# Free-association norms for the Spanish names of the Snodgrass and Vanderwart pictures

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The most frequent names in Spanish corresponding to a set of 247 pictures in the Snodgrass and Vanderwart (1980) norms were used as stimuli in a discrete free-association task. A sample of 525 Spanish-speaking participants provided the first word that came to mind for each of the verbal stimuli. Responses were organized according to frequency of production in order to prepare word-association norms for the set of stimuli.

The questions addressed in cognitive psychology experiments often require the selection of linguistic and pictorial materials with specific objectively or subjectively determined characteristics. One way in which material selection can be adequately accomplished is by using indices empirically obtained in normative studies.

Free-association norms are among the most frequently used normative data in cognitive research. The production frequency of a particular word as a free-association response to another word used as a stimulus is usually taken as an indication of the strength of the connection between the representations of the two words in memory (see Nelson, McEvoy, & Dennis, 2000, for a discussion on how to interpret free-association indices). Manipulations of the strength of these connections using the values provided in free-association norms have been proven to reliably affect semantic facilitation in priming studies (Meyer & Schvaneveldt, 1971), level of performance in free recall (Deese, 1959) and in cued recall (Nelson, McKinney, Gee, & Janczura, 1998), and false recall and false recognition of unstudied words (Roediger & McDermott, 1995), to name a few examples.

Free-association norms for English words have been available for several decades, starting with the widely used norms for 100 words published by Russell and Jenkins (1954). Normative studies of this kind have continued to be regularly published (see Proctor & Vu, 1999, for a comprehensive listing), and currently there is an electronic database that provides norms for more than 5,000 words (Nelson, McEvoy, & Schreiber, in press). With regard to the Spanish language, the availability of this type of normative data is highly restricted. In the only published study, Macizo, Gómez-Ariza, and Bajo (2000) recently provided associative data for 52 words, but their sample included only children between 8 and 13 years of age. Free-association norms for adults were compiled by Algarabel, Sanmartín, García, and Espert (1986), but their database, although used by some researchers, has never been formally published or widely distributed.

Given the scarcity of associative indices for words in Spanish, the main goal of the present study was to construct a free-association normative database based on the responses of a relatively large sample of Spanish-speaking adults to a set of words, which could be of interest to a variety of cognitive researches in our linguistic community.

A set of materials for which there already exist data on a number of defining characteristics in Spanish consists of the pictorial stimuli originally normed by Snodgrass and Vanderwart (1980) for English speakers. Following this influential study, the pictures have been standardized in the basic dimensions of name agreement, image agreement, familiarity, and visual complexity in independent studies with adult samples in Spain (Sanfeliu & Fernandez, 1996), Mexico (Aveleyra, Gómez, Ostrosky, & Rigalt, 1996), and Cuba (Manzano, Piñeiro, & Reigosa, 1997). Other studies using Spanish-speaking subjects have provided additional normative data on this set of stimuli, such as word identification thresholds for fragmented

names of the pictures (Reales, Ballesteros, & García, 2002) and their naming times and ages of acquisition (Cuetos, Ellis, & Alvarez, 1999).

Taking into account the wide use of these pictorial materials and the availability of normative data for some of their important dimensions, in this study we decided to use the words that named them as the stimuli in a free-association task, with the aim of obtaining associative norms that could add to a more complete characterization of the materials in Spanish as well as provide corresponding norms for a sizable set of common words.

## METHOD

### Participants

A total of 525 undergraduate students at the University of Salamanca and the University of La Laguna, both located in Spain, participated in the experiment in exchange for academic credit. All of them were native speakers of Spanish.

### Materials

The verbal materials used as stimuli in the free-association task were a set of words that, according to Sanfeliu and Fernandez (1996), corresponded to the most frequent denominations in Spanish of the Snodgrass–Vanderwart standardized pictures. Although the norms collected by Sanfeliu and Fernandez include the most frequent names for a total of 254 pictures, a few of these names are actually repeated, because the majority of participants in their study used them to name two different pictures (e.g., the word *reloj* was the most frequent name assigned to both Picture 60 [clock] and Picture 250 [watch]). For this reason, the final set of stimuli was reduced to 247 different terms, of which 238 were one-word names and 9 were compound names. Table A1 includes a listing of these stimuli, with their corresponding picture numbers and English names from the original norms of Snodgrass and Vanderwart (1980) to facilitate identification.

A five-page booklet was used to collect the responses. On each page, the stimuli were printed in uppercase letters and arranged in two columns, and space was provided to the right of each stimulus for the participants to write their responses. To control for order effects, 10 different versions of the booklet were constructed for later random distribution, each of them with a different randomly determined order of stimuli. A cover sheet in the booklet presented the instructions for the task, as is described below.

### Procedure

The participants performed the task in groups of 20–40 people. They went through the booklets at their own pace, with completion times ranging from 20 to 40 min.

At the beginning of the session, the participants read the printed instructions on the cover sheet of the booklet. In these instructions, they were asked to read, one by one, each of the terms printed on the pages of the booklet and to write, for each name, another word in the corresponding blank space. More specifically, they were instructed to write "the first word that you think of when reading the preprinted term . . . the first word that comes to your mind." They were also instructed to work as fast as possible, to go through the stimulus series in order, to write only one word for each stimulus, and to respond to all of them. It was made explicit that there were no correct or incorrect answers. Two examples, in which filler stimuli and responses were used, were presented to further clarify the task.

## RESULTS AND DISCUSSION

A computerized procedure was used to type and literally record each of the individual responses given by the participants. The total number of blank responses was 62, an insignificant quantity given that the number of required responses totaled 129,675 (247 responses × 525 booklets). In a few cases (less than 1% overall), the handwritten responses were not readily interpretable by any of four independent judges (the authors) and were therefore coded as illegible. Words with unambiguous spelling errors were recoded in their orthographically correct form. Misspelled responses for which more than one valid orthographic correction was possible were coded as illegible.

As is shown by the data included in Table A1, there was a noticeable variability in the number of independent responses evoked by each of the 247 stimuli, which ranged from 39 for the word *barril* to 163 for the word *burro*, with a mean of 96.62. Each stimulus evoked a large number of idiosyncratic responses (i.e., those provided by only 1 participant), a reasonable result given the nature of the task and the large number of participants in the study. However, there was also evidence of remarkable agreement and consistency. Each stimulus evoked a limited set of responses that occurred very frequently, as is shown by the fact that, on average, the five most frequent free associates of each stimulus accounted for 50% of the participants' responses.

Free-association norms for the 247 verbal stimuli are provided in an appendix (see the Archived Materials section). For each stimulus, the norms include a complete listing of the different responses given by the participants, and the proportion of participants who gave each response is stated. These relative frequency values reflect the probability that the response will be produced as an associate when the stimulus is processed and, as was noted in the introduction, they can be taken as stable indicators of the strength of the preexisting connection between the memory representation of the stimulus and that of the response.

Because free-association norms can be significantly determined by linguistic peculiarities and cultural usages, caution should be used in generalizing our results, obtained in Spain, to other Spanish-speaking populations. Nonetheless, taking into consideration this and other generalizability limitations that may impose restrictions when dealing with norms of this kind, the present data set is likely to be useful for the selection, control, and manipulation of verbal materials in psychological experiments with Spanish-speaking participants, especially those that address questions in the areas of memory, language, and related fields. Furthermore, the provided normative data can be used in conjunction with data about other objective and subjective dimensions of the stimuli that are already available. For example, printed frequency information for 95% of the stimulus words can be found in the frequency dictionary of Alameda and Cuetos (1995); 34% of the stimuli have empirically obtained indices of concreteness, imageability, familiarity, and pleasantness (Algarabel, 1996); and over 80% of the stimuli are included as exemplars in the categorical norms of Soto, Sebastián, García, and del Amo (1994). Finally, the free-association norms collected in this study contribute to a

more complete characterization of the verbal stimuli corresponding to the widely used set of pictorial stimuli first developed and standardized by Snodgrass and Vanderwart (1980).

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## ARCHIVED MATERIALS

The following materials associated with this article may be accessed through the Psychonomic Society's Norms, Stimuli, and Data archive, http://www.psychonomic.org/archive/.

To access these files, search the archive for this article using the journal (*Behavior Research Methods, Instruments, & Computers*), the first author's name (Fernandez), and the publication year (2004).

FILE: Fernandez-BRMIC-2004.zip.

DESCRIPTION: The compressed archive file contains two files: fernandez2004AppendixA.pdf, containing an alphabetical list of stimuli and summary descriptive information for the responses in a 496-page .pdf document.

fernandez2004norms.xls, containing the norms as a 1,960K Microsoft Excel file. Each row represents one of 23,776 free-association responses. There are three columns: word (the stimulus used in the free-association task), response (a verbal response elicited by the stimulus), and proportion (proportion of participants who gave the specific response).

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## APPENDIX

**Table A1**
**Stimuli and Summary of Descriptive Information for the Responses**

| Spanish Stimulus | Picture No. | English Name | Number of Responses | | | |
|---|---|---|---|---|---|---|
| | | | Independent | Idiosyncratic | Blank | Illegible |
| ABEJA | 23 | BEE | 63 | 31 | 0 | 2 |
| ABRIGO | 64 | COAT | 72 | 52 | 1 | 3 |
| ACELGAS | 51 | CELERY | 94 | 56 | 0 | 0 |
| ACORDEÓN | 1 | ACCORDION | 126 | 87 | 0 | 4 |
| ÁGUILA | 82 | EAGLE | 132 | 78 | 0 | 5 |
| AGUJA | 154 | NEEDLE | 76 | 56 | 0 | 0 |
| ALCACHOFA | 9 | ARTICHOKE | 141 | 90 | 1 | 5 |
| ALICATES | 176 | PLIERS | 130 | 75 | 1 | 6 |
| ANCLA | 4 | ANCHOR | 57 | 38 | 0 | 3 |
| ANILLO | 187 | RING | 57 | 34 | 0 | 1 |
| ARAÑA | 212 | SPIDER | 137 | 97 | 3 | 13 |
| ÁRBOL | 241 | TREE | 108 | 58 | 0 | 2 |
| ARDILLA | 216 | SQUIRREL | 111 | 64 | 0 | 1 |
| ARPA | 117 | HARP | 111 | 69 | 0 | 6 |
| AUTOBÚS | 39 | BUS | 135 | 84 | 0 | 5 |

**APPENDIX (Continued)**

| Spanish Stimulus | Picture No. | English Name | Independent | Idiosyncratic | Blank | Illegible |
|---|---|---|---|---|---|---|
| | | | | Number of Responses | | |
| AVESTRUZ | 159 | OSTRICH | 123 | 73 | 1 | 3 |
| AVIÓN | 2 | AIRPLANE | 104 | 66 | 0 | 1 |
| BALÓN DE RUGBY | 95 | FOOTBALL | 116 | 70 | 1 | 8 |
| BANDERA | 90 | FLAG | 94 | 57 | 0 | 1 |
| BARCO | 193 | SAILBOAT | 92 | 59 | 0 | 5 |
| BARRIL | 18 | BARREL | 39 | 24 | 0 | 0 |
| BATE | 19 | BASEBALL BAT | 58 | 37 | 2 | 4 |
| BICICLETA | 27 | BICYCLE | 123 | 73 | 0 | 4 |
| BOLÍGRAFO | 167 | PEN | 54 | 27 | 0 | 4 |
| BOLSO | 178 | POCKETBOOK | 140 | 82 | 2 | 4 |
| BOMBILLA | 138 | LIGHT BULB | 44 | 27 | 0 | 0 |
| BOTA | 31 | BOOT | 105 | 60 | 0 | 4 |
| BOTELLA | 32 | BOTTLE | 75 | 40 | 0 | 1 |
| BOTÓN | 41 | BUTTON | 94 | 58 | 0 | 9 |
| BRAZO | 7 | ARM | 109 | 64 | 0 | 3 |
| BÚHO | 160 | OWL | 70 | 46 | 0 | 2 |
| BURRO | 75 | DONKEY | 163 | 116 | 0 | 5 |
| CABALLITO DE MAR | 200 | SEA HORSE | 161 | 99 | 0 | 1 |
| CABALLO | 121 | HORSE | 153 | 88 | 0 | 4 |
| CABRA | 107 | GOAT | 83 | 51 | 0 | 3 |
| CACAHUETE | 165 | PEANUT | 106 | 60 | 0 | 2 |
| CADENA | 52 | CHAIN | 137 | 83 | 0 | 3 |
| CAJA | 35 | BOX | 135 | 81 | 0 | 3 |
| CALABAZA | 181 | PUMPKIN | 99 | 57 | 0 | 8 |
| CALCETÍN | 211 | SOCK | 103 | 62 | 0 | 1 |
| CAMA | 22 | BED | 79 | 47 | 0 | 1 |
| CAMELLO | 43 | CAMEL | 72 | 42 | 0 | 1 |
| CAMIÓN | 242 | TRUCK | 140 | 91 | 0 | 8 |
| CAMISA | 203 | SHIRT | 122 | 59 | 0 | 2 |
| CAMPANA | 26 | BELL | 94 | 56 | 0 | 6 |
| CANDADO | 143 | LOCK | 78 | 50 | 0 | 1 |
| CANGREJO | 142 | LOBSTER | 107 | 73 | 0 | 8 |
| CANGURO | 126 | KANGAROO | 69 | 44 | 0 | 5 |
| CARACOL | 208 | SNAIL | 108 | 64 | 0 | 5 |
| CARRITO | 249 | WAGON | 59 | 32 | 0 | 3 |
| CASA | 122 | HOUSE | 127 | 74 | 0 | 3 |
| CASCO | 96 | FOOTBALL HELMET | 84 | 50 | 0 | 3 |
| CAZO | 179 | POT | 87 | 50 | 1 | 2 |
| CEBOLLA | 157 | ONION | 76 | 44 | 0 | 4 |
| CENICERO | 10 | ASHTRAY | 61 | 42 | 1 | 1 |
| CEPILLO | 38 | BRUSH | 59 | 40 | 0 | 0 |
| CEPILLO DE DIENTES | 237 | TOOTHBRUSH | 79 | 46 | 0 | 0 |
| CERDO | 172 | PIG | 117 | 74 | 0 | 7 |
| CEREZA | 54 | CHERRY | 119 | 70 | 1 | 3 |
| CESTA | 20 | BASKET | 84 | 51 | 0 | 1 |
| CIERVO | 71 | DEER | 123 | 82 | 0 | 6 |
| CIGARRO | 59 | CIGARETTE | 87 | 53 | 0 | 0 |
| CINTURÓN | 25 | BELT | 80 | 45 | 0 | 1 |
| CISNE | 223 | SWAN | 85 | 52 | 0 | 4 |
| CLAVO | 151 | NAIL | 91 | 57 | 0 | 3 |
| COCINA | 219 | STOVE | 120 | 69 | 0 | 6 |
| COCODRILO | 3 | ALLIGATOR | 104 | 58 | 0 | 2 |
| COCHE | 47 | CAR | 148 | 76 | 0 | 5 |
| COCHECITO | 13 | BABY CARRIAGE | 68 | 47 | 0 | 1 |
| COLUMPIO | 225 | SWING | 85 | 49 | 0 | 4 |
| COLLAR | 153 | NECKLACE | 73 | 40 | 0 | 3 |
| COMETA | 129 | KITE | 100 | 60 | 0 | 1 |
| CÓMODA | 79 | DRESSER | 148 | 83 | 0 | 0 |
| CONEJO | 182 | RABBIT | 150 | 85 | 1 | 10 |
| COPA | 258 | WINEGLASS | 92 | 51 | 0 | 0 |
| CORAZÓN | 119 | HEART | 114 | 71 | 0 | 3 |
| CORBATA | 232 | TIE | 131 | 91 | 0 | 9 |
| CORONA | 69 | CROWN | 66 | 42 | 0 | 2 |
| CUBO DE BASURA | 102 | GARBAGE CAN | 96 | 54 | 0 | 3 |
| CUCARACHA | 24 | BEETLE | 128 | 82 | 0 | 3 |
| CUCHARA | 215 | SPOON | 64 | 33 | 2 | 3 |

**APPENDIX (Continued)**

| Spanish Stimulus | Picture No. | English Name | Independent | Idiosyncratic | Blank | Illegible |
|---|---|---|---|---|---|---|
| | | | | Number of Responses | | |
| CUCHILLO | 130 | KNIFE | 85 | 47 | 0 | 3 |
| CUENCO | 34 | BOWL | 121 | 77 | 0 | 5 |
| CHALECO | 247 | VEST | 135 | 85 | 1 | 5 |
| CHAQUETA | 125 | JACKET | 112 | 62 | 1 | 3 |
| DEDAL | 230 | THIMBLE | 57 | 36 | 0 | 1 |
| DEDO | 88 | FINGER | 78 | 48 | 0 | 2 |
| DESTORNILLADOR | 199 | SCREWDRIVER | 101 | 57 | 0 | 2 |
| ELEFANTE | 84 | ELEPHANT | 90 | 51 | 0 | 3 |
| ENCHUFE | 177 | PLUG | 82 | 49 | 0 | 3 |
| ESCALERA | 131 | LADDER | 109 | 69 | 0 | 4 |
| ESCOBA | 37 | BROOM | 51 | 24 | 0 | 0 |
| ESCRITORIO | 72 | DESK | 87 | 50 | 0 | 0 |
| ESPÁRRAGO | 11 | ASPARAGUS | 132 | 85 | 1 | 5 |
| ESTRELLA | 217 | STAR | 87 | 52 | 0 | 3 |
| FALDA | 205 | SKIRT | 98 | 53 | 1 | 2 |
| FLAUTA | 92 | FLUTE | 100 | 54 | 0 | 1 |
| FLECHA | 8 | ARROW | 95 | 60 | 0 | 1 |
| FLOR | 91 | FLOWER | 105 | 58 | 0 | 3 |
| FOCA | 201 | SEAL | 116 | 63 | 0 | 4 |
| FRESA | 220 | STRAWBERRY | 113 | 63 | 1 | 1 |
| FRIGORÍFICO | 185 | REFRIGERATOR | 71 | 45 | 0 | 2 |
| GAFAS | 105 | GLASSES | 87 | 57 | 0 | 3 |
| GALLINA | 55 | CHICKEN | 63 | 37 | 0 | 1 |
| GALLO | 191 | ROOSTER | 84 | 48 | 0 | 4 |
| GATO | 49 | CAT | 140 | 84 | 2 | 5 |
| GLOBO | 15 | BALLOON | 100 | 54 | 0 | 2 |
| GORILA | 108 | GORILLA | 98 | 59 | 0 | 9 |
| GORRA | 46 | CAP | 98 | 66 | 0 | 5 |
| GUANTE | 106 | GLOVE | 98 | 61 | 0 | 6 |
| GUITARRA | 111 | GUITAR | 120 | 76 | 0 | 6 |
| GUSANO | 50 | CATERPILLAR | 117 | 74 | 1 | 7 |
| HACHA | 12 | AXE | 92 | 54 | 0 | 1 |
| HELICÓPTERO | 120 | HELICOPTER | 93 | 51 | 2 | 5 |
| HILO | 214 | SPOOL OF THREAD | 77 | 41 | 0 | 2 |
| HOJA | 133 | LEAF | 83 | 55 | 0 | 1 |
| HORMIGA | 5 | ANT | 128 | 75 | 2 | 1 |
| IGLESIA | 57 | CHURCH | 128 | 86 | 0 | 5 |
| INTERRUPTOR | 139 | LIGHT SWITCH | 51 | 34 | 0 | 3 |
| JARRA | 175 | PITCHER | 54 | 33 | 0 | 4 |
| JARRÓN | 246 | VASE | 70 | 52 | 0 | 2 |
| JERSEY | 224 | SWEATER | 95 | 63 | 0 | 4 |
| JIRAFA | 103 | GIRAFFE | 71 | 46 | 1 | 2 |
| LABIOS | 141 | LIPS | 76 | 43 | 0 | 1 |
| LÁMPARA | 132 | LAMP | 72 | 43 | 0 | 0 |
| LÁPIZ | 168 | PENCIL | 91 | 44 | 0 | 2 |
| LAZO | 33 | BOW | 104 | 58 | 1 | 4 |
| LECHUGA | 137 | LETTUCE | 79 | 51 | 0 | 3 |
| LEÓN | 140 | LION | 114 | 70 | 0 | 4 |
| LEOPARDO | 136 | LEOPARD | 109 | 57 | 0 | 4 |
| LIBRO | 30 | BOOK | 134 | 83 | 0 | 3 |
| LIMA | 152 | NAIL FILE | 78 | 51 | 0 | 1 |
| LIMÓN | 135 | LEMON | 76 | 49 | 0 | 5 |
| LUNA | 146 | MOON | 101 | 66 | 0 | 0 |
| LLAVE | 128 | KEY | 60 | 43 | 0 | 0 |
| LLAVE INGLESA | 259 | WRENCH | 129 | 79 | 0 | 4 |
| MAIZ | 66 | CORN | 104 | 68 | 0 | 4 |
| MALETA | 221 | SUITCASE | 68 | 44 | 0 | 0 |
| MANO | 115 | HAND | 124 | 74 | 0 | 4 |
| MANOPLA | 144 | MITTEN | 95 | 56 | 0 | 2 |
| MANZANA | 6 | APPLE | 102 | 57 | 0 | 2 |
| MAPACHE | 183 | RACCOON | 109 | 62 | 2 | 3 |
| MARIPOSA | 40 | BUTTERFLY | 111 | 68 | 0 | 2 |
| MARTILLO | 114 | HAMMER | 89 | 53 | 0 | 5 |
| MECEDORA | 188 | ROCKING CHAIR | 113 | 65 | 0 | 4 |
| MELOCOTÓN | 164 | PEACH | 91 | 43 | 0 | 3 |
| MESA | 226 | TABLE | 89 | 56 | 0 | 2 |

**APPENDIX (Continued)**

| Spanish Stimulus | Picture No. | English Name | Independent | Idiosyncratic | Blank | Illegible |
|---|---|---|---|---|---|---|
| | | | | Number of Responses | | |
| MOFETA | 206 | SKUNK | 81 | 52 | 1 | 11 |
| MOLINO | 256 | WINDMILL | 58 | 32 | 0 | 3 |
| MONO | 145 | MONKEY | 136 | 79 | 0 | 8 |
| MONTAŇA | 148 | MOUNTAIN | 134 | 68 | 3 | 9 |
| MOSCA | 93 | FLY | 112 | 60 | 0 | 4 |
| MOTO | 147 | MOTORCYCLE | 117 | 72 | 0 | 6 |
| MUÑECA | 74 | DOLL | 107 | 63 | 0 | 2 |
| MUÑECO DE NIEVE | 210 | SNOWMAN | 75 | 50 | 0 | 1 |
| NARANJA | 158 | ORANGE | 99 | 49 | 0 | 5 |
| NARIZ | 155 | NOSE | 101 | 58 | 0 | 4 |
| NUBE | 62 | CLOUD | 89 | 56 | 0 | 1 |
| OJO | 86 | EYE | 105 | 65 | 0 | 4 |
| OREJA | 83 | EAR | 109 | 76 | 0 | 4 |
| OSO | 21 | BEAR | 120 | 62 | 0 | 2 |
| OVEJA | 202 | SHEEP | 86 | 50 | 0 | 5 |
| PÁJARO | 28 | BIRD | 104 | 55 | 0 | 2 |
| PAN DE MOLDE | 36 | BREAD | 96 | 55 | 0 | 2 |
| PANTALÓN | 162 | PANTS | 119 | 73 | 0 | 3 |
| PARAGUAS | 245 | UMBRELLA | 45 | 32 | 0 | 1 |
| PATATA | 180 | POTATO | 107 | 62 | 1 | 2 |
| PATÍN | 189 | ROLLER SKATE | 121 | 68 | 0 | 7 |
| PATO | 81 | DUCK | 107 | 64 | 1 | 5 |
| PAVO REAL | 163 | PEACOCK | 121 | 76 | 0 | 4 |
| PAYASO | 63 | CLOWN | 87 | 50 | 0 | 2 |
| PEINE | 65 | COMB | 65 | 37 | 0 | 0 |
| PELO | 113 | HAIR | 113 | 63 | 0 | 2 |
| PELOTA | 14 | BALL | 77 | 48 | 0 | 2 |
| PEONZA | 238 | TOP | 116 | 71 | 6 | 4 |
| PERA | 166 | PEAR | 97 | 61 | 0 | 2 |
| PERCHA | 116 | HANGER | 52 | 36 | 0 | 0 |
| PERRO | 73 | DOG | 131 | 85 | 0 | 9 |
| PEZ | 89 | FISH | 77 | 46 | 0 | 2 |
| PIANO | 171 | PIANO | 110 | 65 | 0 | 3 |
| PIE | 94 | FOOT | 82 | 44 | 0 | 4 |
| PIMIENTO | 170 | PEPPER | 98 | 55 | 0 | 1 |
| PINCEL | 161 | PAINTBRUSH | 51 | 30 | 0 | 3 |
| PINGÜINO | 169 | PENGUIN | 83 | 51 | 0 | 5 |
| PINZA | 61 | CLOTHESPIN | 78 | 54 | 0 | 1 |
| PIÑA | 173 | PINEAPPLE | 116 | 66 | 3 | 4 |
| PIPA | 174 | PIPE | 98 | 62 | 0 | 2 |
| PISTOLA | 112 | GUN | 91 | 55 | 0 | 6 |
| PLANCHA | 123 | IRON | 96 | 62 | 0 | 1 |
| PLÁTANO | 16 | BANANA | 84 | 48 | 0 | 1 |
| POMO | 77 | DOORKNOB | 79 | 61 | 5 | 3 |
| PUERTA | 76 | DOOR | 83 | 49 | 0 | 5 |
| PURO | 58 | CIGAR | 118 | 77 | 0 | 4 |
| RANA | 100 | FROG | 74 | 43 | 0 | 0 |
| RAQUETA | 229 | TENNIS RACKET | 54 | 40 | 0 | 3 |
| RATÓN | 149 | MOUSE | 114 | 75 | 0 | 10 |
| REGADERA | 251 | WATERING CAN | 42 | 23 | 0 | 0 |
| REGLA | 192 | RULER | 112 | 63 | 0 | 4 |
| RELOJ | 250 | WATCH | 69 | 43 | 0 | 1 |
| RINOCERONTE | 186 | RHINOCEROS | 92 | 60 | 0 | 3 |
| RODILLO | 190 | ROLLING PIN | 100 | 60 | 0 | 1 |
| RUEDA | 254 | WHEEL | 83 | 50 | 0 | 5 |
| SALERO | 194 | SALTSHAKER | 93 | 55 | 0 | 2 |
| SALTAMONTES | 110 | GRASSHOPPER | 114 | 81 | 0 | 7 |
| SANDÍA | 252 | WATERMELON | 59 | 29 | 1 | 2 |
| SANDWICH | 195 | SANDWICH | 81 | 48 | 0 | 0 |
| SARTÉN | 101 | FRYING PAN | 59 | 28 | 0 | 1 |
| SERPIENTE | 209 | SNAKE | 140 | 87 | 0 | 5 |
| SETA | 150 | MUSHROOM | 93 | 56 | 0 | 2 |
| SIERRA | 196 | SAW | 101 | 63 | 0 | 1 |
| SILBATO | 255 | WHISTLE | 84 | 51 | 0 | 3 |
| SILLA | 53 | CHAIR | 80 | 43 | 0 | 2 |
| SOBRE | 85 | ENVELOPE | 44 | 26 | 0 | 6 |

**APPENDIX (Continued)**

| Spanish Stimulus | Picture No. | English Name | Independent | Idiosyncratic | Blank | Illegible |
|---|---|---|---|---|---|---|
| | | | Number of Responses | | | |
| SOFÁ | 67 | COUCH | 65 | 31 | 0 | 4 |
| SOL | 222 | SUN | 76 | 46 | 0 | 3 |
| SOMBRERO | 118 | HAT | 129 | 83 | 1 | 5 |
| TABLA DE PLANCHAR | 124 | IRONING BOARD | 88 | 58 | 1 | 2 |
| TABURETE | 218 | STOOL | 86 | 45 | 0 | 4 |
| TAMBOR | 80 | DRUM | 131 | 77 | 0 | 2 |
| TARTA | 42 | CAKE | 72 | 42 | 0 | 2 |
| TAZA | 70 | CUP | 65 | 41 | 0 | 0 |
| TELÉFONO | 227 | TELEPHONE | 113 | 74 | 1 | 9 |
| TELEVISIÓN | 228 | TELEVISION | 141 | 80 | 2 | 5 |
| TENEDOR | 97 | FORK | 60 | 37 | 0 | 2 |
| TETERA | 127 | KETTLE | 81 | 52 | 0 | 0 |
| TIGRE | 233 | TIGER | 128 | 86 | 0 | 2 |
| TIJERAS | 197 | SCISSORS | 92 | 61 | 0 | 2 |
| TOCADISCOS | 184 | RECORD PLAYER | 69 | 41 | 1 | 3 |
| TOMATE | 236 | TOMATO | 91 | 58 | 0 | 1 |
| TORNILLO | 198 | SCREW | 97 | 51 | 0 | 4 |
| TOSTADOR | 234 | TOASTER | 77 | 49 | 0 | 1 |
| TREN | 240 | TRAIN | 122 | 74 | 0 | 3 |
| TRINEO | 207 | SLED | 55 | 36 | 0 | 4 |
| TROMBÓN | 99 | FRENCH HORN | 89 | 54 | 0 | 9 |
| TROMPETA | 243 | TRUMPET | 120 | 71 | 0 | 6 |
| TUERCA | 156 | NUT | 107 | 64 | 0 | 0 |
| UVAS | 109 | GRAPES | 87 | 48 | 1 | 7 |
| VACA | 68 | COW | 69 | 33 | 0 | 5 |
| VALLA | 87 | FENCE | 130 | 70 | 0 | 4 |
| VASO | 104 | GLASS | 52 | 27 | 0 | 2 |
| VELA | 44 | CANDLE | 94 | 52 | 0 | 4 |
| VENTANA | 257 | WINDOW | 93 | 51 | 0 | 3 |
| VESTIDO | 78 | DRESS | 101 | 52 | 0 | 1 |
| VIOLÍN | 248 | VIOLIN | 135 | 85 | 0 | 8 |
| ZANAHORIA | 48 | CARROT | 84 | 45 | 0 | 3 |
| ZAPATO | 204 | SHOE | 108 | 56 | 0 | 2 |
| ZORRO | 98 | FOX | 156 | 102 | 1 | 7 |

Note—*Picture No.* is the identification number of the picture corresponding to the stimulus in Snodgrass and Vanderwart (1980). *English name* is the most frequent denomination of the picture in English in Snodgrass and Vanderwart.