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Valence ratings of emotional and non-emotional words in children

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Abstract

Words of varying emotional content are widely used as stimuli in studies that examine the cognitive responses to threat in childhood anxiety disorders. To date, there are limited data on word stimuli that elicit emotional responses in children. The purpose of this study was to collect children's valence ratings of different types of emotional words. Typically developing children ($n = 174$; ages: 9–11 years) rated a pre-selected list of 81 words from three emotional categories: threat, positive, and neutral. Children's valence ratings differentiated the three word categories with strong internal consistency in each category. Furthermore, females provided more extreme valence ratings than males. Mean valence ratings and word characteristics for each word are provided. These words can potentially be used to develop experimental paradigms that examine reactions to emotional words in children with and without anxiety disorders.

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1. Introduction

Cognitive theories propose that childhood anxiety disorders result from abnormalities in the way threatening information is processed (Daleiden & Vasey, 1997). Most of the research in this domain examines the relationship between anxiety and three cognitive processes: attention, perception, and memory. To explore these relationships, researchers use experimental paradigms that present different types of emotional words (specifically, threat, positive, or neutral words) to assess cognitive responses to threat. For example, Vasey, el-Hag, and Daleiden (1996) demonstrated that children with anxiety disorders selectively attend to threat words (i.e., attentional bias) compared to neutral words.

One important variable in the development of anxiety-cognition paradigms for children lies in the selection of words that are emotionally evocative at each developmental stage. To date, there is only one actively used database of emotional words in children. This database was developed by Neshat-Doost, Moradi, Taghavi, Yule, and Dalgleish (1999) and consists of word lists that report the responses of 221 children who were asked to generate as many words as possible that fell within a given emotional category (e.g., happy, sad, scary). The strength of collecting production data from children (“Which words can you think of?”), as opposed to rating data (“How sad does this word make you feel?”), is that it is likely to yield the most familiar words. The limitation however is that the words generated may reflect more idiosyncratic responses rather than words that are perceived as the most threatening or happy. Nevertheless, most of the paradigms developed for the study of cognition and childhood anxiety used words from this single database or words from adult anxiety paradigms (e.g., Dalgleish et al., 2003; Vasey, Daleiden, Williams, & Brown, 1995; Vasey et al., 1996; Taghavi, Dalgleish, Moradi, Neshat-Doost, & Yule, 2003). This shortage of word sources highlights the essential need to develop more refined and developmentally suitable word corpora in order to replicate previous findings and expand future research in the field of child anxiety and cognition.

In contrast to children, adult sources of emotional words are derived using different methods. For example, the *Affective Norms for English Words* (ANEW) is a word corpus that was generated by systematic collection of rating (versus production) data. This corpus provides valence and arousal ratings of more than 600 pre-selected words that were rated by 100 college students (Bradley & Lang, 1999). Other adult word lists are based on emotional ratings from groups of independent judges, rather than a representative community sample (e.g., MacLeod & Mathews, 1988; Mogg & Bradley, 1998).

In the present study, we collected rating data on a pre-selected group of 81 emotional words. The study sample consisted of 9–11 year old children. This age range was selected because of the high prevalence of anxiety disorders in this age group. Collecting emotional rating data on this age group may therefore be useful for developing experimental paradigms that probe information processing abnormalities in anxiety disorders (Costello & Angold, 1995). We report the valence ratings of threat, positive, and neutral words. Given that prior data indicate that females are more emotionally reactive than males (e.g. Neshat-Doost et al., 1999; McManis, Bradley, Berg, Cuthbert, & Lang, 2001), we expected this same pattern to occur in our sample.

2. Method

2.1. Participants

Children, ages 9 to 11 years ($n = 174$; 89 females), participated on this study. Children were categorized into three age groups, ages 9 ($n = 64$), 10 ($n = 70$), and 11 ($n = 40$) years. Children were recruited from a diversity of schools, summer camps, and after-school programs in Baltimore City and surrounding areas. These sites encompassed a broad range of socioeconomic strata, with median household incomes ranging from \$35,000 to \$90,000 (United States Census Bureau, 2000). Race data were collected on a sub-sample of 89 children. The racial composition of the sample was as follows: 59% Caucasian, 33% African-American, 2% Asian, 3% Hispanic, and 3% other. This composition was reflective of the Baltimore City/County area sampled.

2.2. Word selection

An initial list of 200 words (threat, positive, and neutral) were selected by the authors from the following sources: (1) previous studies of childhood anxiety disorders (Vasey et al., 1995, 1996); (2) the ANEW (Bradley & Lang, 1999), which included words from Bellezza, Greenwald, and Banaji (1986), and Mehrabian and Russell (1974); (3) the word list generated by Neshat-Doost et al. (1999); (4) words generated by the authors of this paper. For each word type, the authors confirmed that the words selected were commensurate with a 4th or 5th grade reading level using *The Educator's Word Frequency Guide* (Zeno, Ivens, Millard, & Duvvuri, 1995), which is a corpus of words compiled from over 6000 reading sources that included textbooks, works of literature, and popular works of fiction and nonfiction used in schools and colleges throughout the United States (Zeno et al., 1995). This guide provides grade specific frequencies based on the number of times a word appears in a selection of grade-appropriate books. Although this guide was published about 10 years ago, we believe that with the exception of minor shifts in popular fiction, the vast majority of these materials are adequate for children today.

Specific sources for each word type were as follows: (1) Threat words: Forty words were taken from prior studies of anxious children (Vasey et al., 1995, 1996). Thirty words were extracted from the ANEW (valence < 2) and the Neshat-Doost et al. word list (high frequency and exclusively in the “scary things” category). (2) Positive Words: Seventy words were selected from two sources, the ANEW (valence > 7) and the Neshat-Doost et al. list (high frequency and exclusively in the “happy things” category). (3) Neutral Words: Sixty neutral words were derived from two sources, the ANEW (valence = 5) and generated by the authors. The Neshat-Doost et al. corpus was not considered a suitable source of neutral words since there was some overlap in words between the neutral and scary categories. For example, children generated the words *dog* and *cat* in response to being prompted to list “scary things” as well as “neutral things”. Two developmental psychologists independently reviewed the list of neutral words and corroborated their neutrality.

From this 200 item list, 27 words in each emotional category (threat, positive, and neutral) were selected and matched on mean word frequency, length, and number of syllables. Word frequencies were obtained from *The Educator's Word Frequency Guide*. Since this guide did not provide any

criteria that defined low, medium, and high frequency words, the authors carried out descriptive statistics to establish these criteria. We averaged the frequencies of all 4th and 5th grade words in the database. The resulting list had a frequency range of 0 to 63,000, a mean of 42.5 (SD = 649.7), and median of 2.0. The 81 words selected had a mean of 47.8 (SD = 58.4), and were low or medium frequency words (frequency range was approximately 1 to 250). High frequency words, which were defined as one SD above the mean (>700), were not included since these words were predominantly pronouns, prepositions, conjunctions and other non-emotional parts of speech.

In order to confirm that words were matched across the three categories, three separate ANOVA's were performed with word category (threat, positive, neutral) as the predictor variable and word frequency, word length (number of letters in the words) and number of syllables as the dependent variables. As expected, the results revealed that the word categories did not differ on any of these characteristics (all p 's > .05, see [Appendices A,B,C](#)).

2.3. Development of the valence scale

A modification of the Self-Assessment Manikin (SAM), a nine-point pictorial assessment scale was used to measure the valence of words ([Bradley & Lang, 1994](#)). Valence refers to whether a stimulus is viewed as pleasant or unpleasant ([Lang, 1995](#)). The SAM has been used to measure valence in response to viewing pictures, sounds, and words in adults (e.g., [Lang, 1997](#); [Bradley & Lang, 1999](#)), as well as pictures in children (e.g., [McManis et al., 2001](#)).

The original SAM was modified for this age group in two ways: (1) the phrases “how happy?” and “how sad or scared?” were used instead of pleasant and unpleasant, respectively, to describe valence; (2) the nine-point rating scale was reduced to five points, one point corresponding to each picture. The modified SAM scale contained manikin faces ranging from very happy (*rating* = 5) to very sad or scared (*rating* = 1) (see [Fig. 1](#)).

The 81 words were presented in a single fixed randomized order in a test booklet, with six words per page. Next to each word was the modified SAM scale. The test was preceded by written standardized instructions and two practice items.

2.4. Test administration procedures

Children were tested in a quiet room in their school or camp in a session lasting approximately 15 min. The instructions and practice items were reviewed. Each word was read aloud while the

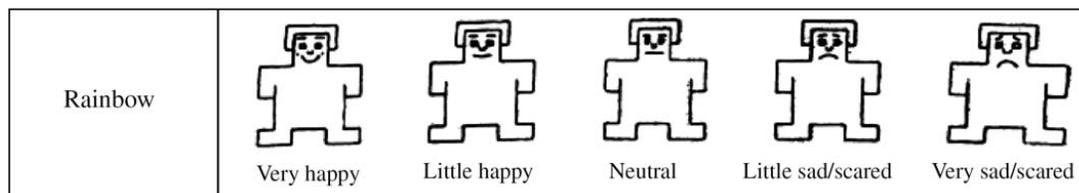


Fig. 1. Modified Self-Assessment Manikin Scale (adapted from [Bradley and Lang, 1994](#)) to Measure Valence.

child simultaneously viewed that word. Children were asked to put an “X” on the manikin that best described their initial feeling upon viewing the word. Children were instructed to record their response within three seconds before the next item was read aloud. If a child lagged behind, testing was temporarily stopped in order to assist the child.

3. Results

3.1. Reliability of word categories

In order to examine the reliability of the assignment of words to the three different categories, tests of internal consistency were conducted on the rating data. Cronbach’s alpha coefficients were excellent (.91, .89, and .92 for threat, positive, and neutral words, respectively), indicating high levels of reliability for word categorizations. Ratings for individual word items correlated strongly with the total score rating for each category. For threat words, item to total score correlations ranged from .31 to .65. For positive words, item to total score correlations ranged from .16 to .65. Only one word, millionaire (at .16), had correlations weaker than .30 with the total correlation. With this word deleted from the analysis, Cronbach’s alpha remained at .89 for positive words. For neutral words, item to total correlations ranged from .39 to .75. In summary, strong Cronbach’s alpha coefficients and high item to total correlations indicated excellent item reliability within each of the three word categories thereby providing confidence in the word categorizations.

3.2. Comparison of valence ratings across word categories

Table 1 lists the mean valence ratings for each word type and Appendices A,B,C list the ratings for individual items. In order to determine whether valence ratings differed by word category (i.e., threat, positive, and neutral words), a $2 \times 3 \times 3$ ANOVA with repeated measures was performed with age and gender as the between subject variables and word category (threat, positive, or neutral) as the within subject variable. The results revealed a main effect for word category, $F(2,164) = 1757.86$, $p < .001$, $\eta^2 = .96$. As expected, children rated the positive words as having the highest valence, followed by neutral words, and then by threat words. Positive words had significantly higher ratings (i.e., more positive) than neutral words, which had significantly higher

Table 1
Mean word ratings (SD’s in parentheses) for positive, negative and neutral words among 9, 10, and 11 year olds

Age (years)	N	Word type		
		Positive	Neutral	Negative
9	64	4.58 (0.34)	3.16 (0.38)	1.74 (0.43)
10	70	4.55 (0.37)	3.19 (0.40)	1.70 (0.42)
11	40	4.54 (0.34)	3.13 (0.24)	1.68 (0.38)

ratings over the threat words (all p 's < .0005 with Bonferroni adjustments for multiple comparisons). The results also revealed an interaction of gender and word category, $F(2, 164) = 13.26$, $p < .05$, $\eta^2 = .14$. Females' ratings for positive and threat words were more extreme than those of males (see [Appendices A, B](#)). There were no gender differences in mean ratings for neutral words. There was no main effect of age (see [Table 1](#)), nor any other interactions.

3.3. *Post hoc analyses*

We had no basis for any hypotheses on whether differences in word ratings would emerge as a function of race since the words selected for this study are common to all children, regardless of race, and are present in everyday language, video games, television, and other sources. Nevertheless, we examined this post hoc question among the sub-sample of 112 children for whom we collected race data. Since there were few subjects in the Asian ($n = 2$), Hispanic ($n = 3$), and other ($n = 2$) racial categories, only the Caucasian ($n = 54$) and African–American ($n = 29$) children were included in the analysis. A repeated measures ANOVA with racial category as the between variable and word type (positive, neutral, or negative) as the within variable revealed a main effect of word type, $F(2, 79) = 742.12$, $p < .001$, $\eta^2 = 0.95$, and a Word type * Race interaction, $F(2, 79) = 5.07$, $p < .01$, $\eta^2 = 0.11$. Pairwise comparisons of the Word type * Race interaction revealed that African–American children rated the positive words more positively ($M = 4.71$, $SD = 0.26$) compared with Caucasian children ($M = 4.47$, $SD = 0.42$), but there were no race effects for neutral words (M 's = 3.12 and 3.15 for African–American and Caucasian children, respectively) or for negative word types (M 's = 1.71 and 1.70 for African–American and Caucasian children, respectively). Though this interaction was statistically significant, the actual differences between Caucasian and African–American children were quite small, with 95% confidence intervals for mean ratings of the positive words between 4.36 and 4.58 and between 4.61 and 4.71 for Caucasian and African–American children, respectively (see [Fig. 2](#)). The small difference between the two racial groups was significant due to the very small standard errors. These data indicate that the word type variable still accounted for the vast majority of children's responses.

In a second post hoc analysis, we compared the mean valence ratings for physical versus social threat words. We first subdivided the list of 27 threat words using the classifications proposed by [Vasey et al. \(1996\)](#), as well as independent judgments by the authors ([Appendix A](#)). Physical threat words were defined as those that posed a threat to one's physical well-being (e.g., 'murder'), whereas social threat words were those that posed a threat to one's social interactions (e.g., 'unpopular'). The word 'afraid' was not included in this analysis, since it was viewed as both a physical and social threat. The results from a repeated measures ANOVA revealed that children rated the physical threat words ($M = 1.48$, $SD = .03$) as more negative (i.e., more unpleasant) than the social threat words, ($M = 1.93$, $SD = .04$), $F(1, 167) = 220.78$, $p < .001$, $\eta^2 = .57$. There also was a main effect of gender, $F(1, 167) = 12.12$, ($p = .001$, $\eta^2 = .07$). Across both types of threat words, females rated the words more negatively than did males (see [Appendix A](#)). There was no main effect of age, nor any interactions.

In summary, children's valence ratings were in the predicted direction, with positive words being rated highest in valence, followed by neutral and then by threat words. Word type accounted for an extremely large portion of the variance in children's responses, with an η^2 value

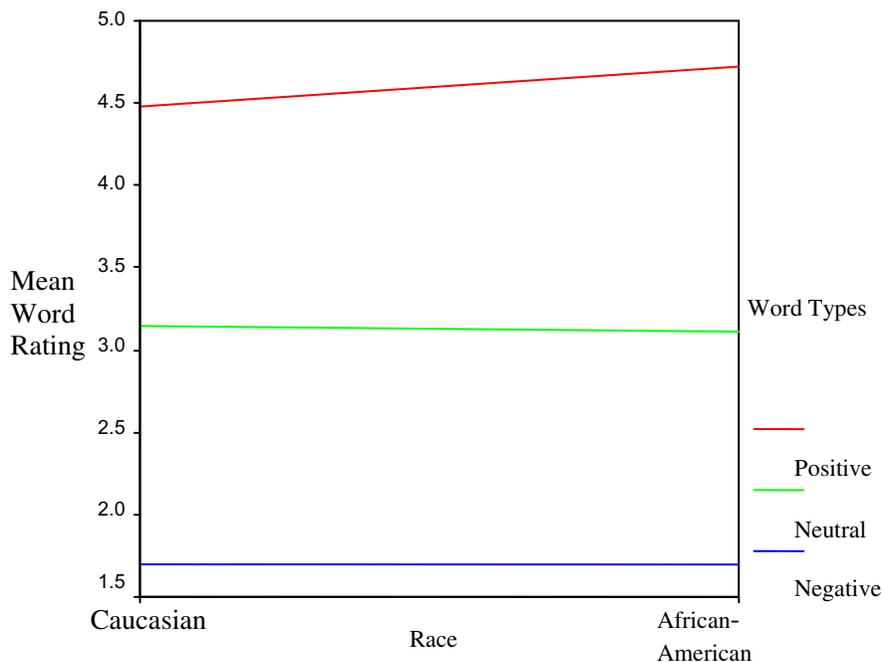


Fig. 2. Ratings for Positive, Neutral, and Negative Word Types by Race. Mean word rating refers to valence ratings as measured by a 5 point scale (5 = very happy, 4 = little happy, 3 = neutral, 2 = little sad/scared, 1 = very sad/scared) that was adapted from Bradley and Lang (1994).

of .96. Additionally, females' word ratings were more extreme than males' ratings for both the positive and threat words. Children viewed physical threat words as eliciting a greater degree of unpleasantness than social threat words. There were no differences in children's responses based on the age factor.

4. Discussion

Experimental paradigms are widely used to study the interrelationships between cognition and anxiety. This is the first study to provide data on children's valence ratings of threat, positive, and neutral words for such purposes. These data will provide researchers with internally sound lists of words that can potentially be used to generate experimental paradigms that assess cognitive responses to emotional stimuli in childhood anxiety disorders.

The results of our study revealed that females provided stronger valence ratings than males in response to both positive and threat words. These findings are consistent with previous studies demonstrating enhanced physiological and behavioral reactivity in girls compared to boys (Kagan, 1994; McManis et al., 2001; Neshat-Doost et al., 1999; Strayer, 1993).

Children's ratings of the emotional words were similar across the three year age range. Younger children (e.g., 7- and 8-year-olds) were considered for our study, however including word stimuli in experimental paradigms would pose a confound for younger children due to variations in

reading levels. Further study is needed to examine the degree to which emotional responses are stable or different within the adolescent age range.

The impact of race on ratings was minimal and confined only to the positive words, with African–American children providing slightly higher ratings than Caucasian children. The effect sizes however were small, thereby indicating that the word type variable still accounted for the vast majority of the children's responses. The word lists are therefore suitable for African–American and Caucasian children. Research on emotional ratings among other races is needed.

Physical threat words elicited more intense negative ratings than the social threat words. Several possible explanations could account for this finding (e.g., a cohort effect due to children's frequent exposure to the media coverage of the current Iraq war, heightened sensitivity to physical threat during this particular developmental period). Irrespective of the underlying causes, social versus physical threat labels provide opportunities to further examine emotional responses to more specific types of threat. Surprisingly, there was no effect of age on physical vs. social threat words, particularly since we expected that the onset of specific phobia in childhood and social phobia in adolescence would have yielded higher physical and social ratings in younger and older children, respectively.

There are several methodological limitations of this study. First, the modified SAM Scale did not differentiate whether the negative ratings reflected sadness or fear. Second, the fixed word order may have resulted in order effects (e.g., fatigue, habituation). Third, there was an imbalance in lexical categories across emotional categories (e.g., neutral words were predominantly nouns, while other categories included a mix of nouns, verbs, and adjectives). If this imbalance were to influence the ratings, we would have expected differences in internal consistency between the categories. Our data however revealed the contrary, i.e., strong internal consistency between categories (i.e., there was not a general regression to the mean but rather the ratings between categories remained distinct).

Other limitations relate to the applicability of these word lists. Specifically, the threat words represent general threats only and therefore may not elicit evocative responses in more focused types of anxiety disorders, such as specific phobia or separation anxiety disorder. Future studies that generate more content-specific words may be more relevant for these disorders. Additionally, the truncated age range of our sample precludes comparison of developmental differences in emotional responses. Finally, future studies are needed to establish the validity of our corpora in differentiating anxious and healthy children. When pursuing such research, it will be necessary to balance categories across subsets of these words since the current word lists are matched across entire categories.

In summary, this study is a first step towards establishing a database of children's ratings of emotional stimuli. Enlarging this database on valence ratings of word stimuli, as well as collecting data on other types of emotional responses (e.g., arousal, dominance) will be integral to gaining a more comprehensive understanding of children's responses to words. Assessments of other types of evocative stimuli (e.g., faces, pictures, sounds) will also be of relevance. Collectively, this body of work will be useful to the study of cognitive–emotional interactions in developmental and clinical samples.

Appendix A. Valence ratings and descriptive characteristics of threat words in 9–11 year old children

Word	Valence ratings			Word characteristics		
	Total mean (SD) ^a	Females	Males	Frequency ^b	Word length	Syllables
Murder ^c	1.14 (0.41)	1.03	1.25	11.25	6	2
Death ^c	1.18 (0.48)	1.12	1.24	119.00	5	1
Kidnapped ^c	1.30 (0.54)	1.13	1.47	1.75	6	2
Cancer ^c	1.36 (0.54)	1.21	1.52	7.50	6	2
Bomb ^c	1.39 (0.68)	1.24	1.55	6.50	4	1
Burglar ^c	1.40 (0.59)	1.31	1.48	0.75	7	2
War ^c	1.44 (0.79)	1.29	1.60	163.25	3	1
Gun ^c	1.45 (0.80)	1.18	1.73	44.25	3	1
Choking ^c	1.45 (0.67)	1.35	1.55	2.75	7	2
Emergency ^c	1.70 (0.84)	1.67	1.72	14.75	9	4
Fail ^d	1.63 (0.76)	1.49	1.76	12.50	4	1
Bully ^d	1.70 (0.77)	1.55	1.85	1.50	5	2
Hate ^d	1.79 (0.82)	1.54	2.05	28.75	4	1
Violent ^c	1.72 (0.90)	1.55	1.89	15.75	7	3
Punished ^d	1.74 (0.77)	1.77	1.95	9.50	8	2
Loser ^d	1.80 (0.82)	1.67	1.94	1.00	5	2
Hurt ^c	1.74 (0.77)	1.65	1.84	100.00	4	1
Afraid ^e	1.84 (0.64)	1.77	1.89	127.00	6	2
Bleeding ^c	1.90 (0.73)	1.79	2.01	7.50	8	2
Stranger ^d	1.91 (0.82)	1.72	2.11	33.50	8	2
Teased ^d	1.80 (0.70)	1.67	1.94	5.25	6	1
Stupid ^d	2.05 (0.86)	1.93	2.18	19.25	6	2
Dumb ^d	2.03 (0.87)	1.91	2.16	11.50	4	1
Rejected ^d	2.01 (0.97)	1.98	2.05	2.25	8	3
Lonely ^d	2.06 (0.77)	2.06	2.07	35.25	6	2
Unpopular ^d	2.34 (0.86)	2.27	2.41	0	9	4
Mistake ^d	2.41 (0.79)	2.34	2.48	28.50	7	2
Mean	1.71 (0.41)	1.60	1.83	30.03	6.1	1.9
Median	1.63	1.59	1.78	11.50	6.0	2.0

^a Valence scale: 5 = very happy, 4 = little happy, 3 = neutral, 2 = little sad/scared, 1 = very sad/scared.

^b Word frequencies derived from Zeno et al. (1995).

^c Physical threat words.

^d Social threat words.

^e Word could be interpreted as either a physical or social threat.

Appendix B. Valence ratings and descriptive characteristics of positive words in 9–11 year old children

Word	Valence ratings			Word characteristics		
	Total mean (SD) ^a	Females	Males	Frequency ^b	Word length	Syllables
Birthday	4.90 (0.41)	4.97	4.84	47.25	8	2
Smart	4.78 (0.47)	4.88	4.67	26.50	5	1
Vacation	4.89 (0.40)	4.91	4.86	18.25	8	3
Champion	4.79 (0.54)	4.85	4.73	7.25	8	3
Millionaire	4.79 (0.59)	4.78	4.80	1.25	11	3
Holiday	4.78 (0.51)	4.82	4.73	14.75	7	3
Cheerful	4.80 (0.49)	4.88	4.64	16.00	8	2
Friend	4.77 (0.51)	4.84	4.66	197.50	6	1
Party	4.78 (0.51)	4.81	4.75	91.25	5	2
Gift	4.75 (0.48)	4.84	4.66	29.75	4	1
Treasure	4.71 (0.57)	4.67	4.74	29.50	8	2
Safe	4.66 (0.64)	4.76	4.55	89.00	4	1
Smile	4.66 (0.58)	4.81	4.51	76.50	5	1
Laughter	4.66 (0.66)	4.73	4.58	22.50	8	2
Peace	4.66 (0.61)	4.75	4.57	49.50	5	1
Beach	4.58 (0.72)	4.73	4.42	78.25	5	1
Wish	4.47 (0.71)	4.61	4.33	106.50	4	1
Cozy	4.47 (0.73)	4.57	4.35	3.75	4	2
Cake	4.46 (0.79)	4.49	4.42	24.00	4	1
Hug	4.38 (0.71)	4.62	4.13	5.25	3	1
Love	4.45 (0.90)	4.80	4.08	137.50	4	1
Strong	4.34 (0.82)	4.42	4.26	236.50	6	1
Rainbow	4.21 (0.76)	4.38	4.02	5.50	7	2
Circus	4.11 (0.82)	4.20	4.02	17.75	6	2
Handsome	4.08 (.92)	3.94	4.21	24.75	8	2
Pretty	4.16 (.98)	4.65	3.64	119.50	6	2
Kiss	4.01 (1.15)	4.30	3.48	9.50	4	1
Mean	4.56 (0.35)	4.67	4.44	55.02	6.0	1.7
Median	4.67	4.70	4.46	26.50	6.0	2.0

^a Valence scale: 5 = very happy, 4 = little happy, 3 = neutral, 2 = little sad/scared, 1 = very sad/scared.

^b Word frequencies derived from [Zeno et al. \(1995\)](#).

Appendix C. Valence ratings and descriptive characteristics of neutral words in 9–11 year old children

Word	Valence ratings			Word characteristics		
	Total mean (SD) ^a	Females	Males	Frequency ^b	Word length	Syllables
Eardrum	3.05 (0.56)	3.02	3.12	1.75	7	2
Brick	3.02 (0.56)	2.99	3.05	28	5	1
Fence	3.04 (0.55)	3.06	3.02	44	5	1
Ankle	3.05 (0.61)	2.96	3.15	5.5	5	2
Block	3.05 (0.64)	2.99	3.11	49.5	5	1
Street	3.11 (0.49)	3.07	3.15	203.75	6	1
Spoon	3.11 (0.49)	3.11	3.11	10.75	5	1
Wood	3.13 (0.55)	3.11	3.15	144.25	4	1
Wall	3.10 (0.60)	3.07	3.13	171.5	4	1
Tray	3.13 (0.58)	3.06	3.21	15	4	1
Machine	3.21 (0.75)	2.99	3.45	97.5	7	2
Lamp	3.17 (0.53)	3.19	3.14	26.75	4	1
Plate	3.16 (0.51)	3.12	3.19	35.25	5	1
Glove	3.14 (0.57)	3.11	3.18	5.25	5	1
Paper	3.18 (0.60)	3.18	3.18	224.25	5	2
Carpet	3.17 (0.58)	3.12	3.21	14.5	6	2
Pencil	3.18 (0.59)	3.19	3.18	29	6	2
Circle	3.20 (0.63)	3.24	3.15	65	6	2
Magnet	3.20 (0.60)	3.13	3.27	13.25	6	2
Article	3.26 (0.68)	3.28	3.25	29.5	7	3
Building	3.25 (0.70)	3.20	3.31	174.25	8	2
Inch	3.17 (0.63)	3.09	3.25	39.75	4	1
Triangle	3.29 (0.71)	3.26	3.31	6.75	8	3
Calendar	3.30 (0.66)	3.30	3.30	10.5	8	3
Hall	3.32 (0.62)	3.33	3.32	87	4	1
Statue	3.30 (0.68)	3.29	3.31	16	6	2
Jacket	3.40 (0.75)	3.43	3.38	27.25	6	2
Mean	3.16 (0.36)	3.13	3.20	58.36	5.6	1.6
Median	3.04	3.04	3.08	29.00	5.0	2.0

^a Valence scale: 5 = very happy, 4 = little happy, 3 = neutral, 2 = little sad/scared, 1 = very sad/scared.

^b Word frequencies derived from [Zeno et al. \(1995\)](#).

References

- Bellezza, F. S., Greenwald, A. G., & Banaji, Mahzarin R. (1986). Words high and low in pleasantness as rated by male and female college students. *Behavior Research Methods, Instruments and Computers*, 18, 299–303.
- Bradley, M., & Lang, P. J. (1999). Affective norms for english words (ANEW): stimuli, instruction manual and affective ratings. Technical report C-1, Gainesville, FL: The Center for Research in Psychophysiology, University of Florida.
- Bradley, M., & Lang, P. J. (1994). Measuring emotion: the self-assessment manikin and the semantic differential. *Journal of Behavioral Therapy and Experimental Psychiatry*, 25, 49–59.
- Costello, E. J., & Angold, A. (1995). Epidemiology. In J. S. March (Ed.), *Anxiety disorders in children and adolescents* (pp. 109–124). New York: Guilford Press.
- Daleiden, E. L., & Vasey, M. V. (1997). An information-processing perspective on childhood anxiety. *Clinical Psychology Review*, 17(4), 407–429.
- Dalgleish, T., Taghavi, R., Neshat-Doost, H., Moradi, A., Canterbury, R., & Yule, W. (2003). Patterns of processing bias for emotional information across clinical disorders: a comparison of attention, memory, and prospective cognition in children and adolescents with depression, generalized anxiety, and posttraumatic stress disorder. *Journal of Clinical Child Adolescent Psychology*, 32(1), 10–21.
- Kagan, J. (1994). *Galen's prophecy: Temperament in human nature*. New York: Westview Press.
- Lang, P. J. (1995). The emotion probe: studies of motivation and attention. *American Psychologist*, 50, 372–385.
- Lang, P. J. (1997). *International Affective Picture System (IAPS): Technical manual and affective ratings*. Gainesville, FL: University of Florida.
- MacLeod, C., & Mathews, A. (1988). Anxiety and the allocation of attention to threat. *The Quarterly Journal of Experimental Psychology*, 40, 653–670.
- McManis, M., Bradley, M., Berg, W., Cuthbert, B., & Lang, P. J. (2001). Emotional reactions in children: verbal, physiological and behavioral responses to affective pictures. *Psychophysiology*, 38, 222–231.
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. Cambridge, MA: MIT Press.
- Mogg, K., & Bradley, B. (1998). A cognitive-motivational analysis of anxiety. *Behaviour Research and Therapy*, 36, 809–848.
- Neshat-Doost, H., Moradi, A., Taghavi, R., Yule, W., & Dalgleish, T. (1999). The development of a corpus of emotional words produced by children and adolescents. *Personality and individual differences*, 27, 433–451.
- Strayer, J. (1993). Children's concordant emotions and cognitions in response to observed emotions. *Child Development*, 64, 188–201.
- Taghavi, M. R., Dalgleish, T., Moradi, A. R., Neshat-Doost, H. T., & Yule, W. (2003). Selective processing of negative emotional information in children and adolescents with generalized anxiety disorder. *British Journal of Clinical Psychology*, 42(3), 221–230.
- United States Census Bureau (2000). Table DP-1. Profile of General Demographic Characteristics. Retrieved from <http://censtats.census.gov/data/MD/>.
- Vasey, M., Daleiden, E., Williams, L., & Brown, L. (1995). Biased attention in childhood anxiety disorders: a preliminary study. *Journal of Abnormal Child Development*, 23, 267–279.
- Vasey, M., el-Hag, N., & Daleiden, E. (1996). Anxiety and the processing of emotionally threatening stimuli: distinctive patterns of selective attention among high- and low-test-anxious children. *Child Development*, 67, 1173–1185.
- Zeno, S. M., Ivens, S. H., Millard, R. T., & Duvvuri, R. (1995). *The educator's word frequency guide*. Brewster, NY: Touchstone Applied Science Associates.