Methods, Instruments, & Computers*, **21**, 31-52.

BLEASDALE, F. A. (1987). Concreteness-dependent associative priming:

Separate lexical organization for concrete and abstract words. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, **13**, 582-594.

CAMPOS, A. (1990). Concreteness, imagery, emotionality, and interest values of words when meaning is controlled. *Perceptual & Motor Skills*, **71**, 603-610.

CHIARELLO, C., SENEHI, J., & NUDING, S. (1987). Semantic priming with abstract and concrete words: Differential asymmetry may be postlexical. *Brain & Language*, **31**, 43-60.

CHRISTIAN, J., BICKLEY, W., TARKA, M., & CLAYTON, K. (1978). Measures of free recall of 900 English nouns: Correlations with imagery, concreteness, meaningfulness, and frequency. *Memory & Cognition*, **6**, 379-390.

CLORE, G. L., ORTONY, A., & FOSS, M. A. (1987). The psychological foundations of the affective lexicon. *Journal of Personality & Social Psychology*, **53**, 751-766.

DAY, J. (1977). Right-hemisphere language processing in normal right-handers. *Journal of Experimental Psychology: Human Perception & Performance*, **3**, 518-528.

DE GROOT, A. M. B. (1989). Representational aspects of word imageability and word frequency as assessed through word association. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, **15**, 824-845.

DE GROOT, A. M. B. (1992). Determinants of word translation. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, **18**, 1001-1018.

DE GROOT, A. M. B., DANNENBURG, L., & VAN HELL, J. G. (1994). Forward and backward word translation by bilinguals. *Journal of Memory & Language*, **33**, 600-629.

FRIENDLY, M., FRANKLIN, P. E., HOFFMAN, D., & RUBIN, D. C. (1982). The Toronto Word Pool: Norms for imagery, concreteness, orthographic variables, and grammatical usage for 1,080 words. *Behavior Research Methods & Instrumentation*, **14**, 375-399.

GILHOOLY, K. J., & LOGIE, R. H. (1980). Age-of-acquisition, imagery, concreteness, familiarity, and ambiguity measures for 1,944 words. *Behavior Research Methods & Instrumentation*, **12**, 395-427.

GOLEMAN, D. (1995). *Emotional intelligence*. New York: Bantam.

HOLMES, V. M., & LANGFORD, J. (1976). Comprehension and recall of abstract and concrete sentences. *Journal of Verbal Learning & Verbal Behavior*, **15**, 559-566.

JAMES, C. T. (1975). The role of semantic information in lexical decisions. *Journal of Experimental Psychology: Human Perception & Performance*, **104**, 130-136.

KERR, N. H., & JOHNSON, T. H. (1991). Word norms for blind and sighted subjects: Familiarity, concreteness, meaningfulness, imageability, imagery modality, and word associations. *Behavior Research Methods, Instruments, & Computers*, **23**, 461-485.

KIERAS, D. (1978). Beyond pictures and words: Alternative information processing models for imagery effects in verbal memory. *Psychological Bulletin*, **85**, 532-554.

NELSON, D. L., & SCHREIBER, T. A. (1992). Word concreteness and word structure as independent determinants of recall. *Journal of Memory & Language*, **31**, 237-260.

PAIVIO, A. U. (1971). *Imagery and verbal processes*. New York: Holt, Rinehart & Winston.

PAIVIO, A. U. (1986). *Mental representations: A dual coding approach*. New York: Oxford University Press.

PAIVIO, A. U., YUILLE, J. C., & MADIGAN, S. A. (1968). Concreteness, imagery, and meaningfulness values for 925 nouns. *Journal of Experimental Psychology Monographs*, **76** (1, Pt. 2).

RUBIN, D. C. (1980). Fifty-one properties of 125 words: A unit analysis of verbal behavior. *Journal of Verbal Learning & Verbal Behavior*, **19**, 736-755.

RUBIN, D. C., & FRIENDLY, M. (1986). Predicting which words get recalled: Measures of free recall, availability, goodness, emotionality, and pronunciability for 925 nouns. *Memory & Cognition*, **14**, 79-94.

SCHWANENFLUGEL, P. J., AKIN, C., & LUH, W.-M. (1992). Context availability and the recall of abstract and concrete words. *Memory & Cognition*, **20**, 96-104.

SCHWANENFLUGEL, P. J., HARNISHFEGER, K. K., & STOWE, R. W. (1988). Context availability and lexical decisions for abstract and concrete words. *Journal of Memory & Language*, **27**, 499-520.

SHAVER, P., SCHWARTZ, J., KIRSON, D., & O'CONNOR, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality & Social Psychology*, **52**, 1061-1086.

TOGLIA, M. P., & BATTIG, W. F. (1978). *Handbook of semantic word norms*. Hillsdale, NJ: Erlbaum.

WHISSELL, C. M. (1989). The dictionary of affect in language. In R. Plutchik & H. Kellerman (Eds.), *Emotion: Theory, research, and experience* (Vol. 4, pp. 113-131). New York: Academic Press.

NOTES

1. Because of limited journal space, only the associations that were provided by more than 4% of the participants are provided in Appendix B. The entire list, including the associations provided by 4% of the participants or less, can be obtained by contacting the first author.

2. It should be noted, however, that emotion words, such as *anguish*, *sorrow*, and *jealousy*, were included as "abstract" words in de Groot (1989). Given work cited in the present paper, it is unclear how the inclusion of emotion words affected the overall findings for "abstract" and concrete words in de Groot's (1989) study.

APPENDIX A

Stimulus Words Within Each Word Type (Abstract, Concrete, and Emotion) and Mean Scores for the Ratings of Concreteness, Context Availability, and Imageability

Word	Ratings Scale		
	Concreteness	Imageability	Context Availability
Abstract Words			
ability	3.6	4.4	1.5
advice	3.4	5.7	2.0
aid	3.5	5.4	2.5
allow	3.2	4.0	1.8
answer	4.7	5.6	2.4
area	4.0	4.0	3.2
art	4.2	5.4	5.5
attitude	3.0	5.5	2.4
beauty	3.1	6.2	4.9
bend	4.1	4.7	4.6
benefit	3.0	4.4	2.3
bribe	4.5	4.5	3.3
capability	3.1	3.3	1.4
capable	3.0	3.7	1.6
chance	2.4	4.8	1.7
chaos	3.4	5.3	3.8
character	3.8	4.8	2.9
choice	3.7	5.0	1.8
concept	3.2	4.4	1.8
conquest	3.7	3.5	2.6
cost	4.2	5.0	2.4
count	3.8	4.6	2.0
criticism	3.4	4.4	2.0
culture	3.4	4.4	3.2
dare	2.7	5.0	1.8
deal	3.4	5.0	3.2
death	4.7	6.4	5.1
decay	3.7	5.0	4.7
decency	2.6	4.2	1.6
deed	4.4	3.3	2.5
democracy	3.7	4.8	2.8
descent	3.8	3.5	2.2
die	4.6	6.0	4.7
donor	4.4	4.4	3.2
drama	3.6	5.2	4.3
dream	3.0	6.2	4.6
east	4.7	5.3	3.6
easy	2.4	5.5	1.6
ego	3.2	5.0	2.5
end	2.8	4.7	3.5
entry	3.6	4.3	3.1
essence	2.2	4.0	1.6
event	4.3	4.4	2.6
excuse	3.0	4.7	1.9
facility	5.0	4.1	3.4
fact	4.6	5.2	1.9
fad	3.7	5.1	3.2
faith	2.4	5.3	2.3
false	3.5	5.2	1.9
fantasy	2.8	5.4	3.9
fault	3.1	4.8	1.8
feud	3.7	5.1	3.6
fever	4.7	5.2	4.0
fiction	3.6	4.6	2.2
finish	3.8	5.3	4.0
flight	4.8	5.9	4.9
folly	3.2	2.6	2.2
form	4.0	4.2	2.5
foul	3.0	4.8	3.2
freedom	3.5	5.5	2.8
gender	5.0	5.8	4.5
glory	2.5	4.6	2.3
grace	2.2	4.1	1.8
guess	3.0	4.8	2.1
haunt	2.9	4.9	3.4
health	3.8	5.4	2.6
heaven	3.4	6.0	5.0
height	5.2	5.6	4.8
heritage	3.6	3.1	1.9
hint	3.0	4.7	2.1
honor	2.8	4.5	2.6
hour	4.7	4.8	3.4
humor	3.2	5.1	3.1
hunger	4.6	5.8	3.5
idea	3.0	4.8	2.0
image	3.3	4.4	2.5
impression	3.1	4.4	1.8
intellect	3.1	3.5	1.9
issue	3.5	4.6	1.5
jeopardy	3.2	5.7	3.0
knowledge	3.6	4.9	2.0
large	4.2	6.0	5.0
law	4.1	6.0	3.0
learning	3.6	5.1	2.8
legend	3.8	5.4	3.0
length	4.6	4.5	3.0
liberty	2.9	5.2	3.2
lift	4.2	4.6	3.9
mastery	3.4	3.3	1.5
measure	3.8	4.5	3.0
memory	3.8	5.7	2.6
method	3.2	3.7	1.5
mind	3.3	5.5	3.2
minute	4.8	5.5	4.2
moist	5.0	4.9	4.8
moment	3.2	4.5	2.0
mood	2.8	5.1	2.5
move	3.8	4.8	3.0
need	3.2	4.5	1.9
nonsense	2.9	4.5	2.5
noon	4.7	5.4	5.0
now	3.5	5.2	2.3
obey	3.4	4.8	2.6
oblique	3.4	2.8	1.9
opinion	2.8	4.8	1.7
option	3.7	4.8	3.5
oral	4.1	2.6	2.4
order	3.4	4.4	2.5
ordinary	3.0	4.2	2.4
origin	3.3	3.5	1.4
patriotism	3.0	3.9	2.5
permission	3.9	5.3	2.4
place	4.3	4.3	3.3
position	3.5	3.9	2.8
power	3.8	5.5	3.6
profit	4.2	5.5	3.4
quench	3.3	5.5	2.4
quiet	3.8	5.5	3.4
recognition	3.9	4.0	2.2
response	3.7	4.6	1.9
retreat	3.5	4.8	2.7
rich	4.2	6.0	5.4
role	3.2	4.4	2.7

APPENDIX A (Continued)

Word	Ratings Scale		
	Concreteness	Imageability	Context Availability
safety	3.6	4.8	2.7
sale	5.0	5.5	4.4
science	5.0	5.0	3.3
second	3.6	4.6	2.2
see	2.7	4.8	1.8
sequel	3.8	5.0	3.4
sequence	3.8	3.6	1.9
severe	3.1	4.8	2.5
sight	3.5	5.5	3.6
slim	4.2	5.7	5.5
soul	2.6	5.1	2.1
south	4.0	5.1	3.7
stubborn	3.5	5.3	3.4
subject	4.0	5.3	2.5
suggestion	3.7	4.2	2.0
theft	4.7	4.6	3.7
think	2.8	5.2	1.9
thought	2.3	4.5	1.7
time	3.9	6.2	3.7
total	3.7	4.6	1.8
travel	4.4	5.7	3.4
treat	4.4	5.4	4.2
truth	3.2	5.2	1.8
vice	3.2	3.9	2.4
virtue	2.1	3.5	1.4
warmth	3.6	4.9	3.5
wealth	3.6	5.4	3.6
welfare	3.2	5.4	3.0
win	3.9	5.7	4.3
wisdom	2.8	4.4	2.2
wrong	3.2	5.1	2.0
young	3.7	5.8	4.4
Concrete Words			
acre	5.3	4.7	5.3
airplane	6.7	7.0	6.0
animal	6.0	6.5	6.2
apartment	6.4	6.5	6.2
apple	6.6	7.0	6.2
arm	6.4	7.0	6.0
asphalt	6.1	5.3	4.2
baby	6.3	6.9	6.2
balloon	6.6	7.0	6.0
bank	6.1	6.5	6.1
basket	6.6	6.9	5.8
bead	6.3	6.4	4.1
bean	6.4	6.5	4.9
bee	6.7	6.9	5.9
beer	6.3	6.9	6.0
bible	6.3	6.8	5.5
brush	6.5	6.8	5.3
building	6.3	6.4	5.8
burglar	6.2	6.5	5.5
cake	6.6	6.9	6.4
calf	6.4	6.4	4.6
canoe	6.9	7.0	4.5
card	6.2	6.5	5.8
castle	6.4	6.9	5.0
chin	6.4	6.7	5.3
cigar	6.5	7.0	5.4
clock	6.7	6.9	6.2
cloud	5.8	7.0	6.0
clown	6.4	6.9	5.9
cork	6.8	6.6	5.2
costume	5.4	5.6	5.4
crown	6.2	6.6	5.2
crutch	5.7	6.4	3.5
daughter	6.2	6.1	6.5
dentist	6.6	6.7	6.0
desk	6.9	6.9	5.8
dirt	6.2	6.8	4.5
dog	6.8	7.0	6.4
dragon	5.7	6.7	5.2
dust	5.9	5.9	5.3
eagle	6.7	6.8	5.6
egg	6.7	7.0	5.9
elephant	6.7	7.0	5.9
face	6.0	6.6	5.6
factory	6.4	6.3	5.3
father	5.7	6.5	6.2
fence	6.7	6.9	5.4
flag	6.6	6.9	5.8
flute	6.5	6.9	4.9
game	5.3	5.9	5.9
garden	6.2	6.7	6.0
girl	6.3	6.8	6.3
gold	6.4	6.5	6.0
hair	6.5	6.9	6.2
ham	6.4	6.7	5.8
ice	6.2	6.7	6.1
jewel	6.2	6.6	5.1
jungle	5.7	6.5	5.9
king	5.7	6.7	5.5
knob	6.5	6.5	5.0
liquor	6.0	6.4	6.0
machine	6.0	5.8	5.3
magazine	6.5	6.7	6.0
mirror	6.3	6.8	6.1
money	6.1	6.9	6.5
moon	6.3	7.0	6.1
mouth	6.3	6.9	5.9
movie	5.9	6.3	6.5
mule	6.4	6.4	4.4
newspaper	6.2	6.9	6.0
nose	6.5	6.9	5.9
nurse	6.3	6.8	5.4
orange	6.3	6.9	5.6
paper	6.4	6.7	6.1
party	5.5	6.5	6.5
pen	6.6	7.0	6.5
pencil	6.6	7.0	6.3
penny	6.8	7.0	5.7
pepper	6.4	6.7	6.1
poison	5.2	4.2	5.7
police	6.3	6.8	6.2
pond	6.1	6.8	4.9
rope	6.6	6.6	5.1
salt	6.0	6.5	5.9
sand	6.7	6.7	5.5
school	6.1	6.5	6.6
scissors	6.8	7.0	5.2
sheep	6.7	7.0	4.6
skin	6.3	6.6	5.8
sock	6.7	6.9	5.1
soil	5.9	6.5	3.8
son	6.3	6.2	6.1
story	5.3	3.9	6.1
street	6.4	6.5	6.3
text	5.9	5.5	5.3
thumb	6.7	6.9	6.0

APPENDIX A (Continued)

Word	Ratings Scale		
	Concreteness	Imageability	Context Availability
timber	6.0	5.3	4.9
tower	6.1	6.3	5.4
truck	6.8	7.0	5.7
web	5.4	6.5	6.0
Emotion Words			
affection	3.4	5.0	4.0
affectionate	3.2	4.3	4.9
afraid	3.2	3.4	5.3
aggravated	2.9	3.3	5.4
aggressive	3.3	2.8	5.2
alert	3.1	3.5	5.1
angry	2.9	4.3	5.7
annoyed	3.1	3.4	5.2
anxiety	3.8	4.7	2.7
anxious	2.5	2.5	4.4
awful	3.2	2.8	4.6
calm	2.7	2.9	5.0
cheerful	3.4	3.8	5.2
concerned	3.0	2.8	4.7
confident	3.2	3.2	5.0
content	2.8	2.0	4.0
curious	2.6	2.8	5.3
delight	3.4	4.4	3.4
delighted	3.0	3.3	4.3
depressed	3.0	3.5	5.4
disappointed	3.2	2.7	4.4
discouraged	3.0	2.7	4.9
disgusted	2.9	3.3	4.9
excited	3.4	4.5	5.6
fear	3.1	5.4	3.5
frustrated	3.1	3.4	5.4
fulfilled	2.8	1.7	3.9
furious	3.3	4.0	5.1
glad	3.2	3.6	5.0
grateful	3.3	3.1	4.8
greed	3.5	4.5	3.4
grief	3.1	4.7	3.5
happy	3.0	4.5	6.0
hope	2.6	5.4	2.4
hopeful	3.1	2.6	4.4
hurt	3.3	3.6	5.0
hysterical	3.4	4.2	5.4
indifferent	2.6	1.7	3.6
infatuated	2.8	2.4	2.7
interested	3.0	2.5	5.2
jealousy	2.9	5.0	2.6
joy	3.0	3.7	5.2
lonely	2.6	2.5	4.9
love	2.4	4.2	6.4
mad	3.0	3.9	5.9
miserable	3.0	3.5	5.4
moody	2.6	3.0	5.5
nervous	3.2	3.4	5.4
obsessed	3.0	2.8	5.8
panic	3.0	5.5	3.8
preoccupied	2.7	2.5	4.6
regret	3.3	5.1	2.3
rejection	2.8	4.6	5.8
sad	3.1	4.0	5.1
scared	2.9	3.7	5.3
secure	2.4	1.8	3.7
sensitive	2.9	2.7	5.1
serious	3.2	3.2	4.7
skeptical	2.5	2.3	4.0
sorry	2.8	2.8	5.3
stupid	3.2	2.8	5.8
surprised	3.0	4.2	4.9
thankful	3.3	2.7	4.7
thrilled	3.0	3.5	4.5
troubled	3.0	3.0	4.3
uncertain	2.8	2.4	4.2
uncomfortable	3.0	3.0	4.7
unhappy	2.9	3.9	5.3
upset	3.2	3.4	5.0
worried	3.1	3.2	5.4
zealous	2.8	2.3	2.7

APPENDIX B
Stimulus Words and Their Associations and the Proportions of Participants Who Generated a Given Association for Each Stimulus Word

Stimulus Word	Associations	Proportion of Participants
Abstract Words		
ability		
	skill	.13
	able	.11
	capable	.11
	talent	.11
	capability	.05
advice		
	help	.15
	friend	.09
	opinion	.07
	column	.05
	counselor	.05
	give	.05
aid		
	help	.49
	first	.25
	financial	.05
allow		
	permit	.31
	let	.24
	permission	.11
	give	.07
answer		
	question	.67
	machine	.05
	reply	.05
	response	.05
area		
	space	.13
	place	.11
	rug	.07

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	location	.05
	map	.05
art		
	painting	.20
	gallery	.09
	work	.09
	paint	.07
attitude		
	bad	.16
	problem	.11
	rude	.09
	opinion	.07
	obnoxious	.05
	personality	.05
	positive	.05
beauty		
	beast	.29
	pretty	.13
	model	.07
	face	.05
	ugly	.05
bend		
	break	.18
	over	.15
	flexible	.09
	knee	.07
	curve	.05
benefit		
	good	.13
	advantage	.07
	dinner	.05
	help	.05
	insurance	.05
bribe		
	money	.56
capability		
	ability	.25
	able	.20
	can	.05
	potential	.05
capable		
	able	.44
	ability	.09
	competent	.07
chance		
	luck	.29
	risk	.09
	opportunity	.07
chaos		
	crazy	.11
	anarchy	.09
	confusion	.07
	disorder	.07
	order	.05
	turmoil	.05
character		
	cartoon	.16
	personality	.13
	play	.13
	actor	.05
	flaw	.05
	witness	.05
choice		
	decision	.29
	choose	.07
	pick	.07
	abortion	.05
	option	.05
	pro	.05
concept		
	idea	.42
	theory	.05
	thought	.05
conquest		
	win	.18
	conquer	.11
	victory	.11
	war	.09
cost		
	money	.35
	price	.15
	amount	.07
	expensive	.07
	effective	.05
	efficient	.05
count		
	numbers	.42
	money	.15
	number	.13
	sheep	.05
criticism		
	constructive	.11
	critique	.07
	critic	.05
	judgment	.05
	praise	.05
culture		
	shock	.13
	society	.07
	heritage	.05
dare		
	truth	.33
	double	.16
	devil	.09
	challenge	.05
	drugs	.05
deal		
	cards	.65
	money	.09
death		
	funeral	.13
	life	.11
	sad	.11
	black	.07
decay		
	rot	.25
	tooth	.13
	die	.07
	old	.07
	teeth	.05
decency		
	good	.13
	nice	.09
	kind	.07
	clothed	.05
	proper	.05
deed		
	good	.20

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	house	.20
democracy		
	government	.22
	communism	.09
	politics	.09
	fair	.07
	freedom	.05
	republic	.05
	vote	.05
descent		
	down	.20
	lower	.11
	fall	.07
	good	.07
	ascent	.05
	heritage	.05
die		
	live	.33
	death	.11
	dead	.07
	end	.07
donor		
	blood	.33
	heart	.22
	organ	.22
drama		
	play	.53
	theater	.11
	movie	.05
	show	.05
dream		
	sleep	.38
	nightmare	.11
	fantasy	.09
	day	.05
	team	.05
east		
	west	.98
easy		
	hard	.44
	going	.11
	simple	.11
	difficult	.07
	money	.05
ego		
	id	.24
	maniac	.13
	big	.05
	self	.05
	trip	.05
end		
	beginning	.29
	begin	.22
	finish	.13
	start	.07
entry		
	exit	.20
	door	.18
	level	.09
	computer	.05
essence		
	smell	.13
	aura	.11
	core	.05
	herbal	.05
event		
	happening	.16
	party	.11
	concert	.07
	holiday	.05
	sports	.05
excuse		
	pardon	.16
	me	.15
	lie	.11
	lame	.09
	reason	.05
facility		
	bathroom	.29
	building	.11
	school	.09
	ease	.05
	lab	.05
fact		
	fiction	.40
	truth	.15
	opinion	.11
fad		
	fashion	.27
	trend	.18
	style	.13
	clothes	.07
faith		
	religion	.25
	belief	.13
	hope	.13
	church	.11
	trust	.07
false		
	true	.60
	truth	.07
	teeth	.05
fantasy		
	dream	.33
	island	.18
	ecstasy	.05
	fiction	.05
fault		
	blame	.35
	guilt	.07
	line	.05
	wrong	.05
feud		
	family	.38
	fight	.36
	war	.11
fever		
	sick	.40
	hot	.29
	cold	.07
fiction		
	novel	.13
	book	.11
	story	.11
	science	.09
	fact	.07
	fake	.07
	pulp	.07

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	nonfiction	.05
finish		
	start	.33
	end	.25
	line	.15
	begin	.07
	complete	.05
	race	.05
flight		
	plane	.27
	airplane	.18
	fight	.13
	attendant	.09
folly		
	joke	.16
	joy	.09
	mistake	.09
	funny	.07
	jolly	.07
	fun	.05
	play	.05
form		
	shape	.22
	content	.07
	figure	.07
	structure	.07
	application	.05
	fitting	.05
	paper	.05
	style	.05
foul		
	smell	.25
	play	.13
	ball	.11
	stench	.09
	odor	.07
freedom		
	liberty	.11
	slavery	.07
gender		
	sex	.31
	male	.18
	female	.11
	girl	.07
	role	.07
	bias	.05
glory		
	flag	.13
	days	.11
	pride	.07
	happy	.05
	honor	.05
	victory	.05
	war	.05
guess		
	jeans	.20
	question	.15
	hypothesis	.11
	what	.09
	show	.05
haunt		
	ghost	.36
	scare	.20
	house	.11
	scary	.05
health		
	doctor	.11
	good	.09
	body	.07
	care	.07
	center	.05
	sickness	.05
heaven		
	hell	.45
	cloud	.07
	earth	.05
	good	.05
height		
	weight	.36
	tall	.35
	short	.09
	length	.05
heritage		
	culture	.11
	background	.09
	family	.09
	history	.07
	ancestor	.05
	ancestors	.05
	roots	.05
hint		
	clue	.49
	suggest	.09
	subtle	.05
honor		
	pride	.24
	award	.11
	glory	.07
	society	.07
	truth	.05
hour		
	minute	.35
	glass	.27
	time	.15
	clock	.05
	second	.05
humor		
	funny	.35
	laugh	.18
	laughter	.07
	comedy	.05
	joke	.05
hunger		
	food	.33
	thirst	.09
	pains	.07
	starvation	.07
	starve	.07
	eat	.05
	poor	.05
idea		
	thought	.38
	lightbulb	.16
	good	.09
	concept	.05
	think	.05
image		
	picture	.24

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	mirror	.20
	vision	.07
impression		
	first	.22
	image	.09
	opinion	.07
	thought	.07
	good	.05
intellect		
	smart	.49
	intelligence	.07
	knowledge	.05
	wisdom	.05
jeopardy		
	game	.22
	danger	.18
	gameshow	.11
	trouble	.09
	show	.05
knowledge		
	smart	.22
	wisdom	.15
	intellect	.09
	brain	.05
large		
	small	.44
	big	.27
	huge	.05
law		
	school	.24
	order	.13
	police	.09
	court	.07
	enforcement	.07
	justice	.05
	lawyer	.05
learning		
	school	.27
	knowledge	.13
	disability	.09
legend		
	story	.24
	hero	.09
	tale	.09
	fall	.05
	history	.05
length		
	width	.22
	long	.16
	ruler	.16
	time	.11
	short	.07
	hair	.05
liberty		
	freedom	.33
	bell	.18
	justice	.16
	statue	.13
	life	.07
	free	.05
lift		
	up	.13
	raise	.11
	crop	.07
	heavy	.07
	carry	.05
	high	.05
	pull	.05
	ski	.05
mastery		
	expert	.09
	novice	.05
	perfection	.05
	skill	.05
	smart	.05
measure		
	ruler	.45
	cup	.11
	amount	.05
	tape	.05
memory		
	cognition	.31
	mind	.13
	remember	.05
	span	.05
method		
	way	.16
	man	.09
	procedure	.09
	scientific	.09
	madness	.07
	plan	.07
	experiment	.05
mind		
	brain	.38
	body	.15
	matter	.05
minute		
	second	.33
	time	.20
	hour	.16
	maid	.05
	small	.05
moist		
	wet	.45
	cake	.20
	damp	.07
moment		
	time	.33
	second	.16
	now	.09
	minute	.07
mood		
	bad	.16
	happy	.13
	swing	.11
	sad	.07
	feeling	.05
move		
	away	.09
	house	.07
	over	.07
	quick	.05
	walk	.05
need		
	want	.49
	desire	.13
	money	.05

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
nonsense		
	silly	.20
	pantyhose	.07
	foolish	.05
noon		
	midnight	.20
	time	.20
	twelve	.11
	high	.09
	night	.09
	lunch	.07
now		
	then	.45
	later	.27
	present	.11
obey		
	listen	.24
	follow	.11
	rules	.07
	command	.05
opinion		
	fact	.15
	thought	.09
	view	.09
	poll	.05
oral		
	mouth	.35
	sex	.09
	exam	.07
	cavity	.05
	surgeon	.05
	surgery	.05
order		
	sequence	.11
	food	.07
	law	.07
	chaos	.05
	mail	.05
ordinary		
	plain	.44
	regular	.07
	boring	.05
origin		
	beginning	.33
	place	.13
	start	.09
	birth	.07
panic		
	attack	.25
	fear	.13
	scared	.13
	nervous	.09
patriotism		
	flag	.29
	country	.15
	soldier	.07
	war	.07
peace		
	war	.35
	love	.16
	dove	.07
permission		
	allow	.24
	ask	.20
	granted	.09
	slip	.09
	allowed	.07
place		
	home	.16
	house	.11
	area	.07
	location	.07
	time	.07
	position	.05
position		
	place	.15
	sex	.07
	job	.05
power		
	strength	.09
	strong	.07
	trip	.05
profit		
	money	.62
	gain	.13
	margin	.05
quench		
	thirst	.82
	thirsty	.07
quiet		
	loud	.25
	noisy	.09
	silent	.09
	hush	.07
	noise	.07
	shy	.07
	peaceful	.05
recognition		
	know	.09
	award	.07
	realize	.07
	see	.07
	face	.05
	familar	.05
response		
	answer	.53
	time	.05
retreat		
	leave	.07
	run	.07
	back	.05
	vacation	.05
rich		
	poor	.49
	money	.24
	unhappy	.05
role		
	play	.42
	model	.13
	acting	.05
	actor	.05
safety		
	security	.18
	home	.07
	net	.05
	pin	.05
	secure	.05
sale		
	bargain	.11
	money	.11

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	buy	.09
	clothes	.07
	price	.07
	shopping	.07
	discount	.05
science		
	biology	.15
	fiction	.07
	experiment	.05
	fair	.05
	math	.05
	medicine	.05
second		
	first	.31
	minute	.22
	third	.11
	base	.05
	chance	.05
	time	.05
see		
	eyes	.24
	look	.16
	hear	.15
	eye	.09
	blind	.07
	sight	.07
sequel		
	movie	.20
	second	.11
	continue	.07
	next	.07
	continuation	.05
	two	.05
sequence		
	order	.51
	events	.13
severe		
	harsh	.18
	extreme	.09
	serious	.09
	bad	.05
	punishment	.05
sight		
	eyes	.22
	see	.22
	sound	.11
	blind	.07
	eye	.07
	glasses	.07
	vision	.05
slim		
	skinny	.27
	fat	.20
	thin	.16
soul		
	mate	.25
	body	.11
	train	.11
	heart	.07
	heaven	.07
	mind	.07
	inner	.05
	spirit	.05
south		
	north	.69
	pole	.07
stubborn		
	mule	.36
	obstinate	.05
subject		
	participant	.11
	school	.11
	topic	.11
	class	.07
	experiment	.07
	object	.07
suggestion		
	idea	.31
	advice	.20
	box	.11
	opinion	.07
	answer	.05
theft		
	steal	.25
	burglar	.07
	rob	.07
	robber	.07
	stolen	.07
	burglary	.05
	robbery	.05
think		
	thought	.16
	brain	.11
	mind	.11
	ponder	.11
	idea	.05
thought		
	idea	.18
	process	.15
	think	.15
	brain	.07
	mind	.07
time		
	clock	.45
	hour	.13
	watch	.11
topic		
	subject	.20
	paper	.13
	title	.09
	issue	.07
total		
	sum	.27
	amount	.11
	complete	.09
	cereal	.07
	all	.05
	equal	.05
travel		
	plane	.20
	fly	.11
	abroad	.09
	vacation	.07
	agency	.05
	agent	.05
treat		
	candy	.36
	trick	.24
	doctor	.05
truth		

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	lie	.45
	dare	.15
	false	.09
	honor	.09
	honesty	.05
vice		
	president	.24
	versa	.18
	grip	.11
	squad	.07
	virtue	.05
virtue		
	truth	.15
	good	.07
	goodness	.05
	honor	.05
	moral	.05
	patience	.05
	virgin	.05
warmth		
	cold	.15
	heat	.15
	fire	.11
	blanket	.07
	sun	.07
wealth		
	money	.38
	selfish	.11
	stingy	.07
welfare		
	poor	.38
	social	.09
	money	.07
	system	.07
win		
	lose	.71
	game	.05
wisdom		
	knowledge	.25
	smart	.24
	wise	.09
	old	.05
	tooth	.05
wrong		
	right	.80
young		
	old	.69
	child	.07
	Concrete Words	
acre		
	land	.75
	grass	.07
	farm	.05
airplane		
	fly	.36
	crash	.15
	airport	.07
	wings	.07
animal		
	dog	.31
	cat	.18
	fur	.11
	crackers	.05
apartment		
	house	.29
	building	.18
	home	.07
	complex	.05
	rent	.05
apple		
	orange	.29
	red	.15
	pear	.13
	fruit	.11
	pie	.07
	tree	.07
arm		
	leg	.62
	hand	.18
asphalt		
	pavement	.15
	road	.11
	driveway	.09
	concrete	.07
	rock	.05
	salt	.05
	tar	.05
baby		
	cry	.11
	boy	.09
	child	.09
	cute	.09
	boom	.05
	food	.05
balloon		
	helium	.16
	party	.15
	red	.09
	birthday	.07
	string	.07
	pop	.05
bank		
	money	.55
	teller	.09
	robber	.07
	robbery	.07
basket		
	weave	.24
	case	.20
	ball	.11
	fruit	.11
	flowers	.07
	picnic	.05
bead		
	necklace	.62
	string	.07
bean		
	stalk	.16
	bag	.15
	string	.07
	green	.05
	kidney	.05
bee		
	sting	.29
	hive	.25
	honey	.15
	yellow	.11

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	bumble	.09
beer		
	drink	.22
	alcohol	.18
	drunk	.13
	bar	.07
bible		
	religion	.22
	church	.16
	book	.11
	belt	.05
	holy	.05
	Jesus	.05
	study	.05
brush		
	hair	.42
	comb	.25
	teeth	.16
building		
	tall	.16
	blocks	.11
	brick	.07
	office	.05
	window	.05
burglar		
	alarm	.16
	thief	.15
	steal	.13
	crime	.09
	robber	.09
	rob	.07
	robbery	.07
cake		
	birthday	.31
	frosting	.09
	icing	.09
	bake	.05
	sweet	.05
calf		
	cow	.67
	leg	.09
	baby	.07
canoe		
	boat	.44
	water	.15
	river	.07
	paddle	.05
	ride	.05
card		
	game	.16
	birthday	.13
	deck	.13
	ace	.05
	play	.05
cards		
	deck	.29
	game	.16
	deal	.07
	play	.07
castle		
	king	.25
	moat	.13
	rock	.13
	princess	.09
	sand	.05
chin		
	face	.33
	cleft	.11
	nose	.07
	beard	.05
	double	.05
	mouth	.05
	up	.05
cigar		
	smoke	.64
	cigarette	.09
	smell	.05
clock		
	time	.56
	wall	.11
	alarm	.07
	tick	.05
cloud		
	sky	.36
	rain	.15
	fluffy	.09
	nine	.09
	white	.07
clown		
	funny	.20
	nose	.18
	circus	.15
	happy	.11
	laughs	.07
	face	.05
cork		
	screw	.42
	wine	.31
	bottle	.13
	champagne	.07
costume		
	party	.22
	clown	.07
crown		
	king	.33
	queen	.11
	gold	.09
	jewel	.09
	jewels	.09
	royalty	.07
	head	.05
crutch		
	leg	.22
	broken	.16
	limp	.09
	hurt	.07
	cripple	.05
daughter		
	son	.45
	mother	.25
	girl	.05
	sister	.05
dentist		
	teeth	.42
	drill	.09
	pain	.05
	tooth	.05
	white	.05
desk		
	chair	.38

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	top	.13
	lamp	.05
	paper	.05
	table	.05
	work	.05
dirt		
	mud	.29
	ground	.09
	clean	.07
	brown	.05
	dust	.05
	soil	.05
dog		
	cat	.47
	bark	.07
	house	.07
	barks	.05
dragon		
	fire	.38
	fly	.13
	slayer	.09
dust		
	dirt	.24
	sneeze	.13
	broom	.05
	cloth	.05
	dirty	.05
	dry	.05
eagle		
	bird	.45
	fly	.13
	bald	.11
egg		
	yolk	.20
	chicken	.16
	scrambled	.13
elephant		
	animal	.13
	trunk	.13
	big	.11
	grey	.11
	peanuts	.07
	man	.05
	tusk	.05
face		
	nose	.22
	lift	.09
	eyes	.07
	head	.07
	pretty	.07
	body	.05
	smile	.05
factory		
	outlet	.13
	workers	.11
	worker	.09
	smoke	.07
	work	.07
	industry	.05
	warehouse	.05
father		
	mother	.60
	son	.11
	figure	.05
fence		
	picket	.24
	white	.13
	wire	.09
	gate	.07
	climb	.05
	house	.05
	jump	.05
	sword	.05
flag		
	pole	.18
	wave	.09
	country	.07
	stars	.07
	patriotic	.05
	red	.05
	stripes	.05
flute		
	music	.33
	instrument	.24
	clarinet	.07
	player	.05
game		
	play	.27
	board	.09
	football	.05
	fun	.05
	monopoly	.05
	room	.05
	show	.05
garden		
	flowers	.33
	flower	.13
	hose	.09
	vegetables	.07
girl		
	boy	.71
	friend	.09
gold		
	silver	.42
	bracelet	.05
	money	.05
	necklace	.05
	ring	.05
hair		
	brush	.20
	long	.13
	comb	.07
	cut	.07
	blonde	.05
ham		
	cheese	.24
	eggs	.11
	pig	.11
	pork	.07
	sandwich	.07
	meat	.05
ice		
	cold	.33
	cream	.15
	water	.15
	cube	.13
	skate	.09
jewel		

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	diamond	.29
	ring	.20
	ruby	.11
	crown	.07
	gem	.07
jungle		
	fever	.18
	trees	.13
	book	.11
	animals	.09
	forest	.05
	wild	.05
king		
	queen	.76
	crown	.15
knob		
	door	.91
liquor		
	drink	.18
	drunk	.18
	alcohol	.15
	beer	.09
	cabinet	.07
	vodka	.07
machine		
	factory	.16
	metal	.09
	sewing	.09
magazine		
	read	.16
	article	.15
	paper	.09
	book	.07
	rack	.07
	ad	.05
	newspaper	.05
mirror		
	image	.35
	reflection	.24
	glass	.09
	face	.07
	look	.05
money		
	rich	.15
	cash	.11
	green	.11
	dollar	.07
moon		
	sun	.25
	stars	.13
	light	.09
	sky	.07
	shine	.05
mouth		
	teeth	.22
	lips	.15
	nose	.15
	open	.09
	face	.07
	oral	.07
	feed	.05
movie		
	theater	.31
	film	.11
	popcorn	.11
	scream	.05
mule		
	donkey	.36
	animal	.11
	horse	.09
	slow	.05
	stubborn	.05
	team	.05
newspaper		
	read	.25
	article	.13
	magazine	.05
nose		
	face	.29
	mouth	.11
	big	.09
	eyes	.09
	bleed	.07
	hair	.05
nurse		
	doctor	.69
orange		
	fruit	.27
	apple	.20
	red	.13
	juice	.09
	peel	.09
	yellow	.09
paper		
	pencil	.29
	pen	.16
	write	.07
party		
	fun	.24
	beer	.09
	animal	.05
	birthday	.05
	time	.05
pen		
	pencil	.45
	write	.22
	paper	.15
	ink	.11
pencil		
	pen	.47
	paper	.15
	sharper	.09
	erasure	.07
	write	.05
penny		
	copper	.18
	nickel	.13
	money	.11
	dime	.09
	saver	.05
pepper		
	salt	.75
	shaker	.05
poison		
	ivy	.25
	death	.13
	snake	.09
	control	.05
	dead	.05
	deadly	.05

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	rat	.05
police		
	officer	.24
	car	.07
	law	.07
	man	.07
	gun	.05
pond		
	water	.31
	lake	.16
	duck	.07
	ducks	.05
	fish	.05
	frog	.05
rope		
	climb	.16
	burn	.15
	jump	.15
	tie	.09
	hang	.05
	knot	.05
	swing	.05
salt		
	pepper	.75
	shaker	.05
school		
	bus	.15
	books	.11
	teacher	.09
	house	.05
scissors		
	cut	.60
	paper	.24
sheep		
	wool	.33
	lamb	.07
	white	.07
	flock	.05
	herd	.05
	skin	.05
skin		
	soft	.18
	color	.11
	smooth	.11
	rash	.07
	dry	.05
	pale	.05
sock		
	shoe	.35
	foot	.31
	feet	.07
soil		
	dirt	.60
	plant	.09
	dirty	.07
	ground	.05
son		
	daughter	.64
	father	.13
	boy	.07
	brother	.05
story		
	book	.35
	tale	.11
	telling	.07
	end	.05
	read	.05
	teller	.05
street		
	light	.18
	road	.15
	car	.07
	lights	.07
	sign	.07
	cars	.05
text		
	book	.82
	read	.05
thumb		
	hand	.27
	nail	.22
	finger	.13
	suck	.09
	print	.07
timber		
	wood	.42
	tree	.31
tower		
	tall	.36
	castle	.09
	high	.09
	leaning	.05
truck		
	car	.20
	driver	.20
	stop	.13
	drive	.07
	wheel	.05
	wheels	.05
web		
	spider	.98
	Emotion Words	
affection		
	love	.44
	caring	.07
	care	.05
affectionate		
	loving	.27
	caring	.20
	love	.16
	warm	.05
afraid		
	scared	.64
	fear	.09
	dark	.04
aggravated		
	assault	.20
	frustrated	.13
	angry	.11
	annoyed	.09
	mad	.07
	frustration	.05
	irritated	.05
	upset	.05
aggressive		
	forceful	.09
	mean	.07
	passive	.05
	pushy	.05

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	strong	.05
alert		
	awake	.36
	aware	.24
	alarm	.09
	ready	.05
alienation		
	alone	.38
amazement		
	surprise	.22
	awe	.20
	wonder	.15
	shock	.09
amusement		
	park	.42
	fun	.22
	laugh	.07
anger		
	mad	.29
	frustration	.05
	red	.05
angry		
	mad	.38
	sad	.13
	happy	.09
annoyed		
	angry	.22
	mad	.13
	irritated	.11
	bothered	.09
	frustrated	.05
	upset	.05
anxiety		
	nervous	.22
	anxious	.09
	attack	.09
	stress	.09
	nervousness	.07
	disorder	.05
	nerves	.05
anxious		
	nervous	.35
	scared	.09
	anxiety	.05
	eager	.05
	impatient	.05
apprehension		
	fear	.11
	nervous	.05
	understand	.05
astonishment		
	amazement	.25
	surprise	.24
	surprised	.18
	shock	.07
	amazed	.05
awful		
	terrible	.24
	bad	.20
	horrible	.18
	disgusting	.07
calm		
	relaxed	.20
	water	.11
	down	.07
	cool	.05
	peaceful	.05
	serene	.05
	storm	.05
cheerful		
	happy	.73
concerned		
	worried	.31
	care	.13
	caring	.13
confident		
	sure	.33
	strong	.13
	assured	.05
	unsure	.05
content		
	happy	.24
	book	.07
	satisfied	.05
	story	.05
curious		
	cat	.15
	question	.11
	wondering	.11
	nosey	.09
	wonder	.09
delight		
	happy	.35
	joy	.15
	pleasure	.05
delighted		
	happy	.65
	pleased	.11
	smile	.05
depressed		
	sad	.56
	lonely	.11
	happy	.05
	upset	.05
disappointed		
	sad	.27
	upset	.27
	happy	.07
	down	.05
discouraged		
	encouraged	.13
	upset	.07
	disappointed	.05
	encourage	.05
disgusted		
	gross	.11
	repulsed	.09
	angry	.05
	sick	.05
distress		
	upset	.11
	help	.09
	stress	.09
	anxiety	.07
	signal	.07
eagerness		
	willing	.15
	anxious	.07

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	ready	.07
	ambition	.05
	ambitious	.05
	excited	.05
	excitement	.05
	impatient	.05
	willingness	.05
ecstasy		
	drug	.16
	sex	.13
	fantasy	.09
	pleasure	.09
	happy	.07
envy		
	jealous	.44
	green	.16
	jealousy	.13
	desire	.05
exasperation		
	tired	.25
	frustration	.09
	frustrated	.07
	breath	.05
	breathless	.05
	excited	.05
	sigh	.05
excited		
	happy	.49
	anxious	.05
exhilaration		
	excited	.22
	excitement	.11
	joy	.05
	rush	.05
fear		
	scared	.24
	afraid	.05
fright		
	scared	.40
	fear	.11
	scare	.11
	night	.07
frustrated		
	angry	.20
	annoyed	.11
	mad	.09
	sexually	.05
	stress	.05
	upset	.05
fulfilled		
	satisfied	.29
	complete	.13
	content	.11
	happy	.09
	dreams	.05
furious		
	mad	.29
	angry	.22
	upset	.05
glad		
	happy	.56
	sad	.13
	mad	.07
grateful		
	thankful	.27
	dead	.19
	thanks	.09
	glad	.07
	happy	.07
grief		
	sad	.25
	death	.15
	sorrow	.15
	sadness	.11
	stricken	.05
guilt		
	innocence	.13
	remorse	.07
	innocent	.05
	regret	.05
	shame	.05
happy		
	sad	.45
	smile	.18
	birthday	.09
hope		
	faith	.16
	glory	.13
	pray	.09
	want	.09
	joy	.07
	wish	.07
	future	.05
hopeful		
	optimistic	.24
	wishful	.09
	happy	.07
	wish	.07
humiliation		
	embarrassed	.20
	embarrassment	.20
	embarrass	.09
hurt		
	pain	.36
	cut	.05
hysterical		
	crying	.15
	upset	.13
	laughing	.11
	crazy	.09
	funny	.09
	laugh	.05
indifferent		
	uncaring	.20
	same	.11
infatuated		
	obsessed	.31
	love	.16
	lust	.07
	crush	.05
	obsession	.05
insecure		
	alone	.07
	fear	.07
	unsafe	.07
	scared	.05
	unsure	.05
interested		
	like	.09
	bored	.07

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	curious	.07
	concerned	.05
irritation		
	rash	.15
	annoyance	.07
	aggravation	.05
	annoy	.05
isolation		
	alone	.58
	lonely	.11
jealousy		
	envy	.49
	envious	.09
	green	.05
joy		
	happy	.42
	happiness	.15
	world	.05
lonely		
	sad	.33
	alone	.18
	depressed	.09
love		
	hate	.25
	heart	.18
	boyfriend	.07
lust		
	sex	.24
	love	.18
	passion	.15
	desire	.13
	want	.09
	body	.05
mad		
	angry	.51
	sad	.09
	crazy	.07
	happy	.05
	upset	.05
miserable		
	sad	.29
	upset	.13
	unhappy	.11
	cry	.05
	depressed	.07
moody		
	blues	.07
	cranky	.07
	sad	.05
	temperamental	.05
neglect		
	ignore	.20
	child	.13
	leave	.07
	abuse	.07
	alone	.05
	hurt	.05
nervousness		
	anxiety	.15
	scared	.11
	anxious	.07
	shaky	.05
obsessed		
	compulsive	.16
	infatuated	.09
	crazy	.07
optimism		
	pessimism	.33
	positive	.20
	hope	.11
	bright	.05
	hopeful	.05
panic		
	attack	.24
	scared	.15
	fear	.13
	nervous	.05
	stress	.05
	stricken	.05
	worry	.05
pity		
	sorrow	.20
	sorry	.11
	empathy	.09
	sad	.09
	sympathy	.09
	self	.05
pleasure		
	pain	.22
	happy	.15
	sex	.13
preoccupied		
	busy	.36
	distracted	.09
	worried	.05
pride		
	joy	.15
	proud	.15
	honor	.07
	lion	.05
rage		
	anger	.51
regret		
	remorse	.18
	sorry	.18
	sad	.11
	sorrow	.11
rejection		
	hurt	.07
	sad	.07
	alone	.05
	denial	.05
	disappointment	.05
	failure	.05
	no	.05
remorse		
	regret	.27
	sorry	.16
	guilt	.13
	sad	.07
	sorrow	.07
	sadness	.05
sad		
	happy	.40
	unhappy	.11
	cry	.07
	frown	.05
satisfaction		
	guaranteed	.25
	content	.24

APPENDIX B (Continued)

Stimulus Word	Associations	Proportion of Participants
	happy	.05
scared		
	frightened	.22
	afraid	.13
	fear	.09
	cat	.05
	fright	.05
	stiff	.05
secure		
	safe	.44
	insecure	.09
sensitive		
	caring	.24
	skin	.09
	emotional	.07
	soft	.07
	teeth	.05
serious		
	joke	.09
	funny	.05
	important	.05
	thought	.05
shame		
	embarrassed	.20
	guilt	.20
	embarrass	.09
	embarrassment	.07
shock		
	electric	.18
	pain	.09
	electricity	.07
	treatment	.07
	scared	.05
	surprise	.05
	therapy	.05
	wave	.05
skeptical		
	unsure	.16
	doubtful	.07
	doubt	.05
sorry		
	apology	.15
	apologize	.13
	sad	.11
	forgive	.05
	regret	.05
surprised		
	shocked	.31
	happy	.13
	party	.09
	excited	.05
	shock	.05
	startled	.05
thankful		
	grateful	.53
	appreciative	.05
	glad	.05
thrilled		
	excited	.40
	happy	.18
	ecstatic	.09
	excitement	.05
troubled		
	worried	.13
	bothered	.09
	confused	.05
uncertain		
	unsure	.36
	confused	.05
	sure	.05
uncomfortable		
	uneasy	.22
	awkward	.07
	comfortable	.05
	nervous	.05
	shy	.05
unhappy		
	sad	.80
upset		
	sad	.24
	angry	.16
	cry	.13
	stomach	.11
	mad	.05
	unhappy	.05
worried		
	scared	.27
	nervous	.16
	concerned	.13
zealous		
	over	.09
	ambitious	.05
	energy	.05
	enthusiastic	.05
	excited	.05
	happy	.05
zest		
	soap	.49
	spice	.07
	zeal	.05

(Manuscript received September 8, 1997;
revision accepted for publication September 14, 1998.)