In *Proceedings of the Twenty-first Annual Conference of the Cognitive Science Society*, p. 149-154. Mahwah, NJ: Erlbaum.

Relevance and Feature Accessibility in Combined Concepts

Zachary Estes (zcestes@princeton.edu)
Sam Glucksberg (samg@princeton.edu)
Princeton University
Department of Psychology; Green Hall
Princeton, NJ 08544-1010 USA

Abstract

When comprehending combined concepts (e.g., 'peeled apples'), two kinds of features are potentially accessible. *Phrase features* are true only of the phrase (e.g., "white"), while *noun features* are true of both the phrase and the head noun (e.g., "round"). Phrase features are verified more quickly and more accurately than noun features. No satisfactory account of this phrase feature priority has been put forth. We propose that relevance can explain the phrase feature priority. In Experiment 1, the differential accessibility of noun and phrase features was reversed by context paragraphs that made noun features relevant. Experiment 2 more subtly replicated this effect using a single-word context. We conclude that the phrase feature priority is attributable to the discourse strategy of assigning relevance to modifiers of combined concepts.

Introduction

Meaning is an unstable phenomenon: The particular features accessed for a given concept may differ greatly across various occasions of use. For instance, Johnson-Laird (1975) noted that the sentence "The tomato rolled across the floor" emphasizes the round feature of tomatoes, while the red feature is accessed in "The sun was a ripe tomato." This same idea is captured by Barsalou's (1982) context-dependent features, which are accessed only in appropriate contexts (as opposed to context-independent features, which are accessed regardless of context). This differential feature accessibility has implications not only for semantics, but also for theories of concept representation, natural language comprehension, and referential communication.

Combined concepts are particularly rich for investigating feature accessibility because certain features emerge only when concepts are combined. For instance, 'peeled apples' are white, though neither apples nor peeled things in general are white. Rather, this feature emerges from the combination of 'peeled apples'. We refer to such features as *phrase features*, because they are true of the phrase but are not true of either constituent concept in isolation. *Noun features*, on the other hand, are true of both the combined concept and the head noun. For instance, "round" is a noun feature of 'peeled apples' because both peeled apples and apples in general are round.

Hampton & Springer (1989) and Springer & Murphy (1992) investigated the relative accessibility of noun and phrase features of combined concepts. In a typical experiment, participants indicated whether sentences such as "Peeled apples are white" and "Peeled apples are round" are true or false (i.e., the sentence verification paradigm). Phrase features were verified more quickly and more accurately than noun features. This *phrase feature priority* has been found by several researchers (Estes & Glucksberg, 1998; Gagne & Murphy, 1996; Hampton & Springer, 1989; Springer & Murphy, 1992).

What accounts for the differential accessibility of phrase and noun features? Gagne and Murphy (1996) suggested that the given-new convention might explain the phrase feature priority. The given-new convention states that information is differentially processed according to whether it is 'given' or 'new' information (Haviland & Clark, 1974). More specifically, new information is processed prior to given information (Hornby, 1974; Singer, 1976).

To assess this given-new hypothesis, Gagne and Murphy embedded combined concepts in discourse contexts that were designed to assign 'new' information status to either the modifier or the head noun. For example, if the modifier 'peeled' is repeated twice in a paragraph but the noun 'apples' appears only once, then the repeated modifier might become the given information and the noun would be the new information. However, this and other manipulations failed to eliminate the phrase feature priority. Phrase feature statements such as "peeled apples are white" were still verified more quickly than were noun feature statements such as "peeled apples are round". Gagne and Murphy concluded that the given-new convention was not responsible for the phrase feature priority.

We propose that relevance can explain the phrase feature priority. By relevance we mean the classic sense used by Grice (1975). Dale and Reiter (1995) paraphrase Grice's maxim of relevance as follows: "A referring expression should not mention attributes that have no discriminatory power and, hence, do not help distinguish the intended referent from the members of the contrast set" (p. 240). In accordance with this, we propose that people make a discourse processing assumption that a concept has been modified because that modifier provides relevant information. That is, 'peeled apples' are mentioned because it is relevant for the comprehender to know that they are peeled rather than ordinary apples. This information is relevant because it has discriminatory power. It helps distinguish the referent from other members of the head noun category. For instance, 'peeled apples' differ from other apples in that they are

white and sticky. Thus phrase features, which by definition distinguish the combined concept from the head noun category, are assumed to be relevant. This assumption of relevance, we suggest, results in the phrase feature priority.

If relevance is responsible for the phrase feature priority, then this preferential accessibility should be reversed by contexts that make noun features relevant and phrase features irrelevant. Experiment 1 tests this hypothesis by explicitly making either noun or phrase features relevant. Experiment 2 uses a more subtle, single-word context to implicitly alter feature accessibility.

Experiment 1

To test our relevance hypothesis, we constructed context paragraphs for which either a noun or a phrase feature was relevant (see Table 1). The relevance hypothesis predicts that the feature relevant to the preceding context will be more accessible, regardless of whether it is a noun or a phrase feature. That is, the phrase feature priority will be reversed by contextual relevance.

Table 1: Examples of stimuli, Experiment 1.

Noun-relevant contex: Alan and Susan were bored one Sunday afternoon, and they decided to play lawn bowling in their backyard. But they didn't have any lawn balls, so they searched around the house. The first things they found were a pair of peeled apples that were going to be used with dinner. They were a little sticky, but they worked just fine.
Phrase-relevant context: Alan was a famous French chef who used fresh fruit to garnish his meals. Each night, he spent half an hour selecting the perfect fruit for the centerpiece. Last night, Alan decided to make a colorful centerpiece. He used orange slices, kiwi and peeled apples. The centerpiece was gorgeous, until the guests began to eat it.
Noun feature verification: Peeled apples are round.
Phrase feature verification: Peeled apples are white.

Many studies have demonstrated that relevant contexts facilitate access to the features of noun concepts (Hess, Foss, & Carroll, 1995; McKoon & Ratcliff, 1988; Tabossi, 1982; 1988; Tabossi & Johnson-Laird, 1980). Thus, our hypothesis may seem obvious. However, there are two reasons to test this hypothesis directly. First, Gagne & Murphy (1996) failed to consistently affect the differential accessibility of noun and phrase features with their contexts. In fact, they concluded just the opposite of our relevance prediction: "Using a context that emphasizes a particular feature makes that feature more difficult to verify than when the feature has not been emphasized in the preceding context" (Gagne & Murphy, 1996, p. 96).

And second, there are important differences in stimuli between the present investigation and past investigations. The earlier work used simple concepts (e.g., apples), while the present experiment uses combined concepts (e.g., peeled apples). The combination of concepts brings about a host of issues that are not involved in the comprehension of simple concepts. For instance, the modifying concept may act as a local context for the head concept, possibly competing with the more global context paragraph (see Hess, Foss, & Carroll, 1995). Also, the modifier of a combined concept is often idiosyncratically construed (Wisniewski, 1996) and may be represented as only a single of its features (Estes & Glucksberg, in press), with some features emerging and others being canceled from the combination (Hampton, 1987, 1988; Medin & Shoben, 1988; Murphy, 1988). These differences in stimuli make it advisable to test any generalization from simple to combined concepts.

Materials and Design

The experiment was a 2 (context) X 2 (feature) within-subjects design, with response time and accuracy as dependent measures in a sentence verification paradigm. Feature-types were noun and phrase features, as described above. Noun and phrase features were matched for number of syllables. Contexts were brief (typically 3 or 4 sentences), and included the critical combined concept (e.g., peeled apples) once. Forty experimental contexts emphasized either the noun or phrase feature without explicitly stating the feature. Most contexts and verification sentences were taken from Gagne and Murphy (1996, Experiment 4), although the contexts were edited to make them consistent with our purposes. Forty experimental target sentences (one noun feature and one phrase feature for each combined concept) were true. Twenty filler contexts concluded with false target sentences (e.g., Pepperoni pizza is vegetarian), also taken from Gagne and Murphy. To encourage attention to the context paragraphs, each context was followed by a comprehension question. For example, the comprehension questions for the two 'peeled apples' scenarios were "Did they bowl in their front yard?" and "Did Alan have his assistant prepare the centerpiece?". The correct answer to half of these questions was "yes". These questions were fully counterbalanced across conditions. Four lists were constructed such that each consisted of 5 true items in each of the 4 experimental conditions and 20 false filler items for a total of 40 items per list. Item order was randomized for each participant.

Participants and Procedure

Thirty-seven Princeton University undergraduates participated for partial course credit or for pay. All were native speakers of American English. The procedure followed that of Gagne and Murphy (1996, Experiment 4). Participants read a context paragraph on a computer monitor and pressed the space bar upon completion (self-paced). A probe sentence was presented in the center of the screen immediately thereafter. Participants pressed one of two labeled keys to indicate whether the sentence was true or false. After this response, a comprehension question was presented in the center of the screen, and again participants responded by

pressing the appropriate key. This sequence was repeated for all 40 items. Participants were instructed to read the paragraphs at their own pace, but to respond to the sentences as quickly as possible without making errors. The task lasted approximately 20 minutes.

Results and Discussion

The data of one error-prone participant were replaced by data from another participant, providing data from 36 participants in all. Two repeated measures ANOVAS were performed, one using participants as a random factor (F_s) and one using items as a random factor (F_i). Response times of less then 500ms or more than 5000ms (2.6% of data) were removed from analyses, as were incorrect responses (12.5%). The comprehension questions were answered with equivalent accuracy rates (90%) across the conditions, all $p > .15$. Thus, any differences in verification time across experimental conditions cannot be attributed to differences in comprehension or attention in the different conditions. Mean response times and percent correct as a function of condition are presented in Table 2.

Table 2: Mean response times in milliseconds (and accuracy) by condition, Experiment 1.

	Feature-type	
Context-type	Noun feature	Phrase feature
Noun-relevant	1980 (.89)	2117 (.82)
Phrase-relevant	2222 (.81)	1921 (.89)

As expected, both response time and accuracy were best in the target-relevant conditions. When phrase features were relevant, they were verified more quickly and more accurately than noun features. But when noun features were relevant, they were verified more quickly and accurately than phrase features. As shown in Figures 1 and 2, this predicted context by feature-type interaction was reliable for both response time [F_s (1, 35) = 21.41, $p < .01$ and F_i (1, 19) = 9.95, $p < .01$] and accuracy [F_s (1, 35) = 6.67, $p < .05$ and F_i (1, 19) = 8.12, $p = .01$]. There were no reliable main effects, including no reliable overall phrase feature priority, all $p > .10$. These results are clear: Relevant information is more accessible than irrelevant information, irrespective of whether it is a phrase feature or a noun feature.

To recapitulate, according to our relevance hypothesis, comprehenders assume that the modifier of a combined concept is relevant because it has "discriminatory power and, hence…help[s] distinguish the intended referent from the members of the contrast set" (Dale & Reiter, 1995, p. 240). That is, the phrase features added by the modifier are assumed to be relevant because they differentiate the combined concept from other members of the head noun category. Thus, in the absence of an informative context, phrase features are more accessible than noun features—the phrase feature priority—because they are more relevant.

In this experiment we made either noun features or phrase features relevant to a context paragraph. The relevance of a feature predicted its accessibility, regardless of feature-type. Thus relevance, rather than the given-new manipulation, determines feature accessibility and can explain the phrase feature priority.

Figure 1: Mean response time by condition, Experiment 1.

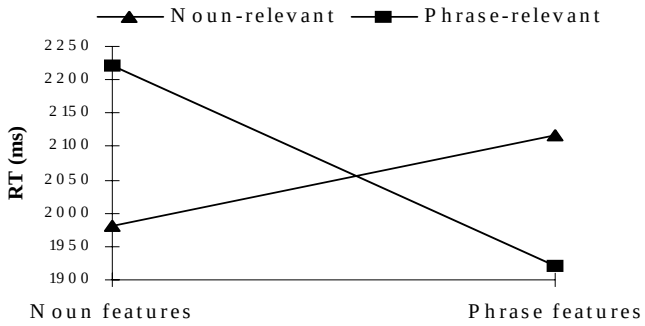
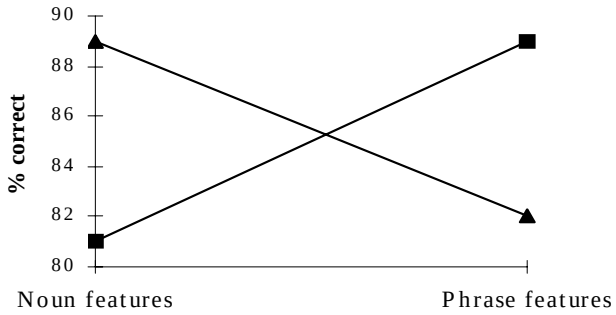


Figure 2: Mean accuracy rate by condition, Experiment 1.



Experiment 2

In Experiment 1 we found powerful context effects using one-paragraph scenarios that explicitly rendered one or another feature-type relevant. Would minimal contexts also effectively alter the accessibility of noun and phrase features? Perhaps the most minimal context possible is a single word that changes the meaning of a sentence. The word "even" may have this effect. To see how, consider these four sentences:

(1) Peeled apples are round.
(2) Peeled apples are white.
(3) Even peeled apples are round.
(4) Even peeled apples are white.

Sentence (2) is verified more quickly and more accurately than (1) (Hampton & Springer, 1989; Springer & Murphy, 1992). From this you might expect (4) to be more easily verified than (3). However, the addition of the word "even" may alter feature accessibility. "Even" may signify to the reader that the upcoming information is somewhat obvious. That is, "even" leads the reader to expect 'given' information, or information that is not new. For instance, when we encounter the phrase "Even peeled apples…", we may expect it to be completed with information that the combined concept has in common with other members of the head noun category, such as the noun feature "round" in (3). Completing this sentence with 'new' information, such as

the phrase feature "white" in (4), violates our expectations of efficient communication (cf. Grice, 1975). Thus, (4) will be difficult to verify. Experiment 2 employs such expressions to determine whether a minimal contextual manipulation can replicate the interaction found in Experiment 1.

Materials and Design

The design was a 2 (sentence-type) X 2 (feature-type) within-subjects design, with response time and accuracy of verification as dependent measures. Twenty-four combined concepts (e.g., peeled apples), each with one noun feature (e.g., round) and one phrase feature (e.g., white), were selected as experimental items. Each of these 48 experimental sentences also appeared preceded by the word "even". Thus, there were 96 total experimental items. See (1) through (4) above as an example of one of the 24 sets of stimuli. Four lists were created such that each list contained 6 unmodified noun features (e.g., (1) above), 6 even-modified noun features (e.g., (3) above), 6 unmodified phrase features (e.g., (2) above), and 6 even-modified phrase features (e.g., (4) above). No combined concept appeared in the same list more than once. In addition, 24 false filler items (e.g., Pepperoni pizza is vegetarian) were randomly interspersed in the lists. Half of the false fillers began with the word "even" (e.g., Even elevator buttons are sewn on.). Noun and phrase features were matched for number of syllables.

Participants and Procedure

Sixteen Princeton University undergraduates participated for course credit. All were native American English speakers, and none had participated in similar experiments before. Sentences were presented one at a time in the center of a computer screen, and participants indicated whether the sentences were true or false by pressing the appropriate labeled key. Each sentence was preceded by a 1000ms intertrial interval and a 500ms fixation cross. This procedure continued uninterrupted for all 48 sentences. In addition, participants were given 8 practice trials prior to the experiment proper. Participants were instructed to indicate as quickly as possible without making errors whether presented sentences were true or false. Item order was randomized for each participant.

Results and Discussion

Two repeated measures ANOVAS were performed, one using participants as a random factor (F_s) and one using items as a random factor (F_i). Response times of less than 500ms or more than 5000ms (2.6% of data) were removed from analyses, as were incorrect responses (9.4%). Results are presented in Table 3.

Table 3: Mean response times in milliseconds (and accuracy) by condition, Experiment 2.

	Feature-type	
Context-type	Noun feature	Phrase feature
Unmodified	2137 (.89)	1835 (.93)
Even-modified	2052 (.95)	2124 (.85)

The predicted interaction obtained: The word "even", when used as a single-word context, hinders verification of phrase features but not noun features. This interaction was significant in both response time [F_s (1, 15) = 5.67, p = .03 and F_i (1, 23) = 4.23, p = .05] and accuracy [F_s (1, 15) = 5.16, p = .04 and F_i (1, 23) = 4.72, p = .04]. See Figures 3 and 4 below. Sentence-type had a reliable main effect on response time in the item analysis, F_i (1, 23) = 5.93, p = .02, indicating that the word "even" generally slowed comprehension. This is not at all surprising, given that the sentences containing "even" are longer than those not containing this additional word. What is more surprising is that despite the fact that these sentences are longer, they do not slow comprehension of noun features. Only phrase feature verification is slowed by this additional word. No other main effect approached significance, all $p > .15$.

Figure 3: Mean response time by condition, Experiment 2.

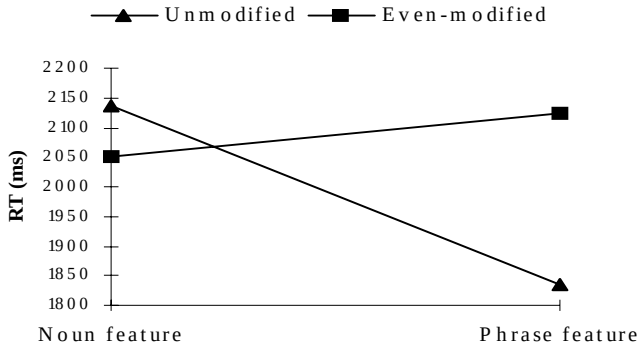
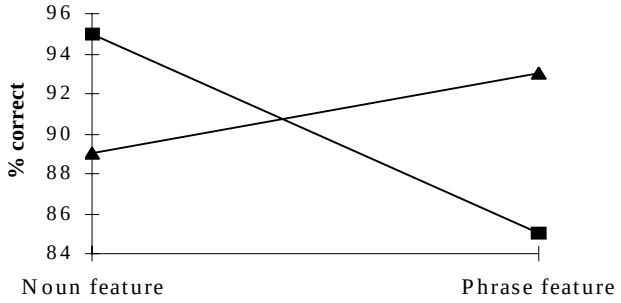


Figure 4: Mean accuracy rate by condition, Experiment 2.



We may also look to the results of the two unmodified conditions for validation of our materials. When our experimental items are not modified by "even", noun feature verification is slower than phrase feature verification. This

is a simple replication of the phrase feature priority (Hampton & Springer, 1989; Springer & Murphy, 1992), thus indicating that our effect in the present experiment is not due to the use of inappropriate items. Instead, it is attributable to the addition of a single-word context, namely, the word "even".

The given-new convention does not predict feature accessibility in combined concepts (Gagne & Murphy, 1996). Relevance does (Experiment 1 above). However, we do not intend to imply that the given-new convention plays no role in feature accessibility. Experiment 2 demonstrates that violating the given-new convention does affect feature accessibility. The addition of the word "even" apparently leads us not to expect phrase features, which are 'new' information to the combined concept. As a consequence, phrase features are more difficult to verify if they are preceded by the word "even".

Another, more speculative, claim is that Experiment 2 is further support for our relevance hypothesis. The claim here would be that "even" not only leads us not to expect phrase features, but that it also consequently makes them less relevant. However, more work needs to be done to determine whether the effect of Experiment 2 is due simply to expectancies, or if it can be explained by relevance.

General Discussion

We suggest that relevance accounts for the differential accessibility of noun and phrase features of combined concepts. Phrase features are verified more quickly and more accurately than noun features in the absence of an appropriate context. Our claim is that this phrase feature priority is attributable to a default discourse strategy of implicitly assigning relevance to the modifier of a combined concept. This default strategy is to assume, in accordance with Grice's (1975) conversational maxims, that the modifier of a combined concept serves a communicative purpose, namely, to add relevant information about the head noun concept. What information may a modifier contribute that is not already evident in the head noun concept? In short, the modification of a concept provides the addition of phrase features. Now because we have assigned relevance to the modifier, we therefore also assign relevance to those phrase features, resulting in the phrase feature priority.

If relevance is indeed responsible for the phrase feature priority, then manipulating the relevance of noun and phrase features should affect the accessibility of those features. Explicitly making noun features relevant should overturn the default strategy of assigning relevance to phrase features. Experiment 1 tested this hypothesis, using context paragraphs that emphasized either noun or phrase features. As predicted, noun features were verified faster and more accurately following contexts relevant to those noun features. Conversely, phrase features were more accessible after contexts relevant to those phrase features.

In Experiment 2 we sought to more subtly demonstrate this context- by feature-type interaction. Instead of a lengthy context, we used a single-word context. We supposed that the word "even", when preceding a combined concept (e.g., "Even peeled apples…"), indicates that the upcoming information is shared by the combined concept and the head noun in isolation. In other words, "even" leads the comprehender to expect noun features, which are 'given' information, rather than phrase features, which are 'new' information. The predicted interaction did obtain. This single-word context slowed comprehension of phrase features. However, the addition of "even" did not hinder verification of noun features, despite the fact that this single-word context made those sentences longer than others not preceded by "even". From Experiments 1 and 2 we conclude that the phrase feature priority is attributable to the discourse strategy of assigning relevance to modifiers of combined concepts.

Note that noun features may be considered *redundant* because they are true of both the combined concept and the head noun category alone. For instance, the feature "round" of 'peeled apples' is redundant because apples in general are also round. Phrase features, on the contrary, may be considered *diagnostic* because they distinguish the combined concept from other members of the head noun category. In other words, one way that 'peeled apples' differ from other apples is that they are white instead of red.

Hence, when combined concepts are encountered in the absence of an informative context, phrase features differ from noun features in two respects: (1) Whereas phrase features are diagnostic, noun features are redundant, and (2) phrase features are more relevant than noun features. Given that we observe a phrase feature priority over noun features in the lack of a context, the question then becomes whether phrase features are verified faster because they are diagnostic, or because they are relevant.

Our data directly address this question. If it is diagnosticity that produces the phrase feature priority, then (diagnostic) phrase features should be verified faster than (redundant) noun features, regardless of contextual relevance. This did not happen. Instead, we found that when those diagnostic features were made irrelevant, they were no longer preferentially processed. Rather, the relevance of the context determined relative speed of verification, regardless of the diagnosticity of the target feature. Essentially, phrase features are preferentially processed as a consequence of their relevance, not their diagnosticity.

Our results also parallel the notion of encoding specificity (Tulving & Thomson, 1973) in the memory literature. Recall is facilitated for items cued by features relevant to their original study context, in comparison to items cued by features irrelevant to the original study context (Anderson & Ortony, 1975; Barclay, Bransford, Franks, McCarrell, & Nitsch, 1974). For instance, the context for the target item 'piano' concerned either lifting a piano, for which the cue "heavy" was relevant, or tuning a piano, for which the cue "nice sound" was relevant. Cues relevant to the study context were more effective than cues that were not relevant. That is, "heavy" was a better cue for 'piano' after the lifting

context than after the tuning context, while "nice sound" was a more effective cue following the tuning context than the lifting context.

We may thus frame our results as a special case of encoding specificity. When combined concepts appear in isolation or in unconstraining contexts, phrase features are verified prior to noun features as a result of the assumption of relevance described above. However, when combined concepts appear in contexts for which one feature or another is sufficiently relevant, people no longer make this default assumption, but instead selectively encode those features that are relevant in the context. In this way, the default phrase feature priority may be overturned, as the differential accessibility of noun and phrase features is governed by contextual relevance.

Acknowledgments

This research was supported by a National Science Foundation graduate research fellowship to the first author and by Grant #SBR-9712601 from the National Science Foundation to the second author. We are especially grateful to Christina Gagne for some of the materials for Experiment 1. We also thank Yevgeniya Goldvarg, Matt McGlone, Sahan Mukherji, and Mary Newsome for helpful comments.

References

Anderson, R. & Ortony, A. (1975). On putting apples into bottles: A problem of polysemy. Cognitive Psychology, 7, p. 167-180.

Barclay, J., Bransford, J., Franks, J., McCarrell, N., & Nitsch, K. (1974). Comprehension and semantic flexibility. Journal of Verbal Learning and Verbal Behavior, 13, p. 471-481.

Barsalou, L.W. (1982). Context-independent and context-dependent information in concepts. Memory & Cognition, 10, 82-93.

Estes, Z. & Glucksberg, S. (1998). Contextual activation of features of combined concepts. In Proceedings of the Twentieth Annual Conference of the Cognitive Science Society, p. 333-338. Mahwah, New Jersey: Erlbaum.

Estes, Z. & Glucksberg, S. (in press). Interactive property attribution in concept combination. Memory & Cognition.

Gagne, C.L. & Murphy, G.L. (1996). Influence of discourse context on feature availability in conceptual combination. Discourse Processes, 22, 79-101.

Grice, H.P. (1975). Logic and conversation. In P. Cole & J. Morgan (Eds.), Syntax and Semantics: Vol. 3, Speech Acts, p. 41-58. New York: Academic.

Hampton, J.A. (1987). Inheritance of attributes in natural concept conjunctions. Memory & Cognition, 15, 55-71.

Hampton, J.A. (1988). Overextension of conjunctive concepts: Evidence for a unitary model of concept typicality and class inclusion. Journal of Experimental Psychology: Learning, Memory and Cognition, 14,12-32.

Hampton, J.A. & Springer, K. (1989). Long speeches are boring: Verifying properties of conjunctive concepts. Paper presented at the 30th meeting of the Psychonomic Society, Atlanta.

Haviland, S.E. & Clark, H.H. (1974). What's new? Acquiring new information as a process in comprehension. Journal of Verbal Learning and Verbal Behavior, 13, 512-521.

Hess, D.J., Foss, D.J., & Carroll, P. (1995). Effects of global and local context on lexical processing during language comprehension. Journal of Experimental Psychology: General, 124, p. 62-82.

Hornby, P. (1974). Surface structure and presupposition. Journal of Verbal Learning and Verbal Behavior, 13, 530-538.

Johnson-Laird, P.N. (1975). Meaning and the mental lexicon. In A. Kennedy & A. Wilkes (Eds.), Studies in long-term memory, p. 123-142. London: Wiley.

McKoon, G. & Ratcliff, R. (1988). Contextually relevant aspects of meaning. Journal of Experimental Psychology: Learning, Memory, and Cognition, 14, p. 331-43.

Medin, D.L., & Shoben, E.J. (1988). Context and structure in conceptual combination. Cognitive Psychology, 20, 158-190.

Murphy, G.L. (1988). Comprehending complex concepts. Cognitive Science, 12, 529-562.

Murphy, G.L. (1990). Noun phrase interpretation and conceptual combination. Journal of Memory and Language, 29, 259-288.

Singer, M. (1976). Thematic structure and the integration of linguistic information. Journal of Verbal Learning and Verbal Behavior, 15, 549-558.

Springer, K. & Murphy, G.L. (1992). Feature availability in conceptual combination. Psychological Science, 3, 111-117.

Tabossi, P. (1982). Sentential context and the interpretation of unambiguous words. Quarterly Journal of Experimental Psychology, 34A, 79-90.

Tabossi, P. (1988). Effects of context on the immediate interpretation of unambiguous words. Journal of Experimental Psychology: Learning, Memory, and Cognition, 14, 153-162.

Tabossi, P. & Johnson-Laird, P.N. (1980). Linguistic context and the priming of semantic information. Quarterly Journal of Experimental Psychology, 32, 595-603.

Tulving, E. & Thomson, D.N. (1973). Encoding specificity and retrieval processes in semantic memory. Psychological Review, 80, 352-373.

Wisniewski, E.J. (1996). Construal and similarity in conceptual combination. Journal of Memory and Language, 35, 434-453.