

Cognitive Intervention in Chinese Character Learning of Children with Dictation Disabilities

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Keywords: Cognitive intervention; Chinese character; Dictation; Children

Abstract: Based on the results of the study on visual discrimination and phonological association deficits in children with dictation disabilities, targeted cognitive intervention training was conducted for children with dictation disabilities, and experimental comparisons were made. The results show that visual discrimination and phonological association can improve the visual discrimination and phonological association ability of children with dictation disabilities accordingly. For Chinese character learning, the comprehensive intervention training of phonological association and visual discrimination is better than that of single visual discrimination and phonological association. The comprehensive cognitive intervention program combining visual discrimination and phonetic association can improve the corresponding cognitive ability of children with dictation disabilities and promote the quality of Chinese character learning of children with dictation disabilities.

1. Introduction

Dictation disorders are mainly manifested in children's difficulties in hearing, pronouncing and writing characters, and their dictation performance lags behind that of their peers. The prominent characteristic of children with dictation disability is that their reading performance is normal and their dictation performance lags behind. It is not due to improper education, visual deficiency or mental problems. This special phenomenon of spelling difficulty is quite common among school-age children. With the increase of learning content and the change of learning mode, dictation difficulties have an increasing impact on children. Dictation difficulties seriously affect children's academic development, and intervention training is the ultimate or highest goal of developmental disorders research. Therefore, according to the cognitive characteristics of children with developmental dictation disability in Chinese, it is of great practical significance to formulate intervention programs for children with developmental dictation disability, to improve their corresponding cognitive ability, to formulate targeted cognitive training for children with dictation disability, and to determine effective cognitive intervention programs for children with developmental dictation disability.

2. Assessment of children with dictation disabilities

2.1. Psychological processing model

Dictation learning disabilities refer to one or more basic psychological processes related to understanding and using oral or written language; these barriers may be manifested in the lack of listening, thinking, speaking and other abilities. This term includes perceptual impairment, brain damage, mild brain dysfunction, dyslexia, developmental aphasia, etc., but does not include children with learning problems caused by visual, auditory or motor disabilities, mental retardation, emotional disorders or environmental, cultural or economic disadvantages. After the emergence of the concept of dictation barrier, its position in the field of special education has been established.

2.2. Intervention study on children with dictation disorder

After the diagnosis and evaluation of children with dictation disabilities are completed, it is necessary to carry out targeted intervention and correction for children with dictation disabilities according to the results of diagnosis and evaluation. Different evaluation methods have different intervention methods, including cognitive intervention, teaching intervention, learning strategy intervention and drug intervention for children with dictation disabilities themselves, as shown in Figure 1 below.

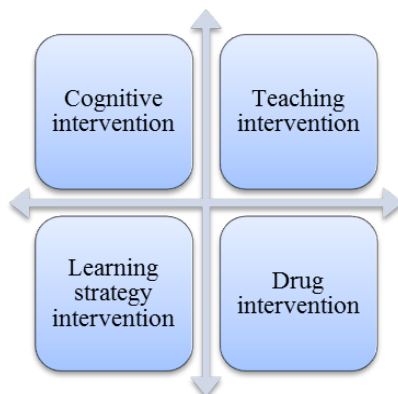


Figure1. Intervention methods for children with disabilities

For the learning of Chinese characters, the comprehensive intervention of the combination of shape-phonetic association and visual discrimination has better effect than the single visual discrimination and shape-phonetic association intervention. The comprehensive cognitive intervention training combined with visual discrimination and phonological association can effectively improve the corresponding cognitive ability of children with dictation disabilities, and improve the learning effect of Chinese characters of children with dictation disabilities. For children with dictation disorders, the single cognitive intervention has little effect on improving their cognitive ability, while the comprehensive intervention has a great improvement. Therefore, for the cognitive intervention of children with dictation disabilities, we should not only excavate their specific cognitive processing deficits, but also pay attention to their ecological intervention effects.

3. Screening and analysis of children with dictation disorders

3.1. Screening method

The group test method is used for the dictation test. The language teacher reads the

pronunciation of each Chinese character in Mandarin, and each student is required to clearly hear the test target word. The student writes the heard word on the answer sheet according to the pronunciation. Divide each student's dictated correct word count by the total number of tests to get the correct rate for each student. Similarly, the reading test also uses a group test method, requiring students to phoneticize each Chinese character, and divide each student's correct number of words by the total number of tests to get the correct rate for each student. Analyses the dictation of each student's correct reading, records the number of words that each student can read or not write, divides the number of words that can not be read and written by the number of words that can be read, and obtains the difference rate of reading and writing, that is, the proportion of the wrong words in the correct reading. Students whose reading and writing differences were higher than the average of grade were selected as candidates for the experimental group.

3.2. Intervention method

Sixty children with dictation disorders were divided into three matched groups: 20 in visual discrimination intervention group, 20 in phonological association intervention group and 20 in phonological association and visual discrimination group, as shown in Table 1 below.

Table 1. Basic situation of test group with dictation disorder

Test group	Gender composition		Intervention training method
Group 1	8 males	12 females	Single channel visual discrimination
Group 2	6 males	14 females	Cross-channel phonological connection
Group 3	8 males	12 females	Comprehensive intervention training

The contents of intervention training in the three experimental groups in Table 1 were according to the plan of each group.

3.3. Intervention tasks and results of the test group

Visual discrimination task is used to intervene in the individual teaching of dictation handicapped children. Tasks with different difficulty are set up and the training difficulty and content are determined according to the performance of the subjects. Intervention training was carried out for children with dictation disorders, and computer-controlled training tasks were used for the combination of form and sound. Similarly, individualized teaching method is adopted in the training, and the training difficulty and content are determined according to the performance of the subjects.

The intervention task of the experimental group includes two parts: one is the training of the combination of form and sound, the other is the training of visual discrimination. The training of shape-sound association adopts the training of shape-sound association and the learning of Form-sound pairing; the training of visual discrimination adopts the training of instant visual discrimination, delayed visual discrimination and image discrimination.

4. The results and analysis of intervention experiment group

4.1. Intervention experiment results

In terms of visual discrimination ability, there was no significant difference between the experimental group of visual discrimination & phonological association intervention and the experimental group of visual discrimination intervention for children with dictation disabilities, but

there was significant difference between the experimental group of phonological association intervention and the comprehensive intervention group and the visual intervention group. There was no significant difference in the correct rate of dictation between children in visual intervention group and children in phonetic intervention group, but there was significant difference between children in comprehensive intervention group and children in visual intervention group and children in phonetic intervention group. There was no significant difference between children in visual intervention group and children in phonetic intervention group, but there was significant difference between children in comprehensive intervention group and children in visual intervention group and children in phonetic intervention group.

4.2. Result discussion and analysis

The results showed that visual discrimination and phonological association could improve the visual discrimination and phonological association abilities of children with dictation disabilities. For Chinese character learning, the comprehensive intervention training of visual discrimination and phonological association was better than that of single visual discrimination and phonological association. For the Chinese character learning of children with dictation disabilities, especially the level of dictation, the effect of comprehensive intervention is greater than that of Phonetic Association and visual discrimination. This suggests that the mechanism of impairment of visual discrimination and phonological association may be different in children with dictation disabilities. Secondly, there is a relationship between visual discrimination and phonological connection deficits in children with dictation disabilities. Visual discrimination defects affect the quality of font representation, and thus affect the validity of the connection between Chinese font and phonetic representation.

5. Conclusions

As a special written speech ability of Chinese children, Chinese character dictation ability can only be acquired through corresponding learning. From the point of view of cognitive ability, improving the visual discrimination and phonological association ability of children with dictation disabilities can improve the quality of Chinese character representation and phonological association memory of children with dictation disabilities, so as to improve their dictation ability. The intervention of visual discrimination and phonological association can correspondingly improve the visual discrimination ability and phonological association ability of children with dictation disabilities. For the learning of Chinese characters, the comprehensive intervention training combined with visual discrimination and phonological association is better than the single visual discrimination and phonological Association intervention training.

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