

Concreteness, emotionality, and meaningfulness as determiners of the imagery values of words when meaning is controlled

ALFREDO CAMPOS

University of Santiago de Compostela, Santiago de Compostela, Spain

Two hundred eighteen subjects were given 98 pairs of words, each pair consisting of one concrete and one abstract word of similar meaning. The subjects rated each word for imagery, concreteness, emotionality, and meaningfulness. Stepwise multiple regression of imagery upon concreteness, emotionality, meaningfulness, date of entry into Spanish, and word length showed that 79% of the variance of imagery values was explained by concreteness, emotionality, and meaningfulness.

Paivio (1968) measured 30 properties of 96 nouns, including imagery, concreteness, emotionality and meaningfulness scores; vividness of imagery correlated .65, -.30, and .61 with concreteness, emotionality, and meaningfulness, respectively. Toggia and Battig (1978) measured seven properties of 2,854 words; imagery correlated .67 with meaningfulness and .88 with concreteness. In a study of 310 nouns, Emmerich (1979) obtained a correlation of .62 between imagery and meaningfulness and a correlation of .89 between imagery and concreteness.

Rubin (1980) measured 51 properties of 125 nouns; imagery correlated .88 with concreteness, -.12 with emotionality, .61 with meaningfulness, -.29 with length, and -.22 with date of entry into the language. Rubin and Friendly (1986) found correlations of, respectively, -.19, .89, and .72 between the imagery and the emotionality, concreteness, and meaningfulness of 925 nouns. In a study of 1,046 words, Benjafield and Muckenheim (1989) also obtained positive correlations between imagery and concreteness (.64) and negative correlations between imagery and date of entry (-.57).

Campos (1990, 1991b, 1991c) and Campos and González (1991) reported positive correlations among imagery, concreteness, emotionality, and interest; their finding that the correlation between imagery and emotionality was positive rather than negative, as in the studies mentioned above, appeared to be due to their having controlled meaning by using concrete and abstract words with similar meanings.

Benjafield (1987) reported only a marginally significant difference in imagery between words high in emotionality and words low in emotionality ($p = .07$), whereas date of entry did make a significant difference, with older words scoring higher in imagery than did newer

words. In our investigation, we wanted to find the variables that influence the imagery value of words and to determine the contribution of each one.

METHOD

Our subjects were 218 psychology students (152 women, 66 men; mean age 19.9 years, range 18-24 years) attending the University of Santiago de Compostela. They were presented with the list of 98 word pairs previously constructed and used by Campos (1990) and Campos and González (1992). In this list, the words of each pair have similar meanings, differing in only a single morpheme so that one refers to something concrete and the other to something abstract (e.g., friend-friendship).

The words were presented in a single session to groups of approximately 20 subjects. One hundred twelve subjects rated 50 word pairs from 1 to 7 on imagery, concreteness, and emotionality scales; the other 106 subjects rated the other 48 word pairs on these scales. Each subject rated only 16 or 17 pairs of words on the meaningfulness scale. The date of entry of each word into Spanish was taken to be the earliest year mentioned in the corresponding entry in the *Breve Diccionario Etimológico de la Lengua Castellana* (Corominas, 1983). Word length was defined as the number of letters in the word (Benjafield, 1987).

We counterbalanced the orders of presentation of words and scales. The instructions for the imagery, concreteness, and meaningfulness scales were adapted from Paivio, Yuille, and Madigan (1968), with few modifications; emotionality scale instructions were adapted from Brown and Ure (1969).

RESULTS AND DISCUSSION

Mean values and Pearson correlations among imagery, concreteness, emotionality, meaningfulness, length, and date of entry are presented in Table 1. All correlations were significant, except that between emotionality and length.

The significant positive correlation between imagery and emotionality contradicts the findings of Paivio (1968), Rubin (1980), Rubin and Friendly (1986), and Campos (1989), but it agrees with those of Campos (1990, 1991b) and Campos and González (1991, 1992). Similarly, the significant positive correlation between emotionality and meaningfulness, contradicts the reports of Paivio (1968), Rubin (1980), and Rubin and Friendly (1986), but it con-

Correspondence may be sent to A. Campos, University of Santiago de Compostela, Dpto. de Psicología Básica, Santiago de Compostela, Spain.

Table 1
Pearson Correlations Among Imagery, Concreteness, Emotionality, Meaningfulness, Length, and Date of Entry

	1	2	3	4	5	6
1. Imagery	1.00*					
2. Concreteness	.80*	1.00*				
3. Emotionality	.63*	.38*	1.00*			
4. Meaningfulness	.52*	.46*	.18*	1.00*		
5. Length	-.26*	-.26*	-.11	-.20*	1.00*	
6. Date of Entry	-.27*	-.16*	-.23*	-.20*	-.46*	1.00
<i>M</i>	3.96	4.02	3.73	3.72	8.96	1475
<i>SD</i>	.84	.70	.99	.79	2.11	203

**p* < .01

Table 2
Stepwise Regression Analysis (Dependent Variable = Imagery)

Variables in the Final Equation*	β	<i>t</i>	<i>p</i>	Percent Explained Variance†
Concreteness	.56	14.71	.0000	63.43
Emotionality	.37	10.42	.0000	12.01
Meaningfulness	.22	6.09	.0000	3.07

**R* = .89 †*R*² = .79.

firms those of Campos (1991a) and Campos and González (1991, 1992).

Stepwise multiple regression performed to evaluate the contributions of concreteness, emotionality, meaningfulness, length, and date of entry to imagery values yielded the results listed in Table 2 (word length and date of entry were excluded from the final equation). Of the variance of imagery values, 79% was explained by concreteness, emotionality, and meaningfulness, the most important variable being concreteness (63.43%).

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