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ABSTRACT

Using an advance organizer, an instructional aid designed to precede a main passage and to provide an effective organizational framework for older adults who may not have spontaneously employed their own strategy for understanding written material, a study investigated whether (1) reading comprehension could be instructionally influenced and (2) this influence would differentially affect young and elderly adult learners. Subjects, 40 individuals aged 18-35 and 40 individuals aged 59-83, all with relatively high educational backgrounds, used an advance organizer with a prose passage. Results indicated that the advance organizer improved the performance of the elderly on measures of recognition memory but not on measures of recall memory. Both sets of subjects performed better on immediate tests than on delayed tests of recall and recognition. Analysis showed that subjects may have been able to generate their own advance organizers to some extent. The recognition test performance of the younger subjects was significantly superior to that of the older subjects under almost all of the conditions in which the main passage was read. Findings suggested that advance organizers may assist adults of all ages, but only under restricted circumstances. Results also indicated that older adult learners may need additional practice with educational aids to gain maximum benefit from their use. (JD)

Using Advance Organizers to Improve Reading Comprehension in Older Adults

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Abstract

A study was conducted concerning the use of advance organizers on adult prose learning. It was argued that an advance organizer would provide an organizational framework for older adults who may not spontaneously use their own organizational strategy in understanding written material. Forty young (aged 18-35) and 40 old (aged 59-83) subjects participated in the study. Results indicated that the advance organizer improved the performance of the elderly on measures of recognition memory but not on recall memory.

Using Advance Organizers to Improve Reading Comprehension in Older Adults

With increases in the age of the American population, more attention is being devoted toward maintaining the mental capabilities of the elderly for periods of time more closely approximating their prolonged life expectancy. Prose learning clearly constitutes a critical cognitive ability for many occupations, for continuing one's education, and generally for an independent, fulfilling life. Despite the importance of reading for comprehension and retention, relatively little research has been devoted to instructional techniques for enhancing this skill in older adults. The current study investigated how reading comprehension could be instructionally influenced and whether that influence differentially affected young and elderly adult learners.

Educators interested in adult verbal learning have largely focused their efforts on paired-associate or serial learning tasks. Early studies (e.g., Canestrari, 1963) indicated that older subjects performed much more poorly on these tasks than younger adults. More recent investigations have attempted to reduce these differences.

One of the most promising lines of investigation involves the use of mediators. There is now considerable evidence that older adults do not spontaneously use mediators as extensively or

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effectively as younger adults. When instructed to use mediational techniques, the older subjects improved much more than the younger ones, although the younger subjects' overall performance remained superior. Botwirick (1984) argues that mediators provide organizational strategies for older adults that are frequently employed spontaneously by younger adults.

The current study employed an instructional device that resembles mediators in some respects, but applied this device to the comprehension of meaningful prose. An advance organizer constituted the instructional aid of interest in this study. Advance organizers are normally written for oral prose passages that provide a familiar conceptual framework for introducing the more detailed information in the main passage that follows. According to Ausubel, Novak and Hanesian (1978), this serves as a highly inclusive context to which the learner can anchor the main passage and make it more meaningful.

Past research on advance organizers has produced conflicting results concerning their efficacy. At least some of these contradictions appear to derive partly from the differences among the subject groups employed. Working with college students, Ausubel and Fitzgerald (1962) and Mayer (1979) found that advance organizers could enhance the learning of subjects with relatively low verbal or mathematical ability, respectively. However, the advance organizers were less effective for more able students, presumably because they had sufficient entering skills to spontaneously organize the material of the main passage. Holzman, Allen, and Layne (1982) reinforced the notion that

advance organizers especially assist less able individuals by applying this aid to elementary school children, most of whom were reading two grades below normal. The current study examined whether advance organizers would have special benefits for individuals at the opposite end of the spectrum when compared with relatively young, collegiate adults. Such an investigation has been repeatedly called for in recent reviews of research in educational gerontology (e.g., Glynn & Muth 1979, Spilich 1983).

Method

Subjects

A sample of young adults was comprised of 40 paid volunteers, aged 18 to 35, taking a college course on developmental psychology. A sample of healthy elderly adults was comprised of 40 paid volunteers, aged 59 to 83, recruited from senior citizens centers in metropolitan Atlanta. To avoid confounding the effects of age with those of educational level, elderly subjects were selected from centers with relatively well educated attenders. As a consequence, there were no significant differences between age groups in level of formal education.

Materials

A 1,500-word main passage (MP) dealt with the biological controversy that had once surrounded the possibility of spontaneous generation and presented details about Louis Pasteur's experiments for resolving the issue. An advance organizer (AO) of approximately 400 words was developed as a conceptual framework for introducing the MP. It discussed in

general terms the nature of scientific discovery and the means by which science advances through objective assessment of conflicting theories. A third passage was designed as an alternate introduction, one that discussed the life of Pasteur, but did not provide a framework for anchoring the details of the main passage. This introductory passage (IP) served as a control for any warm-up benefits that might accrue from the AO.

Two major sets of questions were developed to test comprehension and retention of the information in the MP. One set consisted of multiple choice, recognition items, and the other set consisted of recall items.

Procedure

Much of the previous research on advance organizers has been characterized by inadequate controls for warm-up effects, study time, and information content, which may be additional sources of conflicting results for that research. The current study employed four treatment conditions, three of which were controls, and 10 subjects from each age group were randomly assigned to each treatment.

The experimental treatment (AO-MP) involved first reading the AO and then the MP. The IP-MP control was designed to identify warm-up or motivational benefits that might derive from the AO independent of its essential role as a conceptual assimilator for the MP. Subjects in this condition read the IP followed by the MP. A third condition provided a baseline for identifying benefits derived from the AO or IP. In this condition (MPO), subjects were given equivalent time to those in

the preceding conditions to read the main passage only. Finally, to ensure that any benefits derived from the AO were not due to its provision of test-specific information, a fourth condition (AOO) involved reading the advance organizer, only during a time period equivalent to the other three condition's time allotment.

Immediately after the assigned passages were read, all subjects answered both recall and recognition questions on the content of the MP. One week later, all subjects attempted delayed tests of recall and recognition, answering new questions that were previously found to match the difficulty level of those on tne immediate tests. During the second test session, subjects were also administered the Quick Word Test (Borgatta & Corseni, 1964) as an assessment of general verbal ability.

Results

A 2 (age) X 2 (test delay) X 4 (treatment) split-plot analysis of variance was performed on both the recognition and recall data, with Quick Word Test score as the covariate. For the recognition data, significant main effects were found for age, $F(1,71)=20.02$, $p < .001$, treatment, $F(3,71)=12.21$, $p < .001$, and delay, $F(1,72)=107.52$, $p < .001$. Likewise, for the recall data, there were significant effects of age, $F(1,71)=27.24$, $p < .001$, treatment, $F(3,71)=15.40$, $p < .001$, and delay, $F(1,72)=11.38$, $p < .01$.

The age differences favored the younger subjects. This effect cannot be attributed to overall superior ability for the younger subjects, because the elderly performed better on the

Quick Word Test, $t(78)=-2.62$, $p < .01$, and verbal ability was controlled by the analysis of covariance.

Both young and elderly subjects performed more poorly on delayed tests of recall and recognition than on immediate tests. On both the recall and recognition test performance was best for conditions AO-MP and MPO, then deteriorated for IP-MP, and was worst for AOO. The relatively good performance in MPO suggests that subjects may have generally been able to generate their own advance organizers to some extent.

Marginally significant interactions of age with treatment were found for both recognition and recall data, $F(3,71)=2.64$ $p < .06$, and $F(3,71)=2.29$, $p < .09$, respectively. Post hoc comparisons indicated that the recognition test performance of the young subjects was significantly superior under all conditions in which the main passage was read except for AO-MP. Apparently, the younger subjects were better able to supply their own organizers, but the AO could compensate the elderly for this advantage when recognition memory was tested. Somewhat surprisingly, the opposite pattern occurred for the recall tests. In that situation, age groups differed only when MP was preceded by the AO. For recall, the AO appeared to help the young adults but not the elderly.

Discussion

The current study suggests that advance organizers may assist adults of all ages, but only under restricted circumstances. Few advance organizers studies to date have looked at both recall and recognition measures within a single

set of subjects, and the current study provides some indication that the benefits of advance organizers differ developmentally according to type of memory being tested.

There were several limitations to this study. Advance organizers have been shown to be most beneficial with people of limited verbal ability (Mayer, 1979). The present study used a sample of highly educated adults who may spontaneously use their own organizational strategies to aid them in understanding the material. In addition this study gave subjects only one opportunity to use an advance organizer with a prose passage. It may be that, as suggested by Hultsch (1974) there is time needed to "learn to learn." Older adult learners may need additional practice with educational aids in order to gain maximum benefit from their use.

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Table 1

Mean Age Vocabulary Score and Years of Education for Young and Old Subjects

	Young		Old	
Age	22.65	(4.48)[a]	67.75	(6.29)
Education	14.43	(1.52)	13.53	(2.55)
(t(78)=1.92, n.s.)				
Vocabulary	24.50	(6.10)	38.33	(6.94)
(t(78)=2.62, p<.05)				

[a]Standard deviations are in parentheses.

Table 2

Mean Number of Correct Responses for Young and Old Age Groups

Condition	Age Group	Week 1	Week 2
		Recognition items[a]	
Advance Organizer	Young	6.0 (2.26)[b]	4.5 (2.12)
	Old	5.2 (1.40)	3.6 (1.27)
Main Passage Only	Young	6.9 (1.10)	4.4 (2.17)
	Old	4.6 (1.78)	3.3 (.82)
Introductory Passage	Young	6.6 (.97)	3.9 (1.66)
	Old	4.7 (1.83)	2.0 (1.49)
Advance Organizer Only	Young	3.2 (.92)	2.0 (1.33)
	Old	3.3 (1.30)	1.6 (1.35)
		Recall items[c]	
Advance Organizer	Young	3.1 (1.28)	2.3 (.48)
	Old	1.6 (1.43)	.8 (.92)
Main Passage Only	Young	2.7 (1.16)	2.2 (1.03)
	Old	1.9 (1.29)	1.7 (.95)
Introductory Passage	Young	2.7 (1.25)	1.3 (1.25)
	Old	1.9 (1.45)	1.2 (.79)
Advance Organizer Only	Young	.5 (.53)	1.0 (.47)
	Old	.3 (.67)	.3 (.48)

[a] Maximum score = 8

[b] Standard deviations are in parentheses

[c] Maximum score = 5

Table 3

Analysis of Variance of Correct Responses on Recognition Items

Source	df	MS	F	p
Between	79			
Age	1	65.87	20.02	.000
Treatment	3	40.19	12.21	.000
Age x Treatment	3	8.70	2.64	.056
Error Between	72	3.29		
Subjects within Groups	80			
Week	1	144.40	107.52	.000
Week x Age	1	.23	.17	.684
Week x Treatment	3	3.22	2.40	.075
Week x Age x Treatment	3	1.34	1.00	.398
Error Within	72	1.34		
Total	159			

Table 4

Analysis of Variance of Correct Responses on Recall Items

Source	df	MS	F	p
Between	79			
Age	1	30.93	27.24	.000
Treatment	3	17.48	15.40	.000
Age x Treatment	3	2.60	2.29	.086
Error Between	72	1.14		
Subjects within Groups	80			
Week	1	9.51	11.38	.001
Week x Age	1	.16	.19	.667
Week x Treatment	3	3.26	3.90	.012
Week x Age x Treatment	3	.64	.77	.517
Error Within	72	.83		
Total	159			