

## The Effects of Instructional and Motivational Self-talk on Learning a Dart Throwing Skill in Children with Mild Mental Retardation

\* Bahare Soleymani Tappesari <sup>1</sup>, Tayebeh Baniyasi <sup>2</sup>, Zahra Chaharbaghi <sup>3</sup>, Fateme Adib Chamachaei <sup>4</sup>

<sup>1</sup> Assistant Professor, Adib Mazandaran Institute of Higher Education, Sari, Iran.

<sup>2</sup> M.Sc., Department of Educational Psychology, University of Tehran, Faculty of Psychology, Tehran, Iran.

<sup>3</sup> Visiting Scholar, Department of Public Health, Kinesiology Indiana University, USA.

<sup>4</sup> M.Sc Student, Department of Sport Management, Sari Branch, Islamic Azad University, Sari, Iran.

### Abstract

**Background:** The aim of this study was to investigate the effects of instructional and motivational self-talk on learning a dart throwing skill in children with mild mental retardation.

**Method:** The subjects included 45 children with mild mental retardation who were equally divided into three groups of instructional self-talk, motivational self-talk, and control. The motor task included darts throwing skill in which children's darts throwing scores as well as self-efficacy were measured as dependent variables. The Participants performed pre-test (including 15 throws), acquisition phase (including five 5-minute practice blocks), and retention test (including 15 throws). The participants in the instructional self-talk group were asked to repeat the "Center-Target" phase before each attempt during the training phase and then throw the dart. Those in the motivational self-talk group were asked to use a motivational phrase "I Can" before the throw. The children in the control group followed a similar protocol but were not given any self-talk instructions.

**Results:** The results showed that mentally retarded children who practiced instructional self-talk had better performance than those who used motivational self-talk and the control group in throwing darts in the retention test ( $P=0.000$ ). Moreover, the motivational self-talk group performed better than the control group in dart throwing in the retention test ( $P=0.000$ ). Finally, the results showed that children in the instructional and motivational self-talk groups reported higher self-efficacy scores than those in the control group in the retention test ( $P=0.000$ ), while no significant difference was observed between the instructional and motivational self-talk groups. ( $P=0.527$ )

**Conclusion:** The results of this study show that children with mild mental retardation are able to learn motor skills through self-talk.

**Key Words:** Instructional self-talk, Mental retardation, Motivational self-talk, Self-efficacy.

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### \*Corresponding Author:

Bahare Soleymani Tappesari, Assistant Professor, Adib Mazandaran Institute of Higher Education, Sari, Iran.  
Email: soleymani.bahare@yahoo.com

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## 1- INTRODUCTION

There are several cognitive approaches that can improve the performance of athletes and their mental and emotional patterns. These include observing the pattern (1-5), focusing attention (7-8), and illustration (9). One of the mental techniques that have been considered in the literature to improve the performance of athletes is self-talk. Research has shown that sports coaches make extensive use of self-talk strategies to learn and increase motivation in learners (9-12).

There are different categories for self-talk, according to which self-talk is divided into two types: motivational and instructional. Motivational function facilitates performance by increasing self-confidence and motivation, reducing anxiety, and increasing effort, with low energy costs and the emergence of positive performance states. Instructional self-talk improves performance by focusing attention and technical information and appropriate execution strategies. Numerous studies have compared the effectiveness of different types of self-talk on the performance of different motor tasks in various conditions and athletes. The results of these studies have shown that self-talk improves sports performance (9-12). For example, Dana, Vaez Mousavi, and Mokhtari (13) showed that both instructional and motivational self-talk about control conditions improved adolescent's performance in a Basketball skill. However, motivational self-talk led to better performance than instructional self-talk. In another study, Dana, Vaez Mousavi, and Mokhtari (14) showed that the effectiveness of instructional and motivational self-talk depends on the type of motor task.

One of the theories proposed to explain the effect of self-talk is Bandura's theory of self-efficacy (15). According to this theory, the reason for the effects of self-

talk on athletes' performance is to increase their self-efficacy. Bandura considers self-efficacy as a sense of competence and adequacy and ability to cope with various issues. He believes that people with strong self-efficacy are more diligent in doing tasks than people with weak beliefs, and naturally perform better at tasks.

However, few studies have examined the effects of using self-talk on improving sport performance in children with mental and motor disorders. For example, Bakhtiari et al. (17) showed that instructional self-talk leads to improved motor function in children with ADHD. However, the effects of self-talk on children with mental disabilities have not been studied. Children with mental disabilities generally have lower levels of intelligence and cognitive function than healthy children and exhibit different social behaviors (18-19). Some studies have shown that healthy children have better ability to perform motor skills than children with mental disabilities (7). Therefore, due to the lack of research information on the use of self-talk in improving the athletic performance of mentally retarded children, the aim of this study was to investigate the effects of instructional and motivational self-talk on learning a dart shooting skill in mentally retarded children.

## 2- METHOD

The method of the present study was causal-comparative.

### 2-1. Participants

The subjects of this study included 45 children with mild mental disabilities ranging in age from 12 to 16 years old who were selected from special schools and were randomly and equally divided into three groups: instructional self-talk, motivational self-talk and control. Children had mild mental disabilities with an IQ of 50-70.

## 2-2. Motor task

A dart throwing skill was selected as the motor task. To do this, a standard dart launcher made in China, model GDB 61 and standard darts were used. In this task, the participant started throwing the dart towards the board while placing his foot behind a line with a standard distance from the dart board, which was 2.37 meters. The goal of this task was to throw the dart towards the board to get the highest possible score. In this task, the location of the dart hit was recorded on the dart screen, which was a score between zero and 10.

## 2-3. Procedure

First, a demographic information sheet was completed for each child by referring to the child's record at school. Children were tested separately in a room for this study in the respective schools. Before starting the protocol, the experimenter provided the initial description of the present study to the participants. They were, then, taught how to throw darts, the rules of throwing darts, and how to score points by an experienced instructor. To get familiarized with the environment of performing the protocol and movement task, they were asked to practice darts throwing skills five times. Then, in the pretest, the children practiced dart throwing 15 times without any special instructions. Pre-test scores were recorded and based on these scores, the participants in the groups of instructional self-talk, motivational self-talk, and control were matched. Then, in the acquisition phase, they practiced dart throwing for 30 minutes. The acquisition phase was divided into six 5-minute phases in which the subjects were given a five-minute break between each phase. This was done to prevent fatigue. To add self-talk instructions to the research protocol, the participants in the instructional self-talk group were asked to repeat the "center-target" training phrase before each attempt and then launch. Those in the

motivational self-talk group were asked to use the motivational phrase "I can" before the performance. The children in the control group followed a similar protocol but were not given any self-talk instructions. One day after the acquisition test, the children participated in a memorization test that included performing a dart throwing skill for 15 times. No self-talk instructions were provided before and during the retention test. In order to test the participants' self-efficacy, a self-efficacy test was taken from children before pre-test and retention test. In the self-efficacy test, children were asked to choose a number from zero to one hundred (with a 10-point interval) that indicated their perception of their ability to score 10 in subsequent throws.

## 2-4. Data analysis

In the present study, the dependent variables included dart throwing score (between zero and 10) and self-efficacy score in pre-test and retention test. Descriptive statistics including mean and standard deviation (SD) were used to describe the variables. Also, one-way analysis of variance (ANOVA) was used to compare these variables in different research groups. Tukey post hoc test was used as a post hoc test. The level of statistical significance was considered as  $P < 0.05$ .

## 3- RESULTS

The demographic characteristics of the participants are given in **Table 1**.

**Tables 2** and **Fig. 1** and **2** show the performance of mentally retarded children in pre-test and retention tests on dart-throwing score variables and self-efficacy.

The results of analysis of variance in pre-test and retention test are presented in **Table 3**.

Regarding dart throwing, the results of ANOVA showed that there was no significant difference between the groups

in the pre-test ( $F = 0.96, P = 0.864$ ). In the retention test, the results showed that there was a significant difference between the groups ( $F = 14.07, p < 0.001$ ). The results of Tukey post hoc test showed that the

instructional self-talk group performed better than all other groups. Also, the motivational self-talk group performed better than the control group.

**Table-1:** Demographic characteristics of the participants

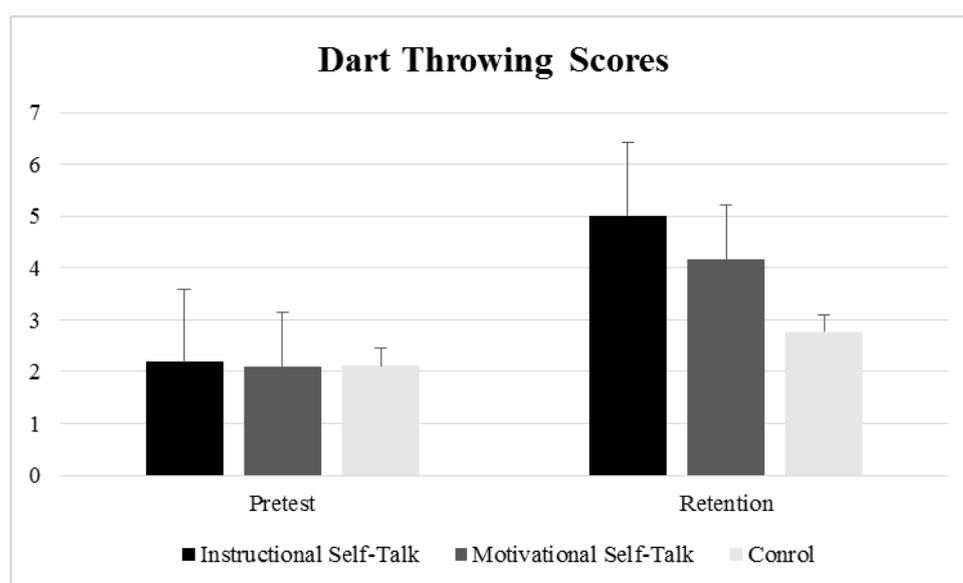
Variable	Age	Height	Weight	BMI
Mean	13.46	152.37	53.05	21.12
SD	1.28	15.77	20.16	3.95

**Table-2:** Mean and SDs of dart throwing and self-efficacy of the research groups in pre-test and retention test

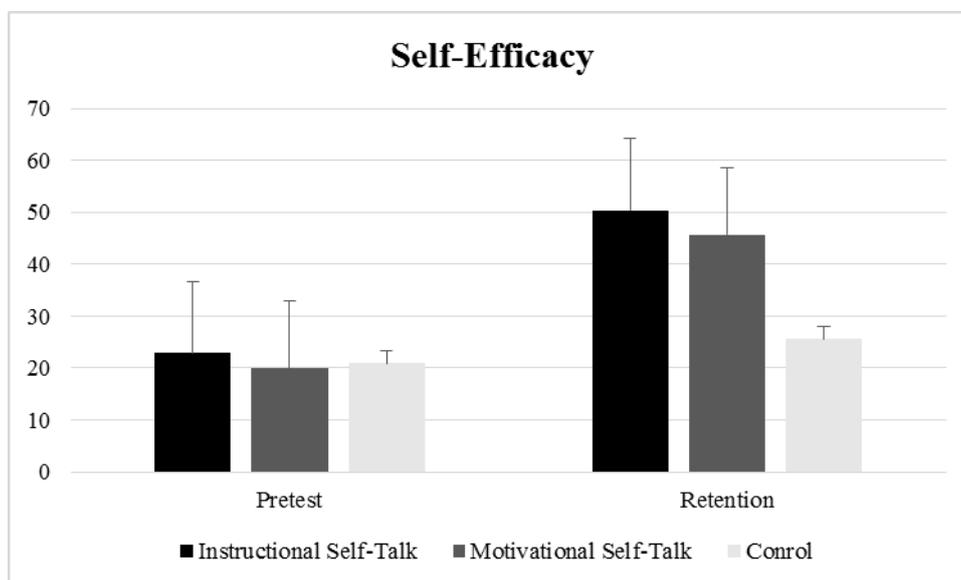
Item		Instructional self-talk	Motivational self-talk	Control
Dart throwing	Pretest	2.19 ± 2.50	2.09 ± 2.90	2.12 ± 2.39
	Posttest	5.01 ± 2.08	4.18 ± 3.29	2.77 ± 3.81
Self-efficacy	Pretest	22.90 ± 10.75	19.95 ± 12.65	20.90 ± 10.75
	Posttest	5.039 ± 20.45	45.67 ± 18.96	25.64 ± 14.97

**Table-3:** Results of analysis of variance in pre-test and retention test

Item		Sum of Squares	df	Mean Square	F	Sig
Dart throwing	Pretest	7.83	2	2.88	0.96	0.864
	Posttest	142.84	2	47.42	14.07	0.000
Self-efficacy	Pretest	9.39	2	3.11	1.22	0.548
	Posttest	158.11	2	52.89	13.96	0.000



**Fig. 1:** Performance of mentally retarded children in dart throwing in the pre-test and retention test



**Fig. 2:** Scores of mentally retarded children in self-efficacy variable in the pre-test and retention test

Regarding dart throwing, the results of ANOVA showed that there was no significant difference between the groups in the pre-test ( $F = 0.96$ ,  $P = 0.864$ ). In the retention test, the results showed that there was a significant difference between the groups ( $F = 14.07$ ,  $p < 0.001$ ). The results of Tukey post hoc test showed that the instructional self-talk group performed better than all other groups. Also, the motivational self-talk group performed better than the control group.

Regarding self-efficacy, the results of analysis of variance showed that there was no significant difference between the groups in the pre-test ( $F = 1.22$ ,  $p = 0.548$ ). In retention test, the results of analysis of variance showed that there was a significant difference between the groups ( $F = 13.96$ ,  $p < 0.001$ ). The results of Tukey post hoc test showed that the instructional and motivational self-talk groups had higher self-efficacy than the control group. However, there was no significant difference between the

instructional and motivational self-talk groups.

#### 4- DISCUSSION

This study was conducted to investigate the effects of instructional and motivational self-talk on learning dart-throwing skill in children with mild mental retardation. The results showed that mentally retarded children who practiced with instructional self-talk instruction performed significantly better in throwing darts in the retention test than those who practiced with motivational self-talk and also the control group. Moreover, the motivational self-talk group had better performance in the retention test than the control group. These results indicated that mentally retarded children have been able to use instructional and motivational self-talk and have improved their post-test performance. The results of this study are indirectly consistent with the results of previous research on the effects of self-talk on motor function in healthy children (9-

13). The results of the present study add new findings to the literature in this field showing that children with mental disabilities have the cognitive mechanisms needed to learn new skills using instructional self-talk guides. A qualitative study on self-talk revealed that self-talk can aid performance by up-regulating or downregulating self-confidence, by promoting mastery goals, performance-approach goals and performance-avoidance goals, and by promoting intrinsic motivation (9).

The second part of the study showed that in the retention test, mentally retarded children in the instructional and motivational self-talk groups showed higher self-efficacy scores than the control group. This result is consistent with Bandura's theory of self-efficacy (15) and indicates that self-talk on motor performance has increased self-efficacy. Bandura views verbal encouragement as a source of self-efficacy that has something to do with self-talk. Verbal encouragement on the part of the individual in the form of educational self-talk can help increase a sense of self-efficacy while practicing and learning the skill. Previous research has also shown that increased self-efficacy reduces anxiety and performance anxiety. Therefore, it seems that self-efficacy facilitates learning by reducing self-focus.

## 5- CONCLUSION

In sum, the results of this study show that mentally retarded children benefit from self-talk to learn a new motor skill. This result may indicate that these children have the mechanisms needed to learn new skills through self-talk. Future studies should focus on learning new motor skills through other self-talks in other disabilities.

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