

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

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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 non-verbal 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 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-

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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:

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:

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 calcu-

lated 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 from 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; Toggia & 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.

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

APPENDIX A (Continued)

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

APPENDIX A (Continued)

Word	Ratings Scale			Word	Ratings Scale		
	Concreteness	Imageability	Context Availability		Concreteness	Imageability	Context Availability
timber	6.0	5.3	4.9	hope	2.6	5.4	2.4
tower	6.1	6.3	5.4	hopeful	3.1	2.6	4.4
truck	6.8	7.0	5.7	hurt	3.3	3.6	5.0
web	5.4	6.5	6.0	hysterical	3.4	4.2	5.4
Emotion Words				indifferent	2.6	1.7	3.6
affection	3.4	5.0	4.0	infatuated	2.8	2.4	2.7
affectionate	3.2	4.3	4.9	interested	3.0	2.5	5.2
afraid	3.2	3.4	5.3	jealousy	2.9	5.0	2.6
aggravated	2.9	3.3	5.4	joy	3.0	3.7	5.2
aggressive	3.3	2.8	5.2	lonely	2.6	2.5	4.9
alert	3.1	3.5	5.1	love	2.4	4.2	6.4
angry	2.9	4.3	5.7	mad	3.0	3.9	5.9
annoyed	3.1	3.4	5.2	miserable	3.0	3.5	5.4
anxiety	3.8	4.7	2.7	moody	2.6	3.0	5.5
anxious	2.5	2.5	4.4	nervous	3.2	3.4	5.4
awful	3.2	2.8	4.6	obsessed	3.0	2.8	5.8
calm	2.7	2.9	5.0	panic	3.0	5.5	3.8
cheerful	3.4	3.8	5.2	preoccupied	2.7	2.5	4.6
concerned	3.0	2.8	4.7	regret	3.3	5.1	2.3
confident	3.2	3.2	5.0	rejection	2.8	4.6	5.8
content	2.8	2.0	4.0	sad	3.1	4.0	5.1
curious	2.6	2.8	5.3	scared	2.9	3.7	5.3
delight	3.4	4.4	3.4	secure	2.4	1.8	3.7
delighted	3.0	3.3	4.3	sensitive	2.9	2.7	5.1
depressed	3.0	3.5	5.4	serious	3.2	3.2	4.7
disappointed	3.2	2.7	4.4	skeptical	2.5	2.3	4.0
discouraged	3.0	2.7	4.9	sorry	2.8	2.8	5.3
disgusted	2.9	3.3	4.9	stupid	3.2	2.8	5.8
excited	3.4	4.5	5.6	surprised	3.0	4.2	4.9
fear	3.1	5.4	3.5	thankful	3.3	2.7	4.7
frustrated	3.1	3.4	5.4	thrilled	3.0	3.5	4.5
fulfilled	2.8	1.7	3.9	troubled	3.0	3.0	4.3
furious	3.3	4.0	5.1	uncertain	2.8	2.4	4.2
glad	3.2	3.6	5.0	uncomfortable	3.0	3.0	4.7
grateful	3.3	3.1	4.8	unhappy	2.9	3.9	5.3
greed	3.5	4.5	3.4	upset	3.2	3.4	5.0
grief	3.1	4.7	3.5	worried	3.1	3.2	5.4
happy	3.0	4.5	6.0	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	Stimulus Word	Associations	Proportion of Participants
ability	Abstract Words		allow	first	.25
	skill	.13		financial	.05
	able	.11		permit	.31
	capable	.11		let	.24
	talent	.11	answer	permission	.11
	capability	.05		give	.07
advice	help	.15		question	.67
	friend	.09		machine	.05
	opinion	.07		reply	.05
	column	.05		response	.05
	counselor	.05	area	space	.13
	give	.05		place	.11
aid	help	.49		rug	.07

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

APPENDIX B (Continued)

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

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