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Seven mediational strategies for use in verbal associative learning have been discovered. They range from the simple to the intermediate to the complex. The subjects of this study were 173 fifth graders, who were administered a paired-associate (PA) task and asked to identify the strategies they used. On the basis of this data, they were then placed into one of the three classes of strategies and administered a criterion PA task. Then the subjects were again asked to identify the strategies they used. One week later the subjects were given a retention PA task and asked upon the completion thereof to state the strategies used. During the criterion task, three types of experimenter-supplied mediators (simple, complex, and none) were distributed among the three subject groups. It was discovered that complex-strategy children learned PA's at a significantly faster rate than simple-strategy children, with the intermediate group falling in-between. The complex experimenter-supplied mediator condition was the most effective for learning, regardless of subject-strategy style. On the retention test, the complex-strategy children again performed significantly better than simple-strategy children. Thus, mediational style was shown to be an important variable in accounting for individual differences in rate of learning and amount of retention. (WD)

Mediational Styles: An Individual Difference Variable In Children's Verbal Learning Ability*

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INTRODUCTION

There is little doubt concerning the occurence of mediational processes in verbal associative learning. In paired-associate learning where Ss are required to learn arbitrary associations between a group of stimuli and their corresponding responses, Ss frequently report using verbal mediators in attempting to form the associations between the stimuli and the responses. A classification scheme has been devised by Martin, Boersma, and Cox (1965) for the purpose of classifying Ss reported mediators. The central feature of this classification scheme was the identification of seven different types of associative strategies reported by the Ss. Strategies were ordered along an apparent continuum of mediational complexity. The least complex strategies involved simple repetition of the pairs or the use of letter identities. These simpler strategies were in marked contrast to the more complex strategies which involved either discovering higher order relationships between the individual pairs or embedding thepair in a syntactic unit such as a phrase, clause, or sentence. The classification scheme is presented in Table 1.

Examination of the individual Ss' reports revealed large individual differences in the types of strategies reported. Some Ss primarily reported high level or complex strategies while others reported low level strategies. Yet, other Ss appeared to report both complex and simple strategies. Furthermore, a statistically significant positive correlation was obtained between the complexity of the reported mediators and number of correct responses. It appeared that the higher level strategies were more effective associative mnemonics than the lower level strategies.

The purpose of this study was to first identify three groups of fifth grade Ss who differed in the types of strategies reported on a paired-associate production task and then to determine whether they differed in the rate at which they learned a second paired-associate task. More specifically, a production task was designed for the purpose of identifying complex strategy producers, simple strategy producers, and variable strategy producers. Since the higher level strategies appear to be more effective mnemonics, it was predicted that:

1. the complex strategy producers would learn at a significantly faster rate than the variable strategy producers, and

2. the variable strategy producers would learn significantly faster than the simple strategy producers.

There is an increasing body of research literature indicating the fact that paired-associate learning can be facilitated by providing Ss with mediating phrases and sentences similar in nature to the syntactical strategies in Table 1. However, the present investigators know of no research which has taken into consideration the mediational style of the individual learner when presenting experimenter-supplied mediators.

TABLE 1. CLASSIFICATION OF ASSOCIATIVE STRATEGIES

Category Level	Type of Association S Reported Using	Example of Verbal Report
1. No Reported Association	S was not able to state how he managed to make the association.	Meardon-Army "I don't know how I learned this pair."
2. Repetition	S reported rehearsing or saying the words over to himself.	Sagrole-Money "I just kept repeating these words to myself."
3. Single letter cues	S reported using a single letter in each of the words to make the association.	Bodkin-Wagon "I saw that each word had an N in it."
4. Multiple letter cues	S reported using more than one letter in each of the items.	Delpin-Insect "Each word contains an IN."
5. Word Formation	S reported that an actual word was embedded in one or both of the words and made use of this word in making the association.	Meardon-Army "The word EAR is contained in Meardon and I remembered that EAR goes with Army."
6. Superordinate	S reported selecting elements from each of the two words that had some relationship to each other.	Standage-Salute "STAN AND SAL are both boy's names and I remembered them."
7. Syntactical	S reported selecting elements from each word and embedded these elements into a sentence phrase or clause.	Icon-Office "I changed Icon to I come and thought "I come to the office."

Reprinted from Martin, C. J., Boersma, F. J. & Cox, D. L. A classification of associative strategies in paired associate learning. Psychon. Sci., 1965, 3, pp. 455

In this investigation two types of experimenter-supplied mediators were administered to each of the three types of strategy producers. During the learning of the second paired-associate list, Ss were given either complex mediators (strategy level 7), simple mediators (strategy levels 3 and 4), or no experimenter-supplied mediators (control condition). It can be argued that those experimenter-supplied mediators which most closely approximate the mediational style of the learner will be most effective in facilitating learning. However, again it was predicted that since the high level strategies are more effective mnemonics:

3. there will be no interaction between the mediational style of the learner and the type of experimenter-supplied mediator. The complex mediation treatment will be most facilitating regardless of the mediational style of the learner.

It has also been generally assumed that if degree of learning is the same for all learners there is no difference in retention between fast and slow learners. Underwood (1964) has stated that, "if the degree of original learning reaches a certain level, it makes no difference how long it took to reach that level." If this viewpoint is correct, then the introduction of complex mediators should not differentially facilitate Ss' long term retention of the material if all Ss attain the same degree of original learning. The facilitation position presented in this paper predicts that:

4. the complex mediation treatment will result in significantly better retention than the simple mediation treatment, and

5. the complex strategy producers will retain significantly more items than the simple strategy producers.

METHOD

Subjects

One hundred and seventy-three fifth grade children, selected from three elementary schools participated in this study. The Ss ranged in age from 10-0 years to 11-10 years. All Ss were administered a strategy production task. Their responses to this task served as a basis for assigning them to one of three groups; high strategy producers, low strategy producers or variable strategy producers. Enough Ss were tested until a minimum of 54 had been assigned to each of the three classifications. In order to keep the sample size the same in each group, a total of eleven Ss were randomly eliminated. Each group consisted of 54 Ss, totaling 162 Ss in all.

After being identified on the basis of strategy production patterns, Ss were randomly assigned to either a complex mediation treatment, a simple mediation treatment or a control treatment. The age, IQ, reading and grade achievement levels for all Ss were obtained from school records. The Otis Quick Scoring Test served as the IQ measure and had been administered to 159 of the Ss. Achievement scores on the Iowa Silent Reading Test and grade achievement levels based on the Stanford Achievement Test were available for 153Ss. The small number of Ss for whom scores were not

available were generally new students in school who had not been tested.

Procedure

Measures on five separate tasks were obtained from all Ss. They were: (1) a production task, (2) a criterion task, (3) an associative strategy task, (4) a retention task, and (5) an associative strategy retention task.

Production task. The production task was administered to groups of Ss ranging in size from 20 to 25. The E first described the seven associative strategy categories by means of a sample paired associate presented on the blackboard. The different strategy categories were introduced as "tricks" and Ss were asked to tell which trick they would use if they had to learn what "new word" (the stimulus term) went with the "old word" (response term). The twenty production pairs were presented to Ss in booklet form, with one paired associate printed at the top of each page. Subjects were allowed sixty seconds to write down the trick they would use for each pair. The E read each pair once.

Subjects' responses were rated and each S was assigned to a high strategy, low strategy or variable strategy production group. In order for an S to be assigned to the high strategy production group, he must have produced a combined total of 15 word formation, superordinate or syntactical strategies. Subjects assigned to the low strategy production group reported at least 15 single or multiple letter cues, repetition strategies or no associative strategy. Variable production Ss produced a wider range of associative strategies. A subject was defined as a variable producer if he reported fewer than 15 of either the low level strategies or high level strategies.

Criterion task. The criterion task was presented to each S seven days after the production task. Criterion pairs and stimulus items were presented on slides by means of a Kodak Carousel 750 projector with an automatic timer attachment. During the learning trials, each of the 14 paired associates was presented at a 5 sec. exposure rate, with a 10 sec. intertrial interval. On the first three learning trials, Ss were supplied the mediators listed in Table 7. The E repeated the pair, then supplied the strategy. For the control (no strategy) condition, E repeated the pair twice.

Learning and test trials were presented alternately. For the test trials, the timer was converted to manual control so that all Ss had sufficient time to respond. The exposure time for each test stimulus was approximately 10 secs. The E recorded Ss responses on a separate answer sheet. Subjects were tested until a criterion of two successive, errorless trials was attained.

Associative Strategy Task. After completion of the criterion task, Ss were reminded of the various strategy categories and were asked what associative strategies, if any, they used to learn the pairs. The 14 paired associates were presented again and Ss reported orally the strategies

they employed. These oral reports were recorded on a tape recorder. Subjects were allowed as much time as they required to report a strategy.

Retention task. All subjects were administered the retention task seven days after the learning of the criterion list. A recall method was used, in which Ss were first presented the 14 stimulus terms and were asked to supply the correct response. Subjects were allowed 10 secs. in which to respond. After this recall trial, Ss were again presented the 14 paired associates at a 5 sec. exposure rate with a 10 sec. intertrial interval. Subjects were again tested until a criterion of two successive, errorless trials was attained. No mediators were given to Ss during the retention trials.

Associative strategy retention task. All Ss were asked to report the associative strategies they employed during the retention task. The Ss reported orally the strategies they used for each of the 14 pairs. Their strategies were recorded on a tape recorder, and Ss were allowed as much time to respond as they required.

Materials

Two paired associate lists were employed in this study. Twenty disyllabic pairs were constructed to form the production list. The stimulus items were low $\frac{m}{}$ paralogs. The response items were familiar words. Items composing these pairs were selected from Noble's list (1952) and Cieutat's association index (1963) or were specifically designed for the experiment. Seven of the stimulus items were selected from Noble's list. Their mean $\frac{m}{}$ value was 1.57 (range 1.28 - 1.82). The remaining 13 stimulus items on the production list were drawn from Cieutat's index and had a mean association value (a) of .68 (range .49-.90). Ten of the response items were selected from Noble's list and had a mean $\frac{m}{}$ value of 7.65 (range 5.94 - 9.61). The remaining ten response items were selected from Cieutat's list and had a mean (a) value of .99 (range .97-1.00).

Fifteen of the twenty paired associates composing the production list satisfied two criteria established in a pilot study. These pairs had been found to elicit low level strategies (no reported strategy or repetition), strategies of intermediate complexity (letter cues and word formation), and more complex strategies (superordinate and syntactical) with equal probability. Secondly, the pairs had been shown to differentiate between Ss producing high strategies and those Ss producing low level strategies. Subjects identified as high strategy producers reported significantly more high level strategies for these pairs, while low strategy producers formulated more low level strategies.

The remaining five pairs differentiated between high and low producers; however, they elicited low, intermediate and high level strategies in unequal proportions. These pairs were added in order to lengthen the production list to twenty pairs. The complete list of twenty paired associates comprising the production list is presented in Table 2.

Table 2. Production list items

Pair			Pair		
Dragrope	--	Drumbeat	Zumap	--	Zebra
Cowwheat	--	Climber	Kaysen	--	Heaven
Wellat	--	Jewel	Nostaw	--	Nonsense
Incarn	--	Dinner	Tabret	--	Mallet
Mugweed	--	Deerskin	Myxlas	--	Party
Kupod	--	Kitchen	Davit	--	Village
Attar	--	Jelly	Fardel	--	Decoy
Caratch	--	Captain	Welkin	--	Wagon
Jointress	--	Journal	Endore	--	Empire
Perflate	--	Porpoise	Landgrave	--	Leader

The criterion list consisted of 14 paired associates which met both criteria. These pairs were also constructed from items selected from the Noble and Cieutat lists. Six of the stimulus items had a mean m value of 1.79 (range 1.05 - 2.41) on the Noble list, and five of the stimulus items had a mean (a) value of .69 (range .52 - .85) on Cietuat's index. The mean (m) value for seven response items was 7.53 (range 5.98 - 9.43) and the Cieutat (a) value was .99 (range .99 - 1.00) for four other response items. The criterion list of 14 paired associates and the experimenter-supplied mediators are presented in Table 3.

Table 3. Criterion list pairs and the experimenter-supplied mediators

Pair	High Strategy	Low Strategy
Carom - Income	"Cars come and go in"	O, M
Delpin - Insect	"Pin the insect"	I
Protan - Pencil	"A tan pencil"	P
Rompin - Return	"Romp up and return it"	R, N
Cotane - Custom	"Cot and custom"	T
Standage - Salute	"Stand up and salute"	S, A
Icon - Office	"I come to the office"	C
Meardon - Army	"Don is in the army"	A, R
Mugwam - Summer	"It's muggy in the summer"	U
Santon - Lion	"I sat on a lion"	N
Cannel - Money	"Can I have some money?"	N, E
Capstan - Youngster	"Cap of the youngster"	S, T
Lucarne - Lady	"Lucy is a lady"	L
Golder - Quarter	"Gold is worth a quarter	E, R

RESULTS

The mean ages, IQs, grade achievement levels and reading achievement levels for Ss in the nine sub-groups were compared by means of a 1 x 9 analysis of variance. The data revealed no significant differences among the nine groups in age ($F=1.48$, $df=8/153$), IQ ($F=-.30$, $df=8/150$, grade achievement ($F=1.13$, $df=8/145$), and reading achievement ($F=.56$, $df=8/145$).

The number of trials required to reach a criterion of two perfect anticipations served as the major measure of learning. The means and standard deviations of trials to criterion on the acquisition task for the nine sub-groups are presented in Table 4. A 3 x 3 Treatments by Levels analysis of variance design (Lindquist, 1956) was performed on these data. Table 5 presents the summary of this analysis. The Treatments effect was found to be highly significant ($p<.01$). Multiple comparisons of the complex, control and simple treatment conditions using the Tukey (a) test (Winer, 1962) revealed all three means to be significantly different from each other. The strategy production variable was also found to be significant ($p<.01$). The only significant difference among the Level means was between the high and low strategy producers as determined by the Tukey test. The Treatments x Levels interaction was not found to be statistically significant. These results indicate that the introduction of complex mediators leads to more rapid acquisition of a paired associate list than does a non-aided control condition. The control condition itself resulted in faster acquisition than did a simple mediation condition. Moreover, high level strategy producers reached criterion on the acquisition task significantly faster than Ss producing low level strategies.

Table 4. Means and standard deviations of the number of trials to criterion on the acquisition task.

Strategy Style		Treatment Condition Complex	Simple	Control	Style (N=54)
High Producers	$\bar{X}$	5.28	7.56	6.33	6.39
	S.D.	1.70	1.65	1.93	1.41
Variable Producers	$\bar{X}$	5.61	7.11	7.00	6.57
	S.D.	.98	1.84	1.68	1.67
Low Producers	$\bar{X}$	6.17	8.72	7.17	7.35
	S.D.	1.20	1.56	.88	1.62
Treatment (N=54)	$\bar{X}$	5.68	7.80	6.85	
	S.D.	1.36	1.15	1.57	

Table 5. Summary of analysis of variance of number of trials to criterion on the acquisition task.

Source		df	SS	MS	F
A:	Treatments	2	120.78	60.39	35.32**
B:	Levels (Strategy Style)	2	27.43	13.72	8.02**
A x B:	Treatments x Levels	4	10.76	2.69	1.57
	Error	153	261.03	1.71	
	Total	161			

**p<.01

The hypothesis that Ss who are supplied mediators congruent with those they habitually report will perform more efficiently than Ss receiving incongruent mediators was examined by means of a 2 x 2 analysis of variance. The performance scores of high strategy producers receiving complex mediators and low strategy producers receiving simple mediators consituted the congruent condition, while low strategy producers receiving complex mediators and high strategy producers receiving simple mediators composed the incongruent condition. Table 6 presents the means and standard deviations for these groups.

Table 6. Means and standard deviations of the number of trials to criterion on the acquisition task for the congruent and incongruent conditions.

Strategy Style		Treatment Condition		Style (N=36)
		Complex	Simple	
High Producers	$\bar{X}$	5.28	7.56	6.42
	S.D.	1.70	1.65	1.52
Low Producers	$\bar{X}$	6.17	8.72	7.45
	S.D.	1.20	1.56	1.18
Treatment (N=36)	$\bar{X}$	5.72	8.14	
	S.D.	1.16	1.43	

A summary of the analysis of variance is presented in Table 7. The results of the analysis revealed a consistency with the previous analysis of variance in that the Treatment and Levels effects were both highly significant. ($p<.01$). Of importance in this analysis however, was the fact that

there was no significant interaction between the two main effects. It does not appear that incongruency between Ss' mediational style and experimenter-supplied mediators adversely affects acquisition of a paired associate list.

Table 7. Summary of analysis of variance of the number of trials to to criterion on the acquisition task for congruent and incongruent conditions.

Source		df	Ss	MS	F
A:	Treatments	1	105.16	105.16	44.00**
B:	Levels	1	19.02	19.02	7.96**
AxB:	Treatments x Levels	1	.35	.35	.15
	Error	68	162.20	2.39	
	Total	71			

** $p<.01$

Two basic measures were utilized in analyzing the retention task results. The number of pairs correctly recalled on the first test trial served as a measure of recall while the number of trials required for Ss to attain the criterion of two errorless trials was used as a relearning measure. Table 8 presents the mean number of pairs recalled on the recall test trial. A Treatment x Levels analysis of variance of these data revealed a highly significant treatment effect ($p<.01$). The Tukey test tevealed that the complex mediation treatment group recalled significantly more items than did the simple mediation group ($p<.01$). There were no siginficant differences between the complex mediation and control conditions, although the control group mean was in the expected direction. The Levels effect was also significant ($p<.01$). The only significant difference between the groups was between high and low strategy producers. Low strategy producers recalled significantly fewer pairs, across all treatments, than did high strategy producers ($p<.05$). There was no significant interaction between Treatments and Levels. These results indicate that Ss receiving complex mediators during learning were able to recall significantly more pairs than did Ss receiving simple mediators. Moreover, low strategy producers recalled fewer pairs on the recall task than did high strategy producers. Table 9 presents the summary of this analysis.

Table 8. Means and standard deviations of the number of items recalled on the recall task.

Strategy Style		Treatment Condition Complex	Simple	Control	Style (N=54)
High Producers	$\bar{X}$	12.06	8.06	9.56	9.89
	S.D.	1.76	3.20	.68	2.69
Variable Producers	$\bar{X}$	10.50	7.89	9.06	9.15
	S.D.	3.00	3.45	2.03	3.01
Low Producers	$\bar{X}$	9.00	6.83	8.44	8.09
	S.D.	1.93	2.30	2.41	2.34
Treatment (N=54)	$\bar{X}$	10.52	7.59	9.02	
	S.D.	2.20	2.93	1.97	

Table 9. Summary of analysis of variance of the number of items recalled on the recall session.

Source		df	SS	MS	F
A:	Treatments	2	231.18	115.59	19.66**
B:	Levels (Strategy Style)	2	88.00	44.00	7.48**
A x B:	Treatments x Levels	4	22.99	5.75	.98
	Error	153	899.53	5.88	
	Total	161			

** $p < .01$

The number of trials required to relearn the criterion list is presented in Table 10. A 3 x 3 analysis of variance revealed siginficant Treatment and Level effects ($p<.01$ and $p<.05$, respectively). Table 11 presents the summary of this analysis. In analyzing the treatment means, the Tukey test revealed that Ss receiving complex mediators during learning were able to relearn the list more rapidly than Ss receiving simple mediators ($p<.01$). Although the over-all Level effect was significant, the Tukey test revealed no significant differences among the three Level means. The differences between high and low producers and variable and low producers both approached significance. The means were in the expected direction; high producers were superior to variable producers and variable producers were superior to low producers.

Table 10. Means and standard deviations of the number of trials to criterion on the relearning task.

Strategy Style		Treatment Condition Complex	Simple	Control	Style (N=54)
High Producers	$\bar{X}$	3.11	4.78	4.00	3.96
	S.D.	.97	2.25	1.41	1.50
Variable Producers	$\bar{X}$	3.39	4.67	4.06	4.04
	S.D.	.84	1.37	.87	.98
Low Producers	$\bar{X}$	4.28	5.44	4.33	4.68
	S.D.	1.19	1.24	1.33	1.25
Treatment (N=54)	$\bar{X}$	3.59	4.96	4.13	
	S.D.	1.06	1.76	1.29	

Table 11. Summary of analysis of variance of the number of trials to criterion on the relearning task.

Source		df	SS	MS	F
A:	Treatments	2	51.48	25.74	14.38**
B:	Levels	2	17.04	8.52	4.76*
A x B:	Treatments x Levels	4	3.83	.96	.54
	Error	153	274.20	1.79	
	Total	161			

**$p<.01$
*$p<.05$

The congruency - incongruency hypotheses were again compared on the retention task by means of a 2 x 2 analysis of variance. Table 12 presents the means and standard deviations for the congruent and incongruent groups.

Table 12. Means and standard deviations of the number of trials to criterion on the relearning task for the congruent and incongruent conditions.

Strategy Style		Treatment Condition: Complex	Treatment Condition: Simple	Style (N=36)
High Producers	$\bar{X}$	3.11	4.78	3.94
	S.D.	.97	2.25	1.02
Low Producers	$\bar{X}$	4.28	5.44	4.86
	S.D.	1.19	1.24	1.27
Treatment (N=36)	$\bar{X}$	3.69	5.11	
	S.D.	1.20	2.16	

Table 13 presents the summary of this analysis of variance. The Treatments and Levels effects were again highly significant ($p<.01$ for both main effects). The lack of a significant interaction again fails to support the congruency hypothesis.

Table 13. Summary of analysis of variance of the number of trials to criterion on the retention task for congruent and incongruent conditions.

Source		df	SS	MS	F
A:	Treatments	1	36.12	36.12	16.19**
B:	Levels	1	15.12	15.12	6.78**
A x B:	Interaction	1	1.13	1.13	.54
	Error	68	151.75	2.23	
	Total	71			

** $p<.01$

The strategies reported by Ss for each pair on the associative strategy task were independently rated by two judges. Each S was assigned a total strategy score based on the sum of the strategy ranks for all 14 pairs. For example, if S's reported strategies for four pairs had been categorized as word formations, he would receive a score of twenty (four pairs categorized at strategy level five). If the verbal reports for three other pairs had been classified as repetition strategies he would have received a score of six for these three pairs (three pairs categorized at strategy level two). Thus, an individual's total strategy score would be the sum of the ranks assigned to each of his reported strategies.

The reliability of the judges' ratings of the strategies reported by 18 Ss on the associative strategy task and the retention strategy task were assessed by means of rank order correlations. The obtained correlations for the two judges was .98 on the associative strategy task and .99 for the retention strategy task. Since interjudge reliability was high, only one judge was selected to rate the remaining associative strategies.

The relationship between the number of trials to criterion and the total strategy score reported by Ss on the associative strategy task was examined by means of a rank order correlation. For all 162 Ss, the resulting rho was -.66 ($p<.01$), indicating that Ss with high strategy level scores required fewer trials to reach criterion.

The median total strategy scores for the high, variable and low strategy producers assigned to the control treatment were 72, 56 and 52.5, respectively. A Kruskal-Wallis one-way analysis of variance on the total strategy scores for these groups yielded a significant $\underline{H}$ value ($H=22, 59$, df = 2, $p.<.001$). Individual comparisons by means of the Mann-Whitney $\underline{U}$ test revealed that the high strategy producers were significantly different from both the variable and low producers ($p.<.01$ for both comparisons) but that the variable and low strategy groups were not different from each other.

The median strategy level reported by the high, variable and low producers was also computed for the retention task. The median strategy scores for the high, variable and low strategy Ss assigned to the control condition were 70, 58, and 51.5 respectively. The Kruskal-Wallis analysis of these median strategy scores yielded a significant $\underline{H}$ value ($\underline{H}$ = 16.28, df = 2, $p<.001$). The Mann-Whitney $\underline{U}$ test again revealed high strategy producers to be significantly different from the variable and low producers ($p. .01$), but the variable and low strategy groups were not significantly different from each other.

DISCUSSION AND CONCLUSIONS

Hypotheses 1 and 2 received only partial support. While it was predicted that the complex or high strategy producers would learn at a significantly faster rate than the variable strategy producers, the only individual comparison which was significant was the difference between the complex and simple strategy producers. However, the means on the acquisition task were in the expected direction.

Hypothesis 3 was confirmed. The complex experimenter-supplied mediation treatment was found to be the most facilitating condition regardless of the mediational style of the learner. Also of interest is the fact the control condition resulted in a significantly faster learning rate than the simple mediation treatment condition. It appears that the introduction of less effective experimenter-supplied mediators resulted in a tendency for the Ss to abandon more effective associative strategies. Because there was no interaction between the mediational style of the learner and the type of mediation treatment, approximation of the mediation treatment to the mediational style of the learner proved not to be a factor in facilitating learning.

Analysis of the retention data confirmed hypotheses 4 and 5. The simple strategy producers recalled significantly fewer pairs than the complex strategy producers. Furthermore, Ss receiving the complex mediation treatment recalled and relearned significantly better than Ss receiving the simpler experimenter-supplied mediators. Since all groups had attained the same degree of original learning, these results are at variance with the commonly accepted notion that degree of original learning is the critical variable influencing retention.

The results of this study have indicated that it was possible to identify different mediational styles among 5th grade children. Perhaps more importantly, mediational style has been shown to be an important variable in accounting for individual differences in rate of learning and amount of retention. It was demonstrated that Ss who were independently classified as high associative strategy producers (a complex mediational style) learned at faster rates than Ss identified as low strategy producers (a simple mediational style). Mention should also be made of the fact that the analyses of I.Q. and reading achievement scores for the nine samples employed in this study revealed no significant differences among them. I.Q. is not related to the mediational style of the learner at least within the range studied in this investigation.

Congruency between the complexity of experimenter-supplied mediators and the mediational style of the learner was not a factor. The higher level associative strategies whether self-generated or experimenter-supplied served as better storage and retrieval devices than did the simpler associative strategies, in spite of the fact that all groups had reached a comparable degree of original learning.

In summary, the results suggest the existence of identifiable individual differences in mediational styles among learners and the differential effectiveness of these styles in forming new verbal associations. The consistency with which these styles were expressed must also be noted. The children included in the mediational style groups as defined within the framework of this study were consistent in the types of associative strategies reported in a relatively open-ended paired-associate production task, a second paired-associate learning task, and finally in a recall and relearning task.

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