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ABSTRACT

This study explored the viability of several theories in describing adjective memory. For the study, college students were told either to form images or to learn sentences. A noun-prompted sentence recall task exposed their memory for adjectives modifying either subject nouns. Results revealed that subject modifiers were better remembered than object modifiers. Also, adjectives semantically unrelated to verbs were recalled better than adjectives related to verbs, mainly because students tended to omit adjectives from their productions when verbs conveyed these meanings. This omission tendency was especially strong for modifiers which followed the verb. Constructive and interpretative theories of semantic memory were applied to results. (Author/RB)

Semantic Memory and the Adjective Omission Phenomenon[1]

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Abstract

Adults were told either to form images or to learn sentences. A noun-prompted sentence recall task exposed Ss' memory for adjectives modifying either subject or object nouns. Results revealed that subject modifiers were better remembered than object modifiers. Also, adjectives semantically unrelated to verbs were recalled better than adjectives related to verbs, mainly because Ss tended to omit adjectives from their productions when verbs conveyed these meanings. This omission tendency was especially strong for modifiers which followed the verb. Constructive and interpretative theories of semantic memory were applied to results.

Much of the research on sentence memory has been aimed at identifying how people process, store and retrieve the meanings of sentences. Blumenthal, Rohrman, and others have proposed that deep structures are the units stored in memory. Meaning is derived by Ss' performing a semantic interpretation of these constituents. Another theory set forth by Bransford, Barclay and Franks, holds that people process and remember sentences by using their knowledge of the world to construct descriptions of overall situations.

The present study was intended to explore the viability of these theories in describing adjective memory. Clark has reported that memory for modifiers is poorer than memory for the nouns modified. In order to examine factors which might influence Ss' tendency to recall or forget adjectives, memory with two types of sentence contexts was examined, one in which adjectives and verbs were related semantically (e.g., The thief dragged the heavy suitcase.) and one in which adjectives and verbs possessed separate independent meanings (e.g., The thief jumped over the heavy suitcase.). Semantic relatedness was manipulated by selecting verbs which either contained or did not contain in their meanings semantic features expressed by the adjectives. (In the above related-pair example, the verb "drag" implies that its direct object is [+ Weight]). It was reasoned that if Ss store deep structure constituents, then each sentence type should be processed to preserve subject and object modifiers and so learners should recall related and unrelated adjectives equally well. However, if Ss store information at a conceptual level, then they may not be able to remember both types of adjectives. In the case of unrelated sentences, since the meanings of adjectives are independent of their verbs, the adjectives are represented separately in the underlying semantic configuration and so adjectives as well as verbs are recalled. However, in the case of related sentences, since the meanings of adjectives are also carried by verbs, and since semantic rather than lexical or syntactic information is preserved in memory, the distinctiveness of adjectives and verbs is lost. Thus, when the learner retrieves and expresses stored meanings, he tends to produce verbs but to forget adjectives. This is because verbs are obligatory components of sentences and because they convey adjective meanings.

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In addition to variations in the type of adjective, one other manipulation of sentences was investigated. Halliday (1967) has distinguished between theme and rheme. Given a normal intonation pattern, the information expressed in the subject of the sentence's surface structure is considered the theme or topic, and the information contained in the predicate is the comment about the topic, the rheme. Results of several memory studies suggest that the theme is better recalled than the rheme. In the present study, performance with sentences having theme-modifiers was contrasted to performance with sentences containing rheme-modifiers.

Methods

Two experiments were conducted. In one, the incidental learning experiment, Ss were told to form images for each sentence and to rate the ease of doing this on a scale from 1 to 5. Following this, they were surprised with a request to recall sentences. In the second experiment, one involving intentional learning, Ss were told to learn the sentences. In both groups of Ss listened to 32 sentences read orally at a 5-second rate. Memory was assessed with a written noun-prompted recall test.

Materials. Two sets of adjective-noun-noun combinations were formed, one in which adjectives modified subject nouns, and one where adjectives modified object nouns. Adjectives serving as very common features of noun referents (e.g., slow turtle) were avoided. For each combination, two verbs were written, one bearing a strong relation to the adjective,

Subject-Related: The angry waitress yelled at the actor. (1)

Object-Related: The barber washed the dirty mirror. (2)

and one bearing little relation to the adjective,

Subject-Unrelated: The angry waitress served the actor. (3)

Object-Unrelated: The barber gazed into the dirty mirror. (4)

These sentences were used to form two lists comprised of the same adjective-noun combinations but different verbs. Each list was presented to a separate group of learners. Each learner was exposed to all four sentence types. Whereas complete sentences were presented during the study trial, only nouns, those assigned adjective modifiers, appeared as aids for recall on the test trial.

Subjects. Experiment 1 utilized 46 college students, 20 completing the task with List I and 26 with List II. Experiment 2 sampled 63 college students, 26 on List I and 37 on List II.

Results

An analysis of variance was performed to assess the influence of two independent variables, adjective-verb relatedness and theme-rheme modification, on recall. Both variables were repeated measures.

The dependent variable of primary interest was adjective recall. Results revealed main effects of both the adjective relatedness and the noun modification factors in both experiments. Mean values are displayed in Tables 1 and 2. Ss remembered unrelated better than related adjectives, and adjectives modifying subject nouns better than adjectives modifying object nouns, ($p < .01$ and $p < .05$ in some cases).

To determine whether recall was poorer for related than unrelated adjectives because Ss were omitting more related adjectives from their productions, recall contingencies were examined. That is, the proportion of cases in which verbs were recalled without their adjectives was determined for each of the sentence types. These results presented in Table 3 reveal that indeed Ss tended to omit more adjectives bearing strong than weak semantic ties to verbs. This tendency was more pronounced in the incidental learning experiment and was especially strong for sentences in which adjectives followed verbs and modified object nouns.

Discussion

These results offer less support for the deep structure position than for the constructive or conceptual view of sentence memory. They suggest that Ss do not necessarily represent each deep structure constituent uniquely in memory. Rather when meanings overlap, the constituents are collapsed into one set of semantic features, or one description or picture of the overall situation, and this is the cognitive configuration which is later recalled.

There is another view of verbal memory which should be mentioned in light of these findings, a view suggested by Underwood and Shulz.

One might expect words which are related to each other to be remembered <u>better</u> than unrelated word pairs because these relations already exist in the Ss' repertoire and so little associative learning is required. However, this was not the case. In fact, the opposite pattern was observed. Such a relationship favoring related words would undoubtedly hold in a task where learners were given related and unrelated pairs in isolation. However, when the relations occur in sentence contexts, other processes, specifically those occurring because Ss are storing the meanings of sentences rather than words, become more important.

One other question was raised in this study. The position of the modifier was varied to determine whether recall would differ depending on which nouns the adjectives modified. Results revealed that subject modifiers were better recalled than object modifiers. (Note that the noun being modified served as the recall cue in both cases.) This may have occurred because subject modifiers play a more important role in the sentence's meaning since they contribute to the theme or topic of the sentence. Alternatively, subject-modifiers being at the heads of sentence were more salient perceptually and so may have been noticed and stored more frequently than object modifiers.

In conclusion, results of the present study appear to be important for their bearing on the problem of specifying and exploring synonymous relations among words and sentences. Findings indicate that when semantic features of the verb imply certain noun properties, it may not be necessary and it may even prove useless to make explicit these properties through the inclusion of adjective modifiers. However, the method chosen for study of this problem, a prompted recall task, was perhaps not the best for disclosing the effects of synonymity on memory. Better would be the use of a sentence recognition task in which false recognition errors are examined. Anisfeld, Fillenbaum and others have employed this technique to study synonymous relations and to test predictions based on semantic feature theory. This constitutes the next step in this line of research planned by this author.

Table 1

Mean Incidental Recall of Adjectives and Verbs as a Function of Noun Modification and Adjective-Verb Relatedness Factors

		Noun Modification[a]		
		Subject	Object	Mean
Relatedness[b]	Related	2.17	1.65	1.91
	Unrelated	2.74	2.35	2.54
	Mean	2.46	2.00	2.23

[a] MS_R (45) = 1.16

[b] MS_E (45) = 1.62

Table

Mean Intentional Recall of Adjectives as a Function of Noun Modification and Adjective-Verb Relatedness Factors

		Noun Modification[a]		
		Subject	Object	Mean
Relatedness[b]	Related	2.67	1.78	2.22
	Unrelated	2.97	2.29	2.63
	Mean	2.82	2.03	2.43

[a] MS_R (62) = 1.15

[b] MS_E (62) = 1.42

Table

Proportion of Sentence Productions in Which Verbs Were Recalled But Adjectives Were Omitted as a Function of Noun Modification and Adjective-Verb Relatedness Factors

		Noun Modification		
	Relatedness	Subject	Object	Mean
Intentional Learning	Related	.42	.56	.49
	Unrelated	.34	.37	.36
	Mean	.38	.47	.42
	Related	.27	.46	.37
	Unrelated	.24	.33	.29
	Mean	.255	.40	.33

Table

Mean Ease-of-Imaging Ratings[a] as a Function of Noun Modification and Adjective-Verb Relatedness Factors

		Noun Modification		
		Subject	Object	Mean
Relatedness	Related	1.94	1.76	1.85
	Unrelated	2.08	2.12	2.10
	Mean	2.01	1.94	1.98

[a]Rating scale ranged from 1 (easy) to 5 (difficult)