More than Knowledge: Word Frequency Influences Preferences for Thematic Associates

Jeannette M. Whitmore (whitmore@umich.edu)
Department of Psychology, University of Michigan-Flint
303 E. Kearsley St., Flint, MI 48502 USA

Wendelyn J. Shore (shorewj@plu.edu)
Department of Psychology, Pacific Lutheran University
Tacoma, WA

Peg Hull-Smith (psmith@uoft02.utoledo.edu)
Department of Psychology, University of Toledo
Toledo, OH

Key words: language acquisition; word meanings;
knowledge representation

Introduction

The purpose of the current study is to determine if
frequency of occurrence, at least partially independent of
definitional knowledge, may play a role in the shift of
attention to thematic relationships during the acquisition of
word knowledge.

Early, partial representations of word knowledge are
likely to consist of categorical information (Chaffin, 1997;
Whitmore, Shore, & Smith 2004). This attentional focus
on categorical relationships during initial encounters is
documented in both the developmental (e.g., Mandler,
category membership is understood, attention may shift to
different types of relationship as we encounter the word in
various contexts. A thematic shift is widely reported in the
developmental literature and has been demonstrated with
adults (Chaffin, 1997). However, Whitmore et al (2004)
found that categorical information remains more readily
available to the language learner at all levels of knowledge
when using low frequency words. It is possible that the
high-frequency words used in Chaffin’s study and in the
developmental literature represent the far end of the word
meaning continuum, whereas the low-frequency words
used by Whitmore et al represent a different point on that
continuum. Low-frequency words, even when part of the
expressive vocabulary, are experienced in limited contexts
and thus may be represented by limited thematic
relationships.

To address this contradiction, participants generated
associates to both high- and low frequency targets. It was
hypothesized that high frequency targets would elicit
thematic responses, while low frequency targets would
elicit categorical responses.

Method

Thirty-five participants completed the level of word
knowledge assessment task (LOWKAT)(e.g., Durso &
Shore, 1991) that included 40 low-frequency, concrete
nouns (e.g., dowager, hovel), 15 high-frequency, concrete
nouns (e.g., picture) and 9 pseudowords (e.g., edarthic).
Targets that were correctly defined or used in a sentence
formed the known set of targets for each participant. No
other targets were included in the current analyses.

Using a coding scheme adapted from Chaffin (1997), two
coders determined if and how associates were meaningfully
related to the targets. The scheme consisted of fourteen possible
relation types (e.g., categorical, verb response), including ‘no
identifiable relation’.

Results

The mean proportion of meaningful thematic and categorical
responses at each frequency was calculated for each participant.

Table 1: Mean Proportions (standard deviations) of Thematic
& Categorical Responses to Low and High Frequency Targets

<table>
<thead>
<tr>
<th></th>
<th>High Frequency</th>
<th>Low Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thematic</td>
<td>.57 (.14)</td>
<td>.25 (.17)</td>
</tr>
<tr>
<td>Categorical</td>
<td>.35 (.13)</td>
<td>.59 (.18)</td>
</tr>
</tbody>
</table>

A MANOVA revealed that more meaningfully related
responses were provided for high frequency targets
F(1,34)=7.79, p<.01. However, there was no difference in type
of response provided, p>.05. Interestingly, type of response
varied as a function of frequency F(1,34)=81.72, p<.001.
Participants provided more thematic associates to high
frequency targets and more categorical associates to low
frequency targets.

Conclusions

The results support the hypothesis. High frequency words
seem to be represented by thematic relationships, while low-
frequency words are represented by categorical relationships.

References

Chaffin, R. (1997). Associations to unfamiliar words:
Learning the meanings of new words. Memory & Cognition,
25, 203-226.

of word meanings. Journal of Experimental Psychology:
General, 190-202.

Mandler, J. M. (2000). Perceptual and conceptual processes
in infancy. Journal of Cognition and Development, 1,
3-36.

knowledge of word meanings: Thematic and taxonomic
representations. Journal of Psycholinguistic Research, 33,
137-164.