

Strategy Self-Verbalization During Remedial Listening Comprehension Instruction

By: [Dale H. Schunk](#) and Jo Mary Rice

Schunk, D. H., & Rice, J. M. (1984). Strategy self-verbalization during remedial listening comprehension instruction. *Journal of Experimental Education*, 53, 49-54.

Made available courtesy of Taylor and Francis: <http://www.tandf.co.uk/journals/>

*****Reprinted with permission. No further reproduction is authorized without written permission from Taylor and Francis. This version of the document is not the version of record. Figures and/or pictures may be missing from this format of the document.*****

Abstract:

This experiment investigated the effects of strategy self-verbalization on children's self-efficacy and listening comprehension. Children with language deficiencies in grades two through four received instruction in listening comprehension. One-half of the children in each grade verbalized explicit strategies prior to applying them to questions. Strategy self-verbalization led to higher self-efficacy across grades, and promoted performance among third and fourth graders, but did not benefit second graders. Future research should apply strategy self-verbalization to other language skills and should explore the effects of covert fading.

Article:

Much attention has been directed recently toward the role of private speech in cognitive self-guidance among children (Fuson, 1979; Harris, 1982a, 1982b; Meichenbaum & Goodman, 1971). *Private speech* refers to the set of speech phenomena that has a self-regulatory function but is not socially communicative (Zivin, 1979). This emphasis on private speech derives historically from the work of Vygotsky (1962), who believed that private speech helped to develop thought through its role in organizing behavior. According to Vygotsky, children employed private speech to help them understand situations and surmount difficulties. Vygotsky hypothesized that overt private speech followed a curvilinear developmental pattern in that it increased until ages 6-7, but then declined and became primarily covert by ages 8-10; however, overt private speech could occur at any age when people encountered obstacles.

One research application of this view has explored how overt self-verbalization affects children's performances on cognitive tasks. Several studies have shown that performance is facilitated when children verbalize strategies to be followed, other types of performance aids, or material to be recalled (Asarnow & Meichenbaum, 1979; Coates & Hartup, 1969; Jackson & Calhoun, 1982; Keeney, Cannizzo, & Flavell, 1967; Meichenbaum & Goodman, 1971; Schunk, 1982; Taylor, Josberger, & Whitely, 1973; Whitely & Taylor, 1973). At the same time, no benefits of overt verbalizations have been obtained (Coates & Hartup, 1969; Denney, 1975; Denney & Turner, 1979).

Drawing a conclusion about the effects of self-verbalization on task performance is difficult because these studies differed in many important ways: age and type of subjects, type of verbalization, experimental tasks, training procedures. One suggestion is that self-verbalization may be most beneficial for children who typically perform in a deficient manner (Denney & Turner, 1979). For example, Keeney, et al. (1967) presented a serial re-call task to 6- and 7-year-old children and identified those who failed to rehearse prior to recall. After these children were trained to rehearse overtly, their recall equaled that of the spontaneous rehearsers. Meichenbaum and Goodman (1971) worked with impulsive children on the Matching Familiar Figures Test (Kagan, 1966). Some children received cognitive modeling of performance strategies, whereas others were administered cognitive modeling plus self-verbalization. The addition of self-verbalization decreased errors and increased response latencies. Asarnow and Meichenbaum (1979) identified kindergartners who did not rehearse spontaneously on a serial recall task. Some children received rehearsal training similar to that of Keeney, et al. (1967), whereas others received self-instructional training with cognitive modeling and self-verbalization.

Although both treatments promoted posttest recall, self-instructional training led to greater benefits on a follow-up test. A series of studies in which educable mentally retarded children were trained to generate elaborations between word associate pairs showed that verbalization of elaborations facilitated recall of associates (Taylor, et al., 1973; Whitely & Taylor, 1973). Coates and Hartup (1969) found that 4-year olds who verbalized the actions of a model as they were performed subsequently reproduced them better than did children who only observed the model. Working with preschoolers, Jackson and Calhoun (1982) found that overt self-verbalization of block design strategies facilitated subsequent performance more than instructions from the experimenter. Schunk (1982) obtained evidence with low arithmetic achievers that self-constructed verbalizations during problem solving enhanced performance more than not verbalizing.

These types of subjects ordinarily may not employ suggested performance strategies or rehearse material prior to recall. Many young children may not spontaneously produce verbal mediators that would regulate their performances, whereas most older children do (Flavell, Beach, & Chinsky, 1966). Impulsive children may not attend to or rehearse material to be learned, or may not employ suggested performance strategies. The typically poor performances of low achievers also may be due in part to these factors. Retarded children possess cognitive deficiencies that interfere with their performances. For these types of children, overt self-verbalization of performance strategies or other task material may help to reduce deficiencies.

Self-verbalization may not facilitate performance when children can adequately handle the task demands. Because self-verbalization constitutes an additional task, it even could hinder performance if it distracted children from the task at hand. Thus, Denney (1975) modeled performance strategies for 6-, 8-, and 10-year-old normal children on a 20-question task. Older children who verbalized strategies while they performed scored no better than did children who did not verbalize, and verbalization seemed to interfere with the performance of 6-year olds. The verbalizations, which consisted of specific strategies, apparently proved too distracting for the youngest children. Among normal children ranging from 3 to 10 years, strategy modeling plus self-verbalization yielded no benefits on different cognitive tasks compared with strategy modeling alone (Denney & Turner, 1979). Subjects constructed their own verbalizations, which may have been less distracting than Denney's (1975) specific statements. Coates and Hartup (1966) also included 7-year olds and found that verbalization of the model's actions did not improve subsequent reproduction compared with passive observation. These children could adequately regulate their task attention and cognitively process the model's actions without verbalizing.

The present study investigated the effects of overt self-verbalization of listening comprehension strategies among children with language deficiencies in grades two to four. Strategy self-verbalization was expected to enhance children's performances. It seemed likely that the low language achievement of the present sample was due in part to factors such as inadequate attention during instruction and failure to generate relevant verbal mediators that would help guide performance. Overt strategy self-verbalization forces children to attend to strategies and is a form of self-rehearsal, which should promote strategy encoding and subsequent availability when children engage in comprehension activities (Denney, 1975; Fuson, 1979). Self-rehearsal of information to be remembered facilitates later performance (Asarnow & Meichenbaum, 1979; Coates & Hartup, 1969; Jackson & Calhoun, 1982; Keeney, et al., 1967).

The performance benefits of strategy self-verbalization were expected to be, greater for the older children (i.e., third and fourth graders) than for the second graders. Although developmental research has lent some support to Vygotsky's hypothesis in that the amount of spontaneous private speech decreases as children become older (Fuson, 1979), research also demonstrates that the proportion of private speech that is self-regulating increases with age (Fuson, 1979). Other research shows that self-regulating private speech does tend to become covert with age (Rubin, 1979). Greater use of covert speech that includes strategies ought to facilitate strategy application to the extent that children utilize covert speech when subsequently given comprehension exercises. Older children also were expected to perform better than younger subjects because the present listening comprehension task was expected to be difficult given subjects' language deficiencies. It seemed possible that

the demands of self-verbalization might compete with those of the listening comprehension task, which could hinder the youngest subjects' encoding of strategies and subsequent availability of that encoding.

This study also explored the effects of strategy self-verbalization on children's self-efficacy. According to Bandura, different procedures change behavior in part through the common mechanism of creating and strengthening perceived self-efficacy (Bandura, 1977, 1981, 1982b). Self-efficacy refers to personal judgments of one's capability to perform behaviors in specific situations that may contain ambiguous, unpredictable, or stressful elements. Self-efficacy can affect choice of activities, effort expenditure, persistence in the face of difficulties, and task accomplishments. Efficacy information is conveyed through self-performances, vicarious (observational) means, verbal persuasion, and physiological indexes.

Strategy self-verbalization was expected to promote self-efficacy more than not verbalizing strategies. The present subjects initially observed a teacher verbalize comprehension strategies, after which they verbalized the strategies prior to applying them to questions. Such teacher modeling is a vicarious source of efficacy information; that is, telling children to verbalize the same strategies represents a close match to the modeled behavior and implicitly conveys that children can succeed if they do so (Schunk, 1982). This type of close match can create a sense of personal control over achievement outcomes, which is hypothesized to promote self-efficacy (Bandura, 1982a). Children's initial sense of efficacy is substantiated later as they successfully apply strategies. Schunk (1982) investigated the effects of different types of self-verbalization; the type that represented the closest match to the model's verbalizations promoted self-efficacy the most. No hypothesis was advanced on whether self-verbalization would affect self-efficacy differently across grades because there was no theoretical or research evidence on this point.

Method

Subjects

The subjects were 42 children in grades two to four (14 children per grade) drawn from seven schools within one school district. An equal number of boys and girls was included. Although different socioeconomic backgrounds were represented, children were predominantly lower-middle class.

Subjects regularly received language instruction in remedial classes. Children had been placed in these classes by the school district based on the following criteria: second graders scored at stanine three or lower on the reading portion of the Metropolitan Achievement Tests (Durost, et al., 1970); third graders scored at least one year below grade equivalent on the reading comprehension subtest of the Iowa Tests of Basic Skills (Lindquist & Hieronymus, 1972); fourth graders scored in the lowest 15% of the normed population on the language portion of the Short Form Test of Academic Aptitude (Sullivan, et al., 1970).

Pretest

Children were administered the pretest in small groups of three to four children by their remedial teachers, all of whom were women. Children sat around a large table such that they could not observe other children's work. To minimize potential evaluative concerns, teachers informed children that this work would not count toward their grade.

Self-efficacy. Children's perceived self-efficacy for successfully answering listening comprehension questions was measured following procedures developed earlier (Bandura & Schunk, 1981; Schunk, 1981, 1982). The efficacy scale ranged from 10 to 100 in 10-unit intervals from 10 (high uncertainty) to 100 (complete certitude). Initially, children were given practice by judging their certainty of jumping progressively longer distances ranging from a few inches to several yards. In this concrete fashion, children learned the meaning of the scale's direction and the different numerical values.

Following this practice, children were shown an answer page from the listening comprehension portion of the SRA Achievement Series (Naslund, et al., 1978). This page consisted of several rows of pictorial stimuli; each row included four pictures. Children privately judged their certainty of correctly answering questions based on

pictures like those portrayed. Thus, children were judging their certainty of correctly answering types of questions and not whether they could answer any particular question. Children were advised to be honest and to circle the number that matched how they really felt.

Listening comprehension skill. Children were then administered the skill test, which consisted of 20 listening comprehension questions from the SRA Achievement Series (Naslund, et al., 1978). The second graders received Level B, whereas the third and fourth graders received Level C. For each item, teachers first read a short passage aloud while children listened, after which teachers read a question and children marked their answers. Children were allowed about 15 seconds per answer. No performance feedback was given. The measure of skill was the number of questions answered correctly.

Training Procedure

Following pretesting, children were assigned randomly within grade, sex, and school to one of two experimental conditions: strategy self-verbalization or no strategy self-verbalization. All children received eight training sessions at a rate of two, 30-minute sessions per week over four consecutive weeks. Training materials were drawn from various sources and were standardized across teachers.

Although experimental treatments were counterbalanced across teachers and schools, all children who met with a given teacher during the same period received the same treatment. Had the two treatments been administered simultaneously, the no strategy-verbalization children might have wondered why they were not verbalizing strategies.

Strategy self-verbalization. Children met with their teachers in small groups of three to four students and were given several pages containing rows of pictorial stimuli. The teacher directed the children's attention to the appropriate row and read a story that ended with a question. The teacher then pointed to the following strategies, which were written on a nearby poster board, and instructed the children to repeat each strategy aloud after she verbalized it.

- (a) What is it I have to do? (b) I must find the correct picture. (c) How will I do it? (d) I'll look at each picture carefully to see if it matches the story I heard. (e) When I find the answer, I'll mark it.

Thus, the teacher verbalized strategy (a) and prompted the children to say it aloud. Once they finished, she verbalized strategy (b), and so on. After the children verbalized strategy (e), the teacher repeated the question, directed the children's attention to the first picture in the row, and asked if that picture showed what happened in the story. The teacher moved down the row until the correct picture was reached, at which point the above procedures were applied to a new story. Several stories were completed during each session. Teachers insured that all children verbalized the strategies and answered the questions.

No strategy self-verbalization. The training procedures for children assigned to this condition were identical to the above except that children did not repeat the strategies aloud after the teacher verbalized them. Rather, the teacher then referred the children to the first picture in the row and proceeded with the question-asking sequence.

Training instructions for both conditions were scripted to insure standardized implementation across teachers. Observations of teachers on selected occasions by the authors revealed that, except for some small idiosyncratic style differences, teachers followed the scripts.

Posttest

A posttest was administered the day after the last training session. The self-efficacy and listening comprehension skill instruments and procedures were similar to those of the pretest except that a parallel form of the skill test was used to eliminate possible question familiarity. Children were not allowed to verbalize overtly.

Results

There were no significant differences due to teacher, school, or sex of the child on any pre- or posttest measure, nor were there any significant interactions. The data were pooled across these variables. There also were no significant between-condition differences on the pre-test measures or on the number of questions answered during training. Means and standard deviations of pre-and posttest measures are shown by experimental condition in Table 1. Analysis of covariance was applied to each posttest measure using the corresponding pretest measure as the covariate according to a 3 (grade: second, third, fourth) \times 2 (strategy self-verbalization: yes, no) factorial design.

The use of analysis of covariance necessitated slope homogeneity across experimental conditions (Kerlinger & Pedhazur, 1973). Tests of slope differences for each measure were made by comparing a linear model that allowed separate slopes for each experimental condition against one that had only one slope parameter for estimating pretest-posttest changes across conditions. These analyses found the assumption of homogeneity of slopes to be tenable.

ANCOVA applied to posttest efficacy yielded a significant main effect for strategy self-verbalization, $F(1,35) = 5.12, p < .05$; the effect for grade and the grade \times strategy self-verbalization interaction were nonsignificant. The strategy self-verbalization treatment accounted for 24.3% of the variation in the post-test self-efficacy measure. Post-hoc analyses using the Newman-Keuls multiple comparison test (Kirk, 1968) showed that within each grade strategy-verbalization children judged themselves significantly ($p < .05$) more efficacious than children who had not verbalized strategies.

On the posttest measure of listening comprehension, ANCOVA yielded a significant main effect for strategy self-verbalization, $F(1,35) = 4.18, p < .05$. This effect accounted for 25.2% of the variation in posttest listening comprehension. The grade \times strategy self-verbalization interaction also was significant, $F(2,35) = 4.07, p < .05$; the interaction accounted for 19.7% of the variation. Post-hoc comparisons showed that fourth-grade strategy-verbalization children significantly ($p < .05$) outperformed fourth graders who had not verbalized strategies. This same result was obtained for third graders ($p < .05$), but no difference was found among second graders. Table 1 shows that strategy self-verbalization fourth graders averaged 2.2 more posttest questions correct than fourth graders who had not verbalized strategies (2.9 more correct among third graders).

Table 1—Pre- and Posttest Means (and Standard Deviations)

Measure	Phase	Grade 2		Grade 3		Grade 4	
		Strategy Verbalization	No Strategy Verbalization	Strategy Verbalization	No Strategy Verbalization	Strategy Verbalization	No Strategy Verbalization
Self-Efficacy ^a	Pretest	58.1 (23.7)	54.0 (20.3)	57.5 (20.6)	56.0 (21.8)	53.3 (16.6)	58.6 (23.8)
	Posttest	88.3 (12.6)	65.9 (13.5)	82.5 (15.0)	60.0 (11.6)	80.0 (11.8)	60.1 (12.7)
Listening Comprehension ^b	Pretest	13.8 (3.7)	13.2 (3.1)	13.2 (2.9)	11.7 (2.9)	14.2 (2.7)	13.1 (2.9)
	Posttest	15.6 (2.5)	16.6 (4.1)	17.9 (1.4)	15.0 (1.3)	18.4 (1.9)	16.2 (1.7)

NOTE: $N = 42$; n 's per grade = 14.

^aRange of scale: 10 (low)-100 (high). ^bNumber of correct answers on 20 questions.

Discussion

The present experiment shows that self-verbalization of listening comprehension strategies promoted self-efficacy among children in grades two through four with language deficiencies. An explanation for this finding is as follows. Pairing strategy self-verbalization with successful performance may have created a strong sense of personal control among children, which is hypothesized to promote self-efficacy (Bandura, 1982a). These children observed their teacher verbalize strategies and then verbalized strategies themselves. As a vicarious source of efficacy information, this teacher modeling may have conveyed that if children followed this sequence they would be successful (Schunk, 1982). Perhaps the present sample of children, given their language deficiencies and prior failures, required a close match between their teacher's actions and what they were asked to do to believe that they could succeed. Children's initial sense of self-efficacy likely was validated as they

successfully applied strategies to listening comprehension questions during training. The other treatment, in which children did not verbalize strategies, did not provide as close a match.

Strategy self-verbalization enhanced listening comprehension performance among third and fourth graders but did not facilitate second graders' performance. Third and fourth graders who verbalized strategies during training averaged 12.5% more items correct (2.5 items) on the posttest than subjects who had not verbalized strategies. Self-verbalization can help children focus and maintain their attention on important task components (Fuson, 1979; Schunk, 1982). Part of the reason why the present sample possessed listening comprehension deficiencies might have been because they paid inadequate attention to relevant information during instruction. Verbalizing strategies also is a form of self-rehearsal, which can promote their encoding and retention and lead to greater availability of strategies when children subsequently encounter comprehension tasks (Denney, 1975).

One possible explanation for the lack of performance benefits among second graders is that the added demands of strategy self-verbalization might have been too taxing for these young children. Thus, having to verbalize strategies and retain the story information may have disrupted strategy encoding and retention. This interpretation is supported by previous research showing that overt self-verbalization can distract young children (Denney, 1975).

Related to this idea is the notion that the present listening comprehension task probably was quite difficult for the second graders, given their language deficiencies and developmental level. The difficulty of the task may have thwarted self-verbalization from enhancing performance (Harris, 1982a, 1982b). These children probably had to focus their efforts during training on comprehending the passages. Because the effectiveness of self-verbalization depends both on the developmental status of the children and the difficulty of the task (Fuson, 1979; Harris, 1982a), the second graders may not have internalized the strategies during training as well as the older subjects. Such internalization should have facilitated children's subsequent use of strategies on the posttest as part of their covert speech (Fuson, 1979). This interpretation is only suggestive because covert speech was not assessed in the present study. Nonetheless, self-regulating private speech becomes covert with age (Rubin, 1979), and to the extent that older children utilized more covert speech on the posttest, it likely aided their performances (Fuson, 1979).

The preceding considerations suggest that the second graders might have experienced more performance benefits had the verbalizations been faded to a covert level during training. Although some studies show that once strategies are instilled overt verbalization may be discontinued with no performance decrement (Meichenbaum & Goodman, 1971; Whitely & Taylor, 1973), other research suggests that overt-to-covert fading is less effective than overt verbalization alone (Jackson & Calhoun, 1982). With young children, however, fading may be an especially effective means of helping them to self-regulate their performances with speech (Fuson, 1979). Future research with young children should explore the effects of fading on tasks that are apt to prove difficult.

It should be reiterated that self-verbalization is likely to be most effective with children whose typical cognitive performances are deficient (Denney & Turner, 1979). Such children may not organize, rehearse, or otherwise properly attend to strategies necessary for successful performance. Their achievement may suffer further from self-doubts concerning their capabilities. Children who typically self-monitor performance should grasp cognitive operations more readily and may not benefit much from self-verbalization (Schunk, 1982).

The present study suggests possible teaching implications. Children who possessed listening comprehension deficiencies showed improvements in achievement outcomes over a short period from verbalizing comprehension strategies. Although these improvements were modest, they are important given the language difficulties of the present subjects. This strategy self-verbalization treatment was incorporated into children's regular instructional procedures and was implemented by teachers. Future research should apply strategy self-verbalization to other language competencies to determine whether it is an effective adjunct to instructional procedures and enhances children's self-efficacy and language performance.

Along these lines, research also ought to explore the durability of changes in achievement outcomes fostered by cognitive training interventions and whether these benefits generalize to other tasks. Durability and generalization were not investigated in the present short-term study, but these issues are important in classrooms. Cognitive skill improvement often proceeds slowly according to children's developmental status, and curricula are designed such that the acquisition of higher order skills depends on the maintenance and generalization of previously learned skills. Although classroom cognitive interventions must be carefully designed and applied, cognitive training seems to hold promise as a means of improving children's achievement outcomes (Harris, 1982b).

REFERENCES

- Asarnow, J. R., & Meichenbaum, D. (1979). Verbal rehearsal and serial recall: The mediational training of kindergarten children. *Child Development, 50*, 1173-1177.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.
- Bandura, A. (1981). Self-referent thought: A developmental analysis of self-efficacy. In J. H. Flavell & L. Ross (Eds.), *Social cognitive development: Frontiers and possible futures* (pp. 200-239). Cambridge: Cambridge University Press.
- Bandura, A. (1982a). The self and mechanisms of agency. In J. Suls (Ed.), *Psychological perspectives on the self* (Vol. 1., pp. 3-39). Hillsdale, NJ: Erlbaum.
- Bandura, A. (1982b). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122-147.
- Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology, 41*, 586-598.
- Coates, B., & Hartup, W. W. (1969). Age and verbalization in observational learning. *Developmental Psychology, 1*, 556-562.
- Denney, D. R. (1975). The effects of exemplary and cognitive models and self-rehearsal on children's interrogative strategies. *Journal of Experimental Child Psychology, 19*, 476-488.
- Denney, N. W., & Turner, M. C. (1979). Facilitating cognitive performance in children: A comparison of strategy modeling and strategy modeling with overt self-verbalization. *Journal of Experimental Child Psychology, 28*, 119-131.
- Durost, W. N., Bixler, H. H., Wrightstone, J. W., Prescott, G. A., & Balow, I. H. (1970). *Metropolitan Achievement Tests*. New York: Harcourt Brace Jovanovich.
- Flavell, J. H., Beach, D. R., & Chinsky, J. M. (1966). Spontaneous verbal rehearsal in a memory task as a function of age. *Child Development, 37*, 283-299.
- Fuson, K. C. (1979). The development of self-regulating aspects of speech: A review. In G. Zivin (Ed.), *The development of self-regulation through private speech* (pp. 135-217). New York: Wiley.
- Harris, K. R. (1982a). Cognitive-behavior modification: Application with exceptional students. *Focus on Exceptional Children, 15*, 1-16.
- Harris, K. R. (1982b, March). *The effects of cognitive training on private speech and task performance during problem solving among learning disabled and normally achieving children*. Paper presented at the meeting of the American Educational Research Association, New York.
- Jackson, J. L., & Calhoun, K. S. (1982). A comparison of cognitive self-instructional training and externally administered instructions in preschool children. *Child Study Journal, 12*, 7-20.
- Kagan, J. (1966). Reflection-impulsivity: The generality and dynamics of conceptual tempo. *Journal of Abnormal Psychology, 71*, 17-24.
- Keeney, T. J., Cannizzo, S. R., & Flavell, J. H. (1967). Spontaneous and induced verbal rehearsal in a recall task. *Child Development, 38*, 953-966.
- Kerlinger, F. N., & Pedhazur, E. J. (1973). *Multiple regression in behavioral research*. New York: Holt, Rinehart & Winston.
- Kirk, R. E. (1968). *Experimental design: Procedures for the behavioral sciences*. Belmont, CA: Brooks/Cole.
- Lindquist, E. F., & Hieronymus, A. N. (1972). *Iowa Tests of Basic Skills*. New York: Houghton Mifflin.
- Meichenbaum, D., & Goodman, J. (1971). Training impulsive children to talk to themselves: A means of developing self-control. *Journal of Abnormal Psychology, 77*, 115-126.

- Naslund, R. A., Thorpe, L. P., & Lefever, D. W. (1978). *SRA Achievement Series*. Chicago: Science Research Associates.
- Rubin, K. H. (1979). The impact of the natural setting on private speech. In G. Zivin (Ed.), *The development of self-regulation through private speech* (pp. 265-294). New York: Wiley.
- Schunk, D. H. (1981). Modeling and attributional effects on children's achievement: A self-efficacy analysis. *Journal of Educational Psychology*, 73, 93-105.
- Schunk, D. H. (1982). Verbal self-regulation as a facilitator of children's achievement and self-efficacy. *Human Learning*, 1, 265-277.
- Sullivan, E. T., Clark, W. W., & Tiegs, E. W. (1970). *Short Form Test of Academic Aptitude*. New York: McGraw-Hill.
- Taylor, A. M., Josberger, M., & Whitely, S. E. (1973). Elaboration instruction and verbalization as factors facilitating retarded children's recall. *Journal of Educational Psychology*, 64, 341-346.
- Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: MIT Press.
- Whitely, S. E., & Taylor, A. M. (1973). Overt verbalization and the continued production of effective elaborations by EMR children. *American Journal of Mental Deficiency*, 78, 193-198.
- Zivin, G. (1979). *The development of self-regulation through private speech*. New York: Wiley.