

## Imageability & Frequency Auditory Lexical Decision: Instructions for Use

This task looks for effects of imageability and frequency (and their interaction) in deciding whether a spoken utterance is a word. Nonwords are derived from words by changing one or more sounds, while preserving phonotactic regularity. The same set of words is also used in visual lexical decision [25], oral reading [31] and repetition [9] tasks.

Deciding whether something heard is a word can be carried out without knowing its meaning. For this reason, auditory lexical decision can assess the functioning of the phonological input lexicon. Patients with an impairment at this level are described by Franklin, S. (1988) *Aphasiology*, 3, 189 - 207.

### Descriptive Statistics (for 21 control subjects):

|   |          |              |                  |
|---|----------|--------------|------------------|
| <b>High Imageability<br/>High Frequency</b> | (n = 20) | Mean = 19.86 | Std. Dev. = 0.48 |
| <b>High Imageability<br/>Low Frequency</b>  | (n = 20) | Mean = 20.00 | Std. Dev. = 0    |
| <b>Low Imageability<br/>High Frequency</b>  | (n = 20) | Mean = 19.95 | Std. Dev. = 0.22 |
| <b>Low Imageability<br/>Low Frequency</b>   | (n = 20) | Mean = 19.62 | Std. Dev. = 0.67 |
| <b>Nonwords</b>                             | (n = 80) | Mean = 76.00 | Std. Dev. = 4.27 |

**Suggestions for Where to go next:** Poor performance on this task can take a number of forms. Note that since the patient simply has to make a "yes" or "no" decision, one would expect the patient to be 50% correct by chance alone. Impairment on this task indicates that examination of more peripheral auditory processing abilities should be carried out (eg. Nonword Minimal Pairs [1]; Word Minimal Pairs [2]).

A significant effect of imageability in auditory lexical decision implies that the patient is using the semantic system on which to base a decision. In this case, one might expect to find an imageability effect in comprehension (eg. Written Synonym Judgements [50]; Auditory Synonym Judgements [49]). Find out whether an imageability effect appears using the same materials in another modality (Visual Lexical Decision [25]). Also investigate whether an imageability effect can be found in Repetition [9].

If the patient shows a significant effect of frequency in Auditory Lexical Decision, test performance using the same materials in Repetition [9]. Frequency effects in both tasks may suggest a common point of breakdown. To confirm or disconfirm your hypothesis about the locus of impairment, look for frequency effects in other modalities (eg. Visual Lexical Decision [25]; Repetition [9]). Compare picture naming and reading aloud on the Frequency Picture Naming task [54].

Poor lexical decision performance may also be characterised by a large number of 'false positives' in response to nonwords. In this case, the patient appears to adopt a lax criterion for what he or she will accept as a word. This can also be seen in a small number of our control subjects - although, even taking a criterion of 2.5 standard deviations below the mean as 'abnormal', one might expect only 15 false positives. Note that an opposite pattern can also sometimes be observed, in which the patient makes many 'misses'; that is, the patient fails to accept many of the words as words. None of our control subjects showed this pattern.

## PALPA

## Auditory Lexical Decision: Imageability &amp; Frequency

## Presenter's Form 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions to Subject:** [Prevent lipreading.] I want you to listen to what I say. When you recognise a word, say "yes". Listen carefully, though, because sometimes what I say will be a 'made-up' word. When it's a made-up word, say "no".

**Marking Instructions:** Circle error responses in the appropriate column (W for incorrect word response and NW for incorrect nonword response).

|    | Target         | Type  | Response |    | Target          | Type  | Response |
|----|----------------|-------|----------|----|-----------------|-------|----------|
| 1  | <b>episode</b> | LI LF | W        | 41 | <b>picture</b>  | HI HF | W        |
| 2  | <b>theory</b>  | LI HF | W        | 42 | calt            |       | NW       |
| 3  | <b>elbow</b>   | HI LF | W        | 43 | pline           |       | NW       |
| 4  | minner         |       | NW       | 44 | drim            |       | NW       |
| 5  | <b>hotel</b>   | HI HF | W        | 45 | <b>thought</b>  | LI HF | W        |
| 6  | <b>potato</b>  | HI LF | W        | 46 | <b>mercy</b>    | LI LF | W        |
| 7  | wembow         |       | NW       | 47 | <b>radio</b>    | HI HF | W        |
| 8  | puct           |       | NW       | 48 | prisciple       |       | NW       |
| 9  | <b>church</b>  | HI HF | W        | 49 | <b>pupil</b>    | HI LF | W        |
| 10 | clenth         |       | NW       | 50 | staden          |       | NW       |
| 11 | plen           |       | NW       | 51 | <b>onion</b>    | HI LF | W        |
| 12 | <b>folly</b>   | LI LF | W        | 52 | mimber          |       | NW       |
| 13 | reash          |       | NW       | 53 | loment          |       | NW       |
| 14 | sutire         |       | NW       | 54 | <b>purpose</b>  | LI HF | W        |
| 15 | <b>gravity</b> | LI LF | W        | 55 | <b>quality</b>  | LI HF | W        |
| 16 | slape          |       | NW       | 56 | <b>school</b>   | HI HF | W        |
| 17 | trenson        |       | NW       | 57 | sammer          |       | NW       |
| 18 | <b>irony</b>   | LI LF | W        | 58 | <b>system</b>   | LI HF | W        |
| 19 | dunkey         |       | NW       | 59 | <b>elephant</b> | HI LF | W        |
| 20 | foaster        |       | NW       | 60 | mither          |       | NW       |
| 21 | fide           |       | NW       | 61 | hopsitle        |       | NW       |
| 22 | tanacco        |       | NW       | 62 | <b>pig</b>      | HI LF | W        |
| 23 | <b>crisis</b>  | LI HF | W        | 63 | antitude        |       | NW       |
| 24 | prath          |       | NW       | 64 | trabite         |       | NW       |
| 25 | <b>battle</b>  | HI HF | W        | 65 | <b>session</b>  | LI HF | W        |
| 26 | <b>clue</b>    | LI LF | W        | 66 | dalour          |       | NW       |
| 27 | <b>concept</b> | LI HF | W        | 67 | andience        |       | NW       |
| 28 | <b>spider</b>  | HI LF | W        | 68 | <b>night</b>    | HI HF | W        |
| 29 | <b>village</b> | HI HF | W        | 69 | baranter        |       | NW       |
| 30 | <b>deed</b>    | LI LF | W        | 70 | voe             |       | NW       |
| 31 | <b>gravy</b>   | HI LF | W        | 71 | <b>marriage</b> | HI HF | W        |
| 32 | fict           |       | NW       | 72 | lutter          |       | NW       |
| 33 | <b>dogma</b>   | LI LF | W        | 73 | <b>thing</b>    | LI HF | W        |
| 34 | idia           |       | NW       | 74 | <b>bonus</b>    | LI LF | W        |
| 35 | weast          |       | NW       | 75 | hend            |       | NW       |
| 36 | <b>opinion</b> | LI HF | W        | 76 | affort          |       | NW       |
| 37 | afe            |       | NW       | 77 | minacle         |       | NW       |
| 38 | <b>alcohol</b> | HI LF | W        | 78 | <b>coffee</b>   | HI HF | W        |
| 39 | fannel         |       | NW       | 79 | <b>pill</b>     | HI LF | W        |
| 40 | trantor        |       | NW       | 80 | <b>analogy</b>  | LI LF | W        |

Auditory Lexical Decision: Imageability & Frequency

Presenter's Form 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_

|     | Target           | Type  | Response |     | Target            | Type  | Response |
|-----|------------------|-------|----------|-----|-------------------|-------|----------|
| 81  | biffle           |       | NW       | 121 | halocle           |       | NW       |
| 82  | <b>hand</b>      | HI HF | W        | 122 | mirtage           |       | NW       |
| 83  | <b>woe</b>       | LI LF | W        | 123 | spuder            |       | NW       |
| 84  | <b>character</b> | LI HF | W        | 124 | boncept           |       | NW       |
| 85  | <b>wheat</b>     | HI LF | W        | 125 | <b>miracle</b>    | LI LF | W        |
| 86  | clee             |       | NW       | 126 | <b>hospital</b>   | HI HF | W        |
| 87  | <b>effort</b>    | LI HF | W        | 127 | nirth             |       | NW       |
| 88  | <b>fire</b>      | HI HF | W        | 128 | pell              |       | NW       |
| 89  | <b>tribute</b>   | LI LF | W        | 129 | crasis            |       | NW       |
| 90  | vallige          |       | NW       | 130 | binus             |       | NW       |
| 91  | <b>fact</b>      | LI HF | W        | 131 | pib               |       | NW       |
| 92  | dend             |       | NW       | 132 | <b>audience</b>   | HI HF | W        |
| 93  | <b>valour</b>    | LI LF | W        | 133 | cottee            |       | NW       |
| 94  | <b>idea</b>      | LI HF | W        | 134 | <b>attitude</b>   | LI HF | W        |
| 95  | sogmy            |       | NW       | 135 | settion           |       | NW       |
| 96  | <b>axe</b>       | HI LF | W        | 136 | atology           |       | NW       |
| 97  | <b>funnel</b>    | HI LF | W        | 137 | <b>wrath</b>      | LI LF | W        |
| 98  | purpise          |       | NW       | 138 | <b>letter</b>     | HI HF | W        |
| 99  | gramy            |       | NW       | 139 | opunion           |       | NW       |
| 100 | <b>tractor</b>   | HI LF | W        | 140 | <b>tobacco</b>    | HI LF | W        |
| 101 | <b>length</b>    | LI HF | W        | 141 | felly             |       | NW       |
| 102 | <b>plea</b>      | LI LF | W        | 142 | pitaro            |       | NW       |
| 103 | pheory           |       | NW       | 143 | <b>principle</b>  | LI HF | W        |
| 104 | <b>monkey</b>    | HI LF | W        | 144 | eltow             |       | NW       |
| 105 | ragio            |       | NW       | 145 | prought           |       | NW       |
| 106 | <b>manner</b>    | LI HF | W        | 146 | apisade           |       | NW       |
| 107 | itony            |       | NW       | 147 | <b>plane</b>      | HI HF | W        |
| 108 | pupit            |       | NW       | 148 | <b>student</b>    | HI HF | W        |
| 109 | <b>realm</b>     | LI LF | W        | 149 | <b>moment</b>     | LI HF | W        |
| 110 | pisture          |       | NW       | 150 | slurch            |       | NW       |
| 111 | <b>slope</b>     | HI LF | W        | 151 | epilent           |       | NW       |
| 112 | <b>member</b>    | LI HF | W        | 152 | <b>summer</b>     | HI HF | W        |
| 113 | merly            |       | NW       | 153 | otion             |       | NW       |
| 114 | shality          |       | NW       | 154 | sping             |       | NW       |
| 115 | <b>satire</b>    | LI LF | W        | 155 | <b>feather</b>    | HI LF | W        |
| 116 | <b>window</b>    | HI HF | W        | 156 | hetal             |       | NW       |
| 117 | <b>treason</b>   | LI LF | W        | 157 | <b>pact</b>       | LI LF | W        |
| 118 | drister          |       | NW       | 158 | <b>mother</b>     | HI HF | W        |
| 119 | <b>drum</b>      | HI LF | W        | 159 | sprool            |       | NW       |
| 120 | <b>cart</b>      | HI LF | W        | 160 | grivity           |       | NW       |
|     | HI HF            |       | /20      |     | HIGH IMAGEABILITY |       | /40      |
|     | HI LF            |       | /20      |     | LOW IMAGEABILITY  |       | /40      |
|     | LI HF            |       | /20      |     | HIGH FREQUENCY    |       | /40      |
|     | LI LF            |       | /20      |     | LOW FREQUENCY     |       | /40      |

## Auditory Lexical Decision: Marking Form for Words

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Marking Instructions:** The form can be used for marking spoken and written versions of this test, thereby allowing a direct comparison between auditory and visual modalities.

| A High I / High Frequency Words |          |        | B High I / Low Frequency Words |          |        |
|---------------------------------|----------|--------|--------------------------------|----------|--------|
|                                 | Auditory | Visual |                                | Auditory | Visual |
| audience                        |          |        | alcohol                        |          |        |
| battle                          |          |        | axe                            |          |        |
| church                          |          |        | cart                           |          |        |
| coffee                          |          |        | drum                           |          |        |
| fire                            |          |        | elbow                          |          |        |
| hand                            |          |        | elephant                       |          |        |
| hospital                        |          |        | feather                        |          |        |
| hotel                           |          |        | funnel                         |          |        |
| letter                          |          |        | gravy                          |          |        |
| marriage                        |          |        | monkey                         |          |        |
| mother                          |          |        | onion                          |          |        |
| night                           |          |        | pig                            |          |        |
| picture                         |          |        | pill                           |          |        |
| plane                           |          |        | potato                         |          |        |
| radio                           |          |        | pupil                          |          |        |
| school                          |          |        | slope                          |          |        |
| student                         |          |        | spider                         |          |        |
| summer                          |          |        | tobacco                        |          |        |
| village                         |          |        | tractor                        |          |        |
| window                          |          |        | wheat                          |          |        |
| C Low I / High Frequency Words  |          |        | D Low I / Low Frequency Words  |          |        |
| attitude                        |          |        | analogy                        |          |        |
| character                       |          |        | bonus                          |          |        |
| concept                         |          |        | clue                           |          |        |
| crisis                          |          |        | deed                           |          |        |
| effort                          |          |        | dogma                          |          |        |
| fact                            |          |        | episode                        |          |        |
| idea                            |          |        | folly                          |          |        |
| length                          |          |        | gravity                        |          |        |
| manner                          |          |        | irony                          |          |        |
| member                          |          |        | mercy                          |          |        |
| moment                          |          |        | miracle                        |          |        |
| opinion                         |          |        | pact                           |          |        |
| principle                       |          |        | plea                           |          |        |
| purpose                         |          |        | realm                          |          |        |
| quality                         |          |        | satire                         |          |        |
| session                         |          |        | treason                        |          |        |
| system                          |          |        | tribute                        |          |        |
| theory                          |          |        | valour                         |          |        |
| thing                           |          |        | woe                            |          |        |
| thought                         |          |        | wrath                          |          |        |
| Number Correct (Hits)           |          | /80    |                                |          |        |
| Number Incorrect (Misses)       |          | /80    |                                |          |        |
| High Frequency (A + C)          |          | /40    | Low Frequency (B + D)          |          | /40    |
| High Imageability (A + B)       |          | /40    | Low Imageability (C + D)       |          | /40    |

Auditory Lexical Decision: Marking Form for Nonwords

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Marking Instructions:** The form can be used for marking spoken and written versions of this test, thereby allowing a direct comparison between auditory and visual modalities.

| Nonwords                            | Auditory | Visual | Nonwords | Auditory | Visual |
|-------------------------------------|----------|--------|----------|----------|--------|
| andience                            |          |        | afe      |          |        |
| biffle                              |          |        | calt     |          |        |
| cottee                              |          |        | drim     |          |        |
| fide                                |          |        | dunkey   |          |        |
| hend                                |          |        | eltow    |          |        |
| hetal                               |          |        | epilent  |          |        |
| hopsitle                            |          |        | fannel   |          |        |
| lutter                              |          |        | foaster  |          |        |
| mirtage                             |          |        | gramy    |          |        |
| mither                              |          |        | halocle  |          |        |
| nirth                               |          |        | otion    |          |        |
| pisture                             |          |        | pell     |          |        |
| pline                               |          |        | pib      |          |        |
| ragio                               |          |        | pitaro   |          |        |
| sammer                              |          |        | pupit    |          |        |
| slurch                              |          |        | slape    |          |        |
| sprool                              |          |        | spuder   |          |        |
| stadent                             |          |        | tanacco  |          |        |
| vallige                             |          |        | trantor  |          |        |
| wembow                              |          |        | weast    |          |        |
|                                     |          |        |          |          |        |
| Nonwords                            | Auditory | Visual | Nonwords | Auditory | Visual |
| affort                              |          |        | apisade  |          |        |
| antitude                            |          |        | atology  |          |        |
| baranter                            |          |        | binus    |          |        |
| boncept                             |          |        | clee     |          |        |
| clenth                              |          |        | dalour   |          |        |
| crasis                              |          |        | dend     |          |        |
| drister                             |          |        | felly    |          |        |
| fict                                |          |        | grivity  |          |        |
| idia                                |          |        | itony    |          |        |
| loment                              |          |        | merly    |          |        |
| mimber                              |          |        | minacle  |          |        |
| minner                              |          |        | plen     |          |        |
| opunion                             |          |        | prath    |          |        |
| pheory                              |          |        | puct     |          |        |
| prisciple                           |          |        | reash    |          |        |
| prought                             |          |        | sogmy    |          |        |
| purpise                             |          |        | sutire   |          |        |
| settion                             |          |        | trabite  |          |        |
| shality                             |          |        | trenson  |          |        |
| sping                               |          |        | voe      |          |        |
| Number Correct (Correct Rejections) |          |        |          | /80      |        |
| Number Incorrect (False Positives)  |          |        |          | /80      |        |

