

Effectiveness of the linguistic plays on improving the reading skills of educable mentally retarded preliminary school students

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Abstract

The present study has been conducted with the purpose of exploring linguistic plays in increasing reading skill among retarded students. This quasi-experimental Study, being conducted among all retarded students studying in second grade of elementary schools. The sample included 30 subjects, randomly selected and assigned as experimental and control. Then the experimental group received 20 sessions of linguistic plays. In data collection we used two standard tests, namely raven children test for homogenous subjects, and phonological knowledge test, and also two researcher-made tests of reading speed and comprehension with appropriate validity and reliability. In data analysis, in descriptive level, we used indicators of central tendency, dispersion index, frequency distribution table, diagram and etc. and in inferential level, in addition to examining the normality of data and investigating test hypotheses we used covariance analysis and t-test. The findings show that phonological skill score of retarded students receiving intervention (linguistic Plays), has been higher compared to control group. No difference has been found regarding reading speed score among both groups. Reading comprehension score of experimental group has been higher than control group. Therefore, the results indicate that this educational method has been appropriate and can increase retarded students' reading skill.

Keywords: Mentally, Play, Phonological, Reading, Student

Introduction

Reading is a cognitive and linguistic process, which is linguistically close to the skills of speaking, writing, and listening, and cognitively close to information processing, storage and recovery [1]. It does not start abruptly. Familiarity with the knowledge of syntax, grammar, and vocabulary sensitivity helps children to be able to read and write [2]. In fact, reading is the key to all other learning, since they are derived from acquiring reading skill [3]. Therefore, reading comprehension is essentially needed for learning [3]. Nowadays,

reading visual signs, electronic marks, and digital texts is of significant importance [4], so reading is considered as a means of empowering all children and students with special needs.

Play therapy is an emotional empowering form of therapy which confronts stress and disorders derived from family problems. Play therapists believe that play therapy allows children to show their disappointments, difficult experiences and repressed emotions in the plays [5].

Playing, on the one hand, can stimulate sensorimotor cortex and make relations between limbic system

and vision, hearing and speaking sections, and repetition and continuation of these stimulations with new learning, mutual effect between brain and nervous system on quality and quantity of behavioral responding and improving the brain and nervous system through consecutive behaviors and practices [6]. On the other hand, it makes learning process more enjoyable for children [7]. Playing and play therapy can be beneficial for improving the linguistic potentiality of students with specific needs.

Many scholars have assessed the effect of various elements on reading skill, for instance, direct education of phonemic awareness [8,9,10], preschool educations [8,11,12], linguistic activities of preschool period [13], linguistic features such as semantics, syntax, phonology [14], phonological awareness, automatic naming speed [15], phonemic awareness training, perception of alphabet, oral language [16,17], phonology processing and phonology awareness and vocabulary reading [18,19], family [20], environmental elements [21], and phonological awareness training [22] are all regarded as influential elements in reading skill. As the reviewed literature demonstrates, linguistic elements are the most principal and fundamental factors in reading skill.

Brennan and Ireson [23] evaluated a phonological awareness program in a small-scale study using 38 children from three intact kindergarten classes. The average age of children was five years four months. There was one experimental class and two control classes. The experimental class received a Danish training program of metalinguistic games and exercises. One control class used a kindergarten reading and writing program which, called Success in Kindergarten Reading and Writing, incorporates phonological awareness skills, but in an informal way. The other control class followed the normal kindergarten program. The results showed that the children in the experimental group and the Success in Kindergarten group had significantly greater gains in reading and spelling measures given at the end of the year. They also did better on six of the metalinguistic tests, with the experimental group showing significantly greater gains in all the tests of phoneme awareness than the other two groups. Considering the importance of linguistic studies,

many instruments have been created in order to assess children's phonological awareness and skills of improvement [24]. Robin cited in Bashour Lashgari, [25] appraised both phonological awareness and class activities of dyslexic students and concluded that the trained children execute better than others in various aspects of reading such as correctness, speed, and comprehension.

Reading process and its disorders are mostly assessed both normal students and those who suffer from learning disorders [26], however few studies were conducted to examine issues related to mentally retarded students. Roberts, Jones and Champlin [27] assessed the effect of reading on teaching early reading and language skills to students with moderate intellectual disabilities (ID). Participants of their study were 28 elementary students from 10 public schools. Students in the treatment condition received daily, comprehensive reading instruction in small groups of 1-4 students for approximately 40 minutes per session. Findings of their study demonstrated that students with moderate ID can learn basic learning skills given consistent, explicit and comprehensive reading instruction across an extended period of time.

Play therapy has concentrated on decreasing behavioral issues and improving emotional status of students so far [27,28], the application of the games has not been focused as a method of empowering and enhancing students' skills. As it has been mentioned in the aforementioned studies, various phonological educations can be effective in reading skills. Due to the fact that mentally retarded students have some problems when acquiring reading skills, games can be utilized in order to improve their abilities in reading skill. Cognitive and linguistic plays are used to develop reading skill, phonological awareness and learning activities of mentally retarded students in a more simply way and through creating motivations; therefore, plays can be influential in improving students' linguistics and reading skills. Considering the effects of play therapy on linguistic and reading skills of educable

mentally retarded students, the present study aims to design and execute a play. So, it examines the effectiveness of linguistic plays on reading skill of educable mentally retarded students. Research hypotheses can be written in the following manner:

- Phonological skill of mentally retarded students who receive linguistic play therapy is more than mentally retarded students of control group.
- Reading speed of mentally retarded students who receive linguistic play therapy is more than mentally retarded students of control group.
- Reading comprehension of mentally retarded students who receive linguistic play therapy is more than mentally retarded students of control group.

Method

The present study is quasi-experimental with pre and post-test, being conducted among all retarded students studying in second grade of elementary schools at Mashhad, Iran. Target population of the group is consisting of 85 mentally retarded students in school year 2011-2012. Due to the fact that this study aims to execute a play-oriented program among mentally retarded students and since the number of students in these classes is averagely 8 to 12, and in interventional studies is 10 to 15, statistical sample of the research includes 30 mentally retarded students. Two male elementary schools of Imam Javad and Mehrafarinan which specifically educated mentally retarded students were chosen as samples. One school was considered as experimental and the other one as control group, and 15 participants in each school were selected among students of the second grade of elementary school. Criteria of selecting participants can be explained in the following manner: 1) selected sample should be recognized by anesthesiology experts between 50-70, 2) they should not have any other sever or significant disabilities such as low vision, hearing loss, mobility and physical problems. Mention must be made though that according to experts, general mental conditions and educational performance of retarded students in specialized schools are approximately the

same. Furthermore, the educational level of students and the cultural-social status of their families are roughly equal which makes the groups homogeneous. Covariance data analysis was applied to control the effect of pre-tests and homogenize them. Two participants were omitted during the process of homogenization, and the final experimental group was consisting of 13 participants.

Evaluation instruments of the research were phonological awareness test, a researcher-made questionnaire in order to estimate reading speed, and a researcher-made questionnaire to estimate reading comprehension. Soleimani [22] and Brennan and Ireson's [23] researches were utilized in order to design the phonological awareness questionnaire. In the field of phonological awareness, the current study mostly employed a test which was also used by Soleimani [22] in his M.A. thesis, which was consisting of three sections: syllabus awareness, intersyllabus awareness, and phonemic awareness. Two or three vocabularies were regarded as key words in each subtest. First, the application of each section was explained to the participants through key words and then, their associated pictures were presented to them. If the participant can answer the required test, they get one, otherwise, they get zero. Consistency of the research is evaluated through two methods of retest and internal consistency. Retest was conducted with 37 participants over a two-week period, and equaled 0.90; the latter, internal consistency, was calculated about 0.98 through applying Cronbach's alpha which was conducted with a sample of 203 people. The coefficients of subtests were also estimated about 0.84 and 0.96 Content validity of the test was appraised; Criterion validity of this test was assessed through the evaluation of its correlation with vocabulary distinction subtests and Hassanzadeh and Minaei's [24] language improvement test of phonological analysis, and a significant coefficient was achieved. Discriminant validity of the test was also confirmed, since it was capable of drawing distinction between different ages and groups

(normal and mentally retarded students), and the results of factor analysis of this test verified three variables of phonemic awareness, intersyllabus awareness and syllabus awareness.

Considering the fact that standard instruments of readings have not been utilized for educable mentally retarded students in Iran, the author has designed a test to assess the participants' reading speed. This test, which was observed by many experts and scholars, included some texts from various books. Then, the participant was asked to read the text, and tester recorded the spent time for reading the text. Reading speed can be calculated through dividing number of whole vocabularies into the spent time. Content validity of this test was confirmed by academic experts and teachers of the second grade of elementary school. Consistency of retest method which was conducted with 28 mentally retarded students over a four-week period was about 0.733 through the application of Cronbach's alpha.

The questionnaire was applied to test reading comprehension of mentally retarded students. This questionnaire was consisting of eleven questions which were designed in accordance with one text. Answering each question could bring about a specific score, and the sum of eleven questions was 20. The participant should answer reading comprehension questions after reading the text, and the sum of their answers demonstrates their reading comprehension. This questionnaire was

designed under the supervision of professors of psychology and pedagogy associated with specialized and retarded children. Consistency of the questionnaire was assessed through retest method which was conducted with 28 mentally retarded students over a four-week period was about 0.813.

The implementation of the research started when the author referred to the Department of Education and various schools. Then, the participants were chosen after assessing their documents, demographic information, and mental status. Privacy of the information, related to families, was retained. Needed conditions and facilities such as the place, class arrangement, and schedule were provided in order to implement the research. Experimental group received the intervention, but control group received no treatment. Before receiving the intervention, a pre-test was given, and during the process of implementation, the participants' enthusiasm and voluntariness were paid much heed; whenever they became tired, they were allowed to get some rest and carry on. They had also time to grab a quick snack. Two participants were eliminated during the process of intervention. A post-test was also conducted when the intervention finished. A synopsis of five sessions can be observed in the accompanying Table 1.

Descriptive and inferential analysis of data was conducted by SPSS v.16. Mean and standard

Table 1 A sample of content, objective, and applied instruments in intervention sessions

	Intervention objective	The approach of playing	Instruments
1 st session	Introduction, readiness, classification	Play therapist asks students to suggest some plays and start group playing such as flipping a coin, replacing the objects or guessing	Consistent with the suggested play
5 th session	Distinguishing the beginning and ending of vocabularies	Play therapist asks students which object in the class starts with M and which object finishes with M. Then, he asks them to write, compare and read them loudly.	Existing objects in the classroom such as board
10 th session	Compounding vocabularies and coining new vocabularies	Play therapist divides a vocabulary into different parts and writes the letters on some cards then gives them the cards and asks them to make new vocabularies and read them aloud.	Play therapist-made cards
15 th session	Utilizing cognitive information in order for fluent reading	Play therapist gives students some texts which are accompanied by pictures and asks them to read the text loudly.	Partially illustrated texts
20 th session	Reading comprehension (text)	Play therapist reads a line of the text and asks some questions related to this line, so the whole text is asked in this way, so at the end of the play, the play therapist asks them to express the text in their own language. If needed, this process will be repeated in following sessions.	Play therapist-made stories and play texts

deviation were used at descriptive level, and covariance analysis test of ANCOVA was utilized to eliminate the effects of pre-test at inferential level.

Results

Demographical findings of the research indicate that the average age of students was 9 to 15 (M-12.77, S-1.69), five couples (the participants' parents) were relatives, but eight were not. The average age of their mothers was 28 to 57 (M-36.23, S-8.03), and their fathers' was 30 to 68 (M-36.23, S-9.42). All parents were physically healthy (100%). The students' retardation was estimated between 2.11 and 4.9 (M-3.85, S-0.82). Control group was also consisting of 15 participants who studied in second

grade of elementary school. Their average age was 9 to 15 (M-12.4, S-2.32), seven couples (the participants' parents) were relatives, but eight were not. The average age of their mothers was 26 to 38 (M-31.07, S-6.57), and their fathers' was 29 to 55 (M-32.27, S-9.3). All parents were physically healthy (100%). The students' retardation was estimated between 3 and 6.3 (M-0.99, S-4.74).

Descriptive data and research hypotheses will be mentioned. Table 2 shows mean and standard deviation of the variables phonology, reading speed, and reading comprehension which were examined through pre-test and post-test.

Table 2 Mean and standard deviation of the variables phonology, reading speed, and

Table 2 Mean and standard deviation of the variables phonology, reading speed, and reading comprehension examined through in two stages

Variables	Groups	Evaluation stage	Mean±SD
Phonology	Linguistic plays group	Pre-test	42.15± 9.32
		Post-test	57.85± 10.53
	Control group	Pre-test	46.00± 11.41
		Post-test	46.8± 11.19
Reading speed	Linguistic plays group	Pre-test	31.42± 14.81
		Post-test	40.45± 15.3
	Control group	Pre-test	32.86± 10.36
		Post-test	33.3± 10.06
Reading comprehension	Linguistic plays group	Pre-test	12.81± 3.36
		Post-test	15.61± 2.94
	Control group	Pre-test	12.93± 2.83
		Post-test	13.07± 3.29

reading comprehension examined through in two stages

Considering the achieved data, it can be alleged that there is a significant difference between

Table 3 Covariance analysis after eliminating the effects of pre-test for the variable phonological skill

Source of changes	Variable	df	F	P-value	η^2
Phonological skill	Pre-test	1	144.1	<0.001	0.85
	Group	1	79.9	<0.001	0.76
	Error	25			

the groups. Due to the fact that high grades of phonological skill show more competence, this conclusion can be drawn that applying linguistic plays can improve the level of phonological skills in mentally retarded students $\eta^2= 0.85, P<0.001, F_{(1,25)}=79.96$. Second hypothesis states that reading speed of

mentally retarded students who receive linguistic play therapy is more than mentally retarded students of control group.

Table 4 shows the results of covariance test for the variable reading speed.

Considering the achieved data, it can be

Table 4 Covariance analysis after eliminating the effects of pre-test for the variable reading speed

Source of changes	Variable	df	F	P-value	η^2
Reading speed	Pre-test	1	4.53	0.043	0.15
	Group	1	2.89	0.102	0.10

alleged that there is no significant difference between the groups. So, this conclusion can be drawn that applying linguistic plays does not affect the level of reading speed in mentally retarded students $\eta^2= 0.1$, $P=0.102$, $F_{(1,25)}=2.89$). Third hypothesis states that reading comprehension of mentally retarded students

who receive linguistic play therapy is more than mentally retarded students of control group.

Table 5 shows the results of covariance test for the variable reading comprehension.

Considering the achieved data, it can be

Table 5 Covariance analysis after eliminating the effects of pre-test for the variable reading comprehension

Source of changes	Variable	df	F	P-value	η^2
Reading comprehension	Pre-test	1	49.28	<0.001	0.77
	Group	1	2.36	<0.001	0.45

alleged that there is a significant difference between the groups. Due to the fact that high grades of reading comprehension show more competence, this conclusion can be drawn that applying linguistic plays can improve the level of reading comprehension in mentally retarded students $\eta^2= 0.45$, $P<0.001$, $F_{(1,25)}=2.36$).

Discussion

The present study intended to examine the effect of linguistic plays on reading skills of educable mentally retarded students. The achieved findings show that these plays can improve the level of reading comprehension and phonological skills.

First hypothesis was confirmed and proved that phonological skill of mentally retarded students who receive linguistic play therapy is more than mentally retarded students of control group. The results of this research were consistent with the findings of similar researches [8,9,10,12,15,17].

Intervention of this study accompanied by a play paved the way for a more powerful verbal communication between teacher and students. Findings of this study were consistent with Dahmer's [8] research who believed that teacher and students' verbal communication can enhance children's reading skills. This study's

findings also agreed with the researches which approved the effectiveness of phonological awareness teaching to dyslexic students [9], and the researches which confirmed the effectiveness of preliminary teachings in improving the language proficiency of bilingual students [12], and also the studies which showed the deficiencies of untimely teaching of reading to the students who suffer from reading disabilities [17]. This study differs from other similar studies, since it focused on the improvement of phonological awareness through play therapy.

The obtained findings of this study is consistent with the researches which approved the effectiveness of phonological awareness [15], since the present study focused on enhancing the level of phonological awareness, phonemic awareness, and finally reading abilities of educable mentally retarded students through employing play therapy.

Second hypothesis which stated that reading speed of mentally retarded students who receive linguistic play therapy is more than mentally retarded students of control group was rejected ($P\leq 0.102$). So, applying play therapy cannot be effective in the improvement of reading speed, and the observed difference was derived from sampling error. Low

speed of reading in these students can be the consequence of their slow speed of information processing and performing which caused slow reactions. The findings of this study, associated with the reading speed, were inconsistent with some studies [9,14] which may be the result of different participants, since the participants of the current study were educable mentally retarded students which cannot be considered equal to normal students or even dyslexic students, but the participants of those inconsistent researches were dyslexic students. Considering basic definitions, dyslexic students' performance is equal to or even more than normal children [23,9,14,17]. Owing to the fact that information processing and reaction speed is in association with intellectual performance, the existing inconsistency in the reading speed of mentally retarded students can be justified. It can be also alleged that the intervention plan of this research for assessing reading speed was not adequately designed, and sufficient opportunities were not supplied to stimulate reading speed. Therefore, the upcoming researches should focus on phonological plays in order to increase reading speed. Rejection of the second hypothesis is an indication of the fact that reading speed enhancement in mentally retarded students is needed to new methods specifically planned for these students.

Third hypothesis which states that reading comprehension of mentally retarded students who receive linguistic play therapy is more than mentally retarded students of control group was confirmed ($P \leq 0.001$). Findings of this study were consistent with the researches which examined the effect of phonological skills improvement on the selection of appropriate method for dealing with symbols and encoded figures [9,15]. It proved that playing can stimulate children to sufficiently decode the vocabularies and thus perceive the meaning.

As the reviewed literature demonstrate, phonological and reading skills can be improved through various linguistic trainings which were all based on phonological awareness. This study used an innovative method and deployed plays in order to increase reading and phonological

awareness and comprehension.

Conclusion

The present study aimed to assess the effectiveness of interventional methods in enhancing the level of reading skills due to their great importance and attractiveness. This study introduced an innovative and creative model of linguistic play therapy in order to be applied in specialized school for mentally retarded children with specific needs. Scholars, psychologists and rehabilitation experts can use this method to help the children. It seems that deploying this method is more influential than direct teachings, since children are all interested in playing and can be motivated to learn more through this approach. They can even concentrate more when they learn through playing. So, this method is not accompanied by tensions, limitations, dangers and side effects of educational environments, while it is not expensive and difficult to use.

So far some researches, conducted by Zare and Ahmadi [27] and Pazhouhesh Shourabi [28], investigated the effect of play therapy on behavioral and emotional problems, thus the current study assessed linguistic and educational influences of play therapy which can bring about new ideas for scholars, instructors, and researchers to be capable of improving linguistic competence of mentally retarded students by means of play therapy. This conclusion can be also drawn that direct methods are not as effective as play therapy, since these students have passed preschool programs, but they still have to deal with some adversities in reading. Linguistic teachings can be considered as an appropriate substitute in order to improve the level of reading skills. Thus it can be concluded that linguistic plays are influential in enhancing reading skills in educable mentally retarded students.

During the process of conducting each study, there are some constraints which may bring about some difficulties or threaten internal and external validity of the research. This study was not an exception and faced some limitations which can be explained in the

following manner:

It was limited to male students, since male researchers were not allowed to be present at female schools. Target population of the research was constricted to the students of second grade of elementary school in Mashhad and the participants were not chosen randomly. So, the achieved findings cannot be generalized to all students. Lack of interventional groups could bring about threatening effects of reviewed literature on the results. Two participants were omitted during the process of research implementation which can be considered as a limitation for the research.

It is expected that other researchers decrease the aforementioned constraints in future studies.

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Contributions

Study design: SM, AN

Data collection and analysis: MA

Manuscript preparation: HM, SE

Conflict of Interest

"The authors declare that they have no competing interests."

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