

Effects of PREP Training on Simultaneous, Successive Processing Function and Word Reading of Children with Reading Disability

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I. Introduction

As the most essential components in learning textbooks, Reading will be able to find a knowledge or information which is necessary to a daily life and it is an essential activity for studies accomplishing or the adaptation in life because is used with the means which is principal, And reading are very important to develop a individual intelligence, emotion, and sociality.

Reading difficulties appearing in the lower grades of an elementary school and children with developmental disabilities on the whole might give severe effects on the development, and it has a tendency to continue until the adulthood.

We are having many problems in the systemic program and teaching method in teaching children with reading difficulties in Korea. To case of foreign nation, it recognized the importance of the function advancement, which the child reads from early, the cognitive process with a function that it reads thinks the reading became

accomplished together.

PREP was researched and developed by J.P. Das and J. Naglieri to integrate applied areas of psychological knowledge using a theory of cognitive processing and tasks designed to train those processing. It is based on PASS theory of Das, Naglieri and Jarman(1979) which is linked to the theories of A.R. Luria. PASS theory proposes that human cognitive functioning is based on the four essential activities of Planning, Attention, Simultaneous and Successive processing that employ and alter an individual's knowledge base.

The PASS theory makes an objection in the center and the position PREP ground is letting in the cognitive psychology that probably is with a child development theory. PREP stands for PASS Reading Enhancement Program. It is based on PASS theory of Intelligence, and should be understood within the framework provided by PASS theory.

The PREP program improves the information-processing strategies that underlie reading, while avoiding the direct teaching of word-reading skills. This method is founded on the premise that it is easier for children to learn these strategies by inductive rather than deductive means(Carlson & Das 1996). Accordingly, the program is structured so that tacitly acquired strategies are likely to be used in appropriate ways.

Attention and planning are important aspects of task given in the program. Specifically, attention is required to perform each task, and planning skills are developed by encouraging the children to discuss their strategies and solution both during and following each task.

Each task involves both a global training component and a curriculum-related bridging component. The global component includes structured, non-reading tasks that require the application of simultaneous or successive strategies. These tasks also

provide children with the opportunity to internalize strategies in their own way, thus facilitating transfer. The bridging component involves the same cognitive demands as its matched global component and provides training in simultaneous and successive processing strategies, which have been closely linked to reading.

Thus the purpose of this study were to examine effects of PASS Reading Enhancement Program on simultaneous-successive processing function and word reading of Children with reading disability. Literature review reveals that children with reading disability have some deficiencies in cognitive function and have reading difficulties.

. Methods

1. Participants

Three students with reading disabilities were recruited. The students with reading disabilities attended a S-special school in Korea. Student 1's chronological age(CA) was 96 months, student 2's CA was 98 months, student 3's chronological age was 108 months.

Subject children 3(second-grade 2; male 1 female 1, third-grade 1; female) with reading disability were selected an experimental child from normal classroom of elementary school.

The IQ of these students, calculated using the standard score from KEDI-WISC(Park et al., 1987) was 90, 89, and 93. The present reading levels of these students was

measured using a Based Learning Functional Test(Park et al., 1989). Student 1 can't read slowly, easy words without final elements, but he sees the letter in the wrong order. The second student can read just each letter but can not read words and sentences. He can imitate the sentence by model sentence. The third student can not read slowly, easy double letters without final elements. She can write easy words in order when a teacher says an easy word.

2. Research tools

Training program of this study were used PREP. Training of the PREP was consisted of 17 ~ 19 sessions for 2 months. Each training session took 30 minutes.

The program consists of eight tasks which vary considerably, both in content and in what they require of the student. Each task involves both a global training component and a curriculum-related bridging component. The global component consists of structured non-reading tasks that require the application of simultaneous or successive strategies. These tasks also provide children with the opportunity to internalize strategies in their own way, thus facilitating transfer. The bridging component, and provides training in simultaneous and successive processing strategies that are closely linked to reading and spelling.

The global tasks begin with content that is familiar and non-threatening so that strategy acquisition occurs in small stages (Das et al 1994). Complexity is introduced gradually, and only after a return to easier content. Through verbal mediation, which occurs through discussion of specific strategies used, the children are encouraged to apply their chosen strategies to academic tasks such as levels of difficulty. This allows

the child to progress in strategy development and, for those who already have some successful processing strategies in place, to begin at an appropriate level.

From this research only against the subject of two task which do not have a culture difference it applied.

A system of prompts is also integrated into each global and bridging component. The prompts support and guide the child to ensure that he/she completes the tasks with minimal assistance and maximal success. A record of these prompts provides a monitoring system for facilitators to determine when material is too difficult for the child or alternatively when the child is ready to progress to a more difficult level.

A number of children who are highly motivated and emotionally well adjusted, and who have a supportive family environment, nevertheless experience reading difficulties. research shows that these children in both are unable to read at the level expected for their grade. (in this context the word "read" means the ability to identify written words, especially unfamiliar words such as "analogy" or "made-up" words that have no meaning, such as "pardet".)

The larger group comprises children whose reading difficulties arise from a wide array of weaknesses in cognitive functioning, while children in the smaller group can be classified as dyslexic readers. How do we know to which of the two groups a child belongs? The poor reader from the larger category is likely to struggle in other subjects that do not require a lot of reading, and may perform poorly on a wide variety of intellectual tasks. By contrast, the dyslexic child has specific cognitive processing difficulties that are related to converting spelling to speech (i.e. he has difficulty with phonological coding). Both types can benefit from PREP.

J.R. kirby (1988) argues that the cognitive processing associated with reading

passes through eight distinct and increasingly complex levels of abstraction: (1) features (components of letter), (2) letters,(3)sound or syllable units, (4)words, (5)phrases, (6)ideas, (7) main ideas, and (8)themes. at each level, items of information are recognized (simultaneous processing) and order (successive processing) so that higher-level units can be comprehended (simultaneous processing). in other words, both simultaneous and successive processing are required at each level:

(1) Each letter consists of various features ~ vertical, horizontal or oblique lines, and semi-circles.

(2) The letter has to be recognized as a whole after its components have been put together successively. Upper case(a,b) has to be distinguished from lower case(a,b) and yet the child must recognize that a=a b=b ~ thus simultaneous processing is also required.

(3) The various sounds of letters, especially vowels, have to be distinguished (simultaneous processing) and put serially together.

(4) Words must then be read, either as whole patterns or as a string of phonemes (when the words are long or unfamiliar).

(5) Meaning must be obtained from phrases; it is not enough to know the meaning of each individual word in phrases such as "hot-headed comment" or "bone-chilling cold": we need to understand their meaning in the context of the other words in the phrase, and this requires both processes.

(6) The ideas represented by words, phrases and sentences need to be understood.

(7) The ideas need to be sorted out into main and secondary ideas. for example, what is the main idea in the sentence while walking on ice, he fell through it"?

(8) Finally, themes have to be identified in order to make sentences, paragraphs and

entire text meaningful. "in little things do we beauty see", when combined with "in small measures life may perfect be", gives the reader a "theme" to understand the two sentences. Simultaneous and successive processing are both needed for comprehension, as are attention to the sequence and combination of words, and a plan to extract the meaning of poem. More over, if the child does not have an adequate knowledge base, he may read the poem and understand each word but still miss its meaning.

In the case of a young child who fails to learn to read, the failure is primarily due to a problem with successive processing, i.e. the process that helps the child to sequence different items, letters or words (Das 1998). A child cannot read "friend" or "tongue" if he or she cannot remember the exact sequence of letters in each word and then convert these words into speech. Difficulties in successive processing may cause difficulties in acquiring and/or using phonological coding (the ability to convert spelling into sounds and vice versa). This may, in turn, lead to an inability to decode words effectively, which ultimately leads to reading failure.

On the other hand, when a child can read but struggles to understand what he/she is reading, the difficulty probably stems from weaknesses in simultaneous processing. Comprehension as an aspect of reading is very different from basic word decoding and is also more difficult to remediate.

The prep approach is to identify the most important processing needs of the child in the remedial program and to concentrate remediation in these areas.

Thus a prep teacher will focus on successive processing to develop decoding skills, or alternatively, focus on simultaneous processing to develop comprehension.

Poor performance in either simultaneous or successive processing may be due to (a)

insufficient ability to use the process, or (b) barriers to the use of the process that can be overcome by training, i.e. a disinclination to use the process even though it is the optimal method (Kirby & Williams 1991).

It is important to note, however, that no cognitive task requires one process alone. It is a matter of emphasis. Depending on the task requirements and individual preference, the child may focus more strongly on one of the processes (for example, the use of successive processing in spelling or decoding words phonetically).

3. Design

The design of this research was a multiple baseline across subjects design.

4. Procedure

The experimental period was from April to August, 2000. The experimental phase was divided into three phases called baseline, intervention, maintenance.

During the baseline phase, the participants were tested on the 42 probe items of word reading without intervention.

During the intervention phase, the participants were taught by teacher's instruction and mediation at first, gradually prompts were decreased. Completion criterion of intervention was continually above 80% during the three sessions of task achievement performance.

After the break session during one week, maintenance of intervention was measured as baseline.

5. Data Analysis

Data about correct respond analyzed and provided by average score per each experimental phase.

6. Interobserver Reliability

The responses for each participant were observed during the experimental sessions. The percentage of agreement between the experimenter and the independent observer range from 88% to 95%, with a mean 90%.

Percentage of agreement was calculated by dividing the number of agreements concerning item accuracy by the total number of agreements and disagreements.

. Results

Simultaneous-successive processing function and word reading data for all participants, showing their use of the PASS Reading Enhancement Program during baseline and maintenance, are presented in Figure 1, 2, and 3. Each point represents a word reading score during given sessions.

1. Change Simultaneous Processing Function

Figure 1. Subject accomplishment result

stage student	distinction	baseline	intervention	maintenance
Student A	sesssion	3	17	3
	average score	1.0	6.05	10.33
	score (low-top)	1 1	2 10	10 11
Student B	sesssion	5	18	3
	average score	1.4	8.50	12
	score (low-top)	1 3	3 12	12

Student C	session	7	16	3
	average score	2.14	7.81	11
	score (low-top)	1 3	4 11	11

During the baseline session, the score of all three participants was below 2. The average score of student A was 1.0, student B was 1.4, student C was 2.14.

In the intervention stage, the three participants scored 2~10, 3~12, and 4~11 on simultaneous processing function. The average score of student A was 6.05, student B was 8.50, student C was 7.81.

As you can be see in the Figure 1, each participants showed the intervention effects from baseline to maintenance.

2. Change Successive Processing Function

Figure 2. Subject accomplishment result

stage student	distinction	baseline	intervention	maintenance
Student A	session	3	18	3
	average score	1.0	7.33	9.67
	score (low-top)	1 1	3 10	9 10
Student B	Sesssion	5	18	3
	average score	1.4	7.26	9.33
	score (low-top)	1 3	3 10	9 10
Student C	session	7	20	3
	average score	2.14	8.95	12
	score (low-top)	1 3	4 12	12

During the baseline session, the score of all three participants was below 2. The average score of student A was 1.0, student B was 1.4, student C was 2.14.

In the intervention stage, the three participants scored 3~10, 3~10, and 4~12 on simultaneous processing function. The average score of student A was 7.33, student B was 7.26, student C was 8.95.

As you can be see in the Figure 2, each participants showed the intervention effects

from baseline to maintenance.

3. Change Word Reading

Figure 3. Word reading before-after test result

distinction student	before	after	before-after score Difference
Student A	8	31	23
Student B	21	36	15
Student C	31	40	9

In the Word reading before test, the score of all three participants was below score. The before-after score difference of student A was 23, student B was 15, student C was 9.

In the Figure 3, the three participants demonstrated the intervention effects from word reading before test result to after.

. Discussion

As you can be see in the figure 1, 2, and 3, the PASS Reading Enhancement Program had clear effects on the acquisition and maintenance of each participant's simultaneous-successive processing function and word reading.

It is reported that most of the programs had effects in improvement of reading and cognitive processing function. This PASS Reading Enhancement Program also seems to have strong intervention effects. Thus the PREP(PASS Reading Enhancement Program) of this research should be viewed as facilitating communication skills to students with reading disability.

Early identification of reading problems is desired by parents and teachers alike. Although accurate assessment is possible only after children have had formal reading

instruction, usually in first grade, children who are "at risk" for reading disability can be identified even before starting school. As soon as they show early signs of reading difficulty in first grade, they can be helped (Das, Parrila & Papadopoulos Study 1997).

. Conclusion

Major conclusions of the research drawn from the result were as follow;

First, students with reading disability could improve simultaneous processing function by using the PREP.

Second, students with reading disability could improve successive processing function by using the PREP.

Finally, students with reading disability could improve word reading with the PREP.

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