



# The Effects of Instructional and Motivational Self-Talk on Overt and Covert Levels of Motor Performance

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## Abstract

The aim of this research is to study the effects of instructional and motivational self-talk on the overt and covert levels of motor performance of dart throwing. Fifty seven male non-athlete right-handed university students with age range of 24/68 year old voluntarily participated in this research and they were randomly put into three groups of instructional, motivational and control group. The performance of dart throwing (five groups of three efforts) of groups in three levels of overt, covert and control were measured. In overt level of self-talk, the participants used the phrase of I CAN with loud voice for motivational self-talk, and they used the phrase of Center-Aim for instructional self-talk before performing their duties. In covert level of self-talk these phrases were used with internal voices, but in control level no phrases of self-talk were used. The results of statistical analysis showed that the overt instructional self-talk has a significant effect on the performance of dart throwing, but the overt motivational self-talk did not have an effect on the performance. But the covert instructional and motivational self-talk did not have an effect on the performance. Also the results showed that the overt motivational self-talk improves the performance of dart throwing in comparison to covert motivational self-talk. In overt instructional self-talk group the performance was better than the covert instructional self-talk group as well. It seems that it is better that the coaches encourage the players in using self-talk in overt situations than the covert ones.

**Keywords:** Instructional Self-talk; Motivational Self-talk; Overt and Covert; Dart Throwing

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## 1. Introduction

Gaining success in sport competitions has turned into a value, and it has an influential effect on the life and spirit of each and every athlete, thus in all levels the athletes use different training methods for achieving their sport potentials. They use different sports sciences such as biomechanics, physiology, nutrition, and sports psychology in order to design the appropriate trainings for achieving success (Hall, 2001). Also athletes are more aware than before and they realized that thoughts and feelings affect their sports activities and they also realized that several

factors such as personal problems, sport needs, fear of failure, and emotional issues create concerns and they act as a barrier in front of the athlete and achieving success, thus different mental and physical interventions are implemented on the athlete.

From past to present, different interventional methods have been used for improving the performance, satisfaction, and personal growth of athletes. Along with this, different cognitive solutions such as self-talk, target selecting, mental imagery, relaxation training, and controlling motivation have been proposed and they have been at the center of attention in order to help promote the mental and thought patterns of the athletes.

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Self-talk is one of the special kinds of interventional methods. This method is a strategic method and it refers to something that the person says out loud or with his/her internal voice to him/herself (Sellars, 1997).

Researches show that the athletes widely use the methods of self-talk for producing and increasing the motivation and creating signs for physical performance (Weinberg and et al, 1992). Furthermore, Zinnser, Bunker, and Williams (2006) stated that through acquiring better skills the self-talk improves the increase of self-confidence, self-efficacy, amendment of ineffective habits, and control of performance efforts. Weinberg and Gould (2003) also suggested that the athletes should use self-talk methods in different ways such as gaining skills, and learning a new skill, removing a bad habit, acquiring motivation, controlling attention, change of behavior, and increase of self-confidence. Thus, the self-talk could be used in different situations and for different aims. Several categories are offered for self-talk, which based on one of them the self-talk is divided into two kinds of motivational and instructional. Several researches used different kinds of self-talk for comparing the effectiveness of each on the duties, situations and different athletes. According to the statements of some of the researchers that the motivational self-talk facilitates the performance through induce of more efforts and creation of a positive temperament and self-confidence, while in instructional self-talk, the instructional remarks related to duty, improves the performance by calling preferred actions of concentration and implementation strategy (Hardy et al., 1996).

Several researches studied the effects of different kinds of self-talk before the sports duties or competitions, but the results of such studies are contradictory. Some of the researches reported the improvement of performance in sports such as swimming, 100-meter run, golf and tennis through instructional self-talk. (Harvey, 2000; Landin, 1990; Mallet, 1997; Rushall, 1984). Others stated that both types of self-talk improve the performance (Rushall, 1988).

Along with classification of motivational and instructional self-talk, Theodorakis and et al (2000) observed that the instructional self-talk is more useful for delicate tasks (that need accuracy), while motivational self-talk is more useful for gross motor skills (that need strength and endurance). Hardy, Oliver and Tod (2009) stated the matching theory, which based on that the instructional self-talk is more effective for tasks that need accuracy and scheduling, while motivational self-talk is more effective for tasks that need strength and endurance. But the research results of Hatzigeorgiadis et al (2004, 2009) showed that the instructional self-talk is more effective than the

motivational self-talk for tasks that need accuracy and delicacy, in contrast with that the motivational self-talk is recommended for gross tasks that need strength and accuracy, but it could also be useful for tasks that need accuracy. In general, these findings suggest that different kinds of self-talk have different effects on the performance, based on the task and the type of used self-talk. Hatzigeorgiadis, Theodorakis and Zourbanos (2007) suggested that if the different signs of self-talk have different effects on the performance, it is better to use different kinds of tasks for different functions. One main aspect of formation of a clear understanding from the potential applicable concepts of intervention of self-talk is the understanding of the nature of self-talk. The nature of self-talk dates back to two decades ago and it was suggested by Van Noorde (1984). Van Noorde believes that generally several aspects are along with self-talk, especially in the field of sports that include dimensions of capacity, overt and covert dimensions, self-choice, motivational commentary, repetition and periodicity, and dimension of functions of self-talk. It is better to pay attention to this point that despite of the fact that each of the dimension are separately offered, a substantial overlap exists between the dimensions (Hardy, 2006). One of these dimensions that could be effective on the self-talk and which is the aim of study in this research is the overt and covert dimension of self-talk. But by reviewing the literature of self-talk in sports we can see that most of the researches have not reported the difference between the overt and covert self-talk. In this way Hardy (2006) concluded that a direct comparison between the overt and covert self-talk should be conducted in order to clarify this issue. This dimension of self-talk includes the overt or covert conversation and it is related with this issue that how an athlete could state his/her statements (Hardy, 2006). According to Theodorakis, Weinberg, Natsis, Douma and Kazakas (2000) self-talk refer to something which individuals say to themselves in their minds with loud voice or internal voice.

Defenition of Theodorakis and et al shows two important dimensions of self-talk. Firstly, self-talk could be overt or covert. Secondly, self-talk is consisted of statements which the person says to him/herself and not the people around him/her. Overt self-talk refers to a method that the person talks to him/herself and the people around him/her become aware of them, but the covert self-talk is the short voice produced in the person's mind and it is not audible by the others (Theodorakis et al., 2000). Despite of using a particular kind of self-talk (overt or covert) learning the words happen in a similar pace and pattern. Although strange and interesting differences exist between these two types of self-talk. From the point of audio pronunciation of letters and words, several

examples are available showing the difference between these two types of self-talk. For example, audio dimensions of overt self-talk are absent in covert self-talk (MacKay, 1992).

MacKay stated that people are able to change the modulation and loudness of their statements while they are using overt self-talk, but it is impossible in covert self-talk. In this way, in overt self-talk a person could successfully put him/her in the shoes of others, while this is impossible in covert self-talk. The other difference between the overt and covert self-talk is the act of twisting the tongue while expressing the words. When a person states some words in the form of overt self-talk he/she does this with a particular speed by the twist of the tongue, but when a person does this with covert self-talk the act of twisting the tongue is not that easy and this is under the influence of several differences existing in the structural combination of forms related to the self-talk (MacKay, 1992).

Thus according to the effect of instructional and motivational self-talk on the performance, and also based on the overlap between different dimensions of self-talk and effectiveness of these dimensions on the impact of self-talk on the performance, this research tried to not only determine the effect of instructional and motivational self-talk on the performance of dart throwing but also tried to study the overt and covert dimensions of self-talk which seemed effective on its effectiveness.

## 2. Materials and Methods

The current research methodology is semi-empirical and it studies the effect of instructional and motivational overt and covert self-talk on the motor performance of dart throwing. The research design is a two factorial 2×3 combinational design (self-talk in three levels of instructional, motivational, and control and in two levels of overt and covert) with repetitive measuring. This research includes two experimental groups and one control group, and participants were organized randomly in the mentioned groups.

### 2.1 Participants

The research participants include all of the male, non-athlete, right-handed university students who did not have any experience in dart throwing. The sample size was adequate based on the statistical power of 0.8 (common power in behavioral sciences) and effect size of 0.62 which is reported by Myers for cognitive solutions on the motor performance (Quoted by Boroujeni, 2011) in level of 95% of confidence with 19 individuals.

### 2.2 Measuring tools

The current research measuring tools include the standard test of dart throwing, verification protocol

manipulation, and demographic questionnaire which are explained with details.

1. Board of dart throwing: Standard board of dart throwing made in China, JB-D6-1 Model with dimensions of 18×1.2 inch and small arrow of dart throwing: made in China. Tournament brand, length of 12cm and weight of 10 grams.
2. Verification protocol manipulation: This protocol discusses the use of self-talk by the groups. In fact, this protocol builds this trust that the created experimental conditions by the researcher are correct (Hardy, 2005). The participants in experimental groups were invited to show the followings in the 10-scale value (1) How many times did they use the phrase of selective self-talk, (2) Did they use other types of self-talk, (3) If so, what did they tell to themselves, (4) If exists how often did they use them. The definition of self-talk was described for the participants of control group and they were asked to show the followings in a 10-scale value: (1) Do they use all kinds of self-talk, (2) If so what do they tell to themselves, (3) If exists how often do they use them (Hatzigeorgiadis et al., 2008).
3. Personal-sports information questionnaire: In the section of personal information this questionnaire includes questions about the name and surname, age, superior hand, history of neurological muscular diseases. In the section of sports information this questionnaire includes questions about the history of sport in dart throwing field.

### 2.3 Procedure

According to the information resulted from the questionnaires, 57 participants were chosen from the healthy, right-handed, non-experienced individuals in dart throwing and they were randomly put into two groups of instructional and motivational and one group of control.

Before starting the study, a few meetings were held with the coach in order to explain the methodology and method of conducting the test to him. Firstly in one session the method of dart throwing, regulations of dart throwing and method of scoring were explained to the participants by a coach specialist. Then each of the participants threw 50 darts to the dart board in order to learn it. In dart throwing the participants learned to throw darts according to the laws and regulations of dart federation, and they should throw darts by their superior hand from the distance of 2.37 meter from the dart board which had the height of 1.73 from the ground to the center of the board. At first they tried 15 training efforts. Then a pre-test was conducted. Based on the fact that there was no instruction for using self-talk in the pre-test, the

dart throwing was measured without self-talk in instructional and control groups. Then they were asked to perform 15-dart throwing including 5 groups of 3 efforts, because the test in the previous researches has shown that 15 times of dart throwing let the participants to perform the duty without exhaustion (Van Raalte, 1995). In the process of data collection the participants were asked to perform 15 throwing for warm-up. The participants performed three groups of five efforts and each group includes three efforts with 5-minute break between each group efforts for dart throwing test. This 5-minute break is included in order to let the participants reset and they do not become exhausted (Van Raalte, 1995). Participants of the experimental groups become acquainted with the self-talk and method of using them before performing the act. All of the participants of the experimental groups were asked not to talk with their teammates during performing dart throwing (Chroni, 2007).

Based on the timetable, each group of participants separately attended in the gym. After warming up, the participants of instructional self-talk group were asked to repeat the instructional phrase of center-aim with loud voice in a way that the researcher could hear it. Then in covert self-talk situation the participants of this group learned to repeat the instructional phrase of center-aim in their minds before each of the attempts, in a way that the researcher could not hear it. The participants of motivational self-talk group were asked to use the motivational phrase of I can in two overt and covert forms in the similar situation. In control condition, before and during the performance no phrase was used. The participants performed three groups of five efforts, and each group includes three efforts, with 5-minute break between the group efforts. The scoring method was according to the distance of darts being thrown

from the center of the board. In other words, each of the holes of darts being thrown was measured from the center of the aim. For darts being thrown outside the board the distance of border of the board from the center of the aim was recorded, which is the maximum distance. Immediately after ending the tests the participants completed the verification protocol manipulation questionnaire.

#### 2.4 Data analysis

At first the research variables were described by the use of indicators of descriptive statistics, mean, standard deviation, tale and diagrams. Also statistical analyses of covariance and Kolmogorov-Smirnov were used for determining the homology and congruence of the groups. Based on the fact that data distribution was not normal, the one-way ANOVA test was used and Tukey test was used for determining the difference between groups. Also dependent t-test was used for comparing the experimental groups separately in overt and covert conditions. The significance level of the current research is 0.05.

### 3. Results

Although the data resulted from the error of dart throwing in three levels of instructional, motivational and control group are not normally distributed, because the ANOVA test is resistant against the violation of assumption of normality in the condition of 2-domain of the assumptions, thus this statistical method was used for testing the hypotheses. Levin test results showed that the assumption of homogeneity of variance with  $p = .852$  is set. Thus, the analysis of variance in table 1 showed that a significant difference exists between the error of dart throwing of the overt instructional self-talk group and covert motivational self-talk group and control group.  $P < 0.05$ ,  $F(2, 57) = 4.76$ .

**Table 1.** One-way ANOVA test for dart throwing in overt self-talk conditions.

Variable	Difference Location	SS	df	MS	F	P
Dart throwing	Intragroup	16.91	2	8.45	4.76	0.012
	Intergroup	101.23	57	1.77		

Tukey test was used for determining the difference resource and final test of the hypothesis. The results in table 2 showed that a significant difference exists between the mean of error of dart throwing in overt instructional self-talk group

(5.44) and mean of error of dart throwing in control group (6.71) ( $p < 0.05$ ). Which means that overt instructional self-talk leads to improve in performance of dart throwing.

**Table 2.** Results of 2 by 2 comparing of groups of overt instructional self-talk, overt motivational self-talk and control group by the use of Tukey test.

Variable	Self-talk groups	P
Error of dart throwing	Overt instructional self- talk	0.666
	Overt motivational self-talk Control	0.011
	Overt motivational self-talk	0.666
	Overt instructional self-talk Control	0.092

Also results of table 2 showed that no significant difference exists between the mean of error of dart throwing in overt motivational self-talk group (5.81) and mean of error of dart throwing in control group (6.71) ( $p=0.092$ ). Which means that the overt motivational self-talk does not have any significant effect on the performance of dart throwing. Also the results of data analysis showed that no significant difference exists between the mean of error of dart throwing in overt motivational group (5.81) and

mean of error of dart throwing in overt instructional group (5.44) ( $p=0.666$ ).

Also the variance analysis results in table 3 show that no significant difference exists between the error of dart throwing in covert instructional self-talk group, covert motivational self-talk group and control group  $p=0.183$ ,  $F(2, 57)=1.75$ , which means that covert instructional and motivational self-talk do not have significant effect on the performance of dart throwing.

**Table 3.** Results of one-way ANOVA test of dart throwing data in covert self-talk conditions.

Variable	Difference Location	SS	df	MS	F	P
Dart throwing	Intragroup	6.86	2	3.43	1.75	0.183
	Intergroup	111.6	57	1.96		

But the results of dependent t-test for data analyzing of motivational self-talk in two levels of overt and covert 8 showed that a significant difference exists between the mean of error of dart throwing in overt motivational self-talk group (5.81) and covert motivational self-talk group (6.05) ( $t_{(19)}=-2.86$ ,  $p<0.05$ ). In other words, the overt motivational self-talk improved the performance of dart throwing compared to the covert motivational self-talk.

Also the results of dependent t-test for data analyzing of instructional self-talk in two levels of overt and covert showed that a significant difference exists between the mean of error of dart throwing in overt instructional self-talk group (5.44) and covert instructional self-talk group (5.94) ( $t_{(19)}=-6.58$ ,  $p<0.05$ ). In other words, overt instructional self-talk improved the performance of dart throwing compared to the covert instructional self-talk.

#### 4. Discussion and Conclusion

Generally researches have supported the useful effects of self-talk on the learning and motor performance in different fields such as athletes in research of Perkos et al (2002); Skilled individuals in research of Landin and Hebert (1999); Learned skills in research of Harvey and et al (2002); and new skills in research of Hatzigeorgiadis et al (2004). Also researches in different sports fields such as sprint runners in research of Mallet and Hanrahan (1997); Skiing in research of Rushall et al (1998); Tennis in research of Landin and Hebert (1999); and passing, shooting and dribbling in basketball in research of Perkos and Chroni (2007), and Theodorakis et al (2001); dart throwing in research of Van Raalte (1995), and task of producing strength in research of Theodorakis (200) showed that self-talk results in improvement of performance. For example, in a research named Enhancing performance and skill acquisition in novice basketball players with instructional self-

talk, Perkos, Thodorakis, and Chroni (2002) studied the effect of this self-talk on the performance of three tasks of passing, free throwing and dribbling. Results showed that the effect of instructional self-talk during performing passing and dribbling is more than free throwing, and participants use more self-talk during performing these two tasks than free throwing. Researches stated the instructional self-talk as an appropriate and effective tool for skill acquisition and improving skills which are in a lower level of complexity. Hardy et al (1996) considered self-talk as not only a facilitating psychological skill for performance but also as a solution for dealing with negative mental pressures which can be destructive for the performance. This highlights the self-talk as a potential resource for reaching the peak of performance (Hardy et al., 2009). The current research results showed that the overt instructional self-talk leads to the improvement of performance of dart throwing. The current research results also confirmed that self-talk and specially the overt instructional one is an effective solution for improving the performance. But the overt motivational self-talk did not lead to improve of performance of dart throwing. In explaining these results we could refer to the theory of alignment of self-talk with task requirements.

According to this theory, instructional self-talk is effective for tasks which need accuracy and scheduling, while motivational self-talk is more effective for tasks which need strength and endurance (Hardy, Oliver & Tod, 2009). Along with this, research results of Hatzigeorgiadis et al (2004, 2009) showed that instructional self-talk is more effective than the motivational self-talk for tasks which need accuracy and delicacy, in contrast, motivational self-talk is recommended for gross tasks which need strength and accuracy (Hatzigeorgiadis et al, 2004; 2009). According to the current research results, the current research confirms this dimension of the hypothesis that

instructional self-talk is effective for tasks which need accuracy and scheduling, because dart throwing is a delicate task. Thus, it not only confirms a part of theory of alignment of self-talk with task requirements but also it is consistent with the research results of Hatzigeorgiadis and et al (2004 & 2009).

Also a few researches separately studied the overt self-talk (such as Van Raalte, Cornelius, Brewer, & Hatton, 2000) and covert self-talk (Hardy et al., 2005). As a result the subject that which of the overt or covert self-talks is more effective on the sports performance was limitedly studied (Hardy et al., 2006). The current research results showed that overt instructional self-talk improved the performance of dart throwing compared to the covert motivational self-talk. Also the overt instructional self-talk had a better effect on the improvement of performance of dart throwing than the covert instructional self-talk. As it was mentioned in the previous part although in comparison to the control conditions the performance of dart throwing did not improve by covert self-talk, it improved by overt self-talk. Before discussing the comparison between overt and covert self-talk it is necessary to point to a statistical matter for explaining these inconsistent results. Statistics are based on odds, and they are sensitive toward change of variance of the dependent variable in each level of the independent variable. Thus the possibility of confronting these conditions is probable based on the odds. Also comparison of overt and covert self-talk is based on the research project of intergroup section. This kind of project is more sensitive toward the small differences than the intragroup project. Researchers (Ming & Marten, 1996) at first preferred the overt self-talk, because it guarantees them that the participants really have used the self-talk (Van Raalte et al., 1994, 2000).

Despite this, the feedback from the participants showed that using self-talk causes distraction (Van Raalte et al., 2000). Ultimately in most of the studies it was recommended that the participants use covert self-talk (Hardy et al., 2005). The current research results were not consistent with the theory of linguistic autonomy (1986) of Vigotsky. Vigotsky at least distinguished between two forms of language, social speech and private speech (such as overt self-talk). The Vigotsky's theory was one of the first speech autonomies which distinguished between the speech for others and speech for oneself. Based on the Vigotsky's theory, the overt self-talk connects the social speech and covert self-talk. Thus as a child grow he/she increasingly use self-talk which is shorter and more internal. In fact, the covert self-talk has more complex levels of psychological functions than the overt self-talk. But this does not mean that adults never use overt self-

talk in their daily lives but they use them in special conditions. Vigotsky not only suggest that overt and covert self-talk are similar, because both of them are self-speech but also suggests that they have truncation-structural similarities (Hardy, 2006). In order to explain this result we can refer to several reasons. Firstly, Landin et al (1994) proposed the importance of matching the self-talk with requirements of each task. Landin believed that the effectiveness of self-talk depends on its shortness, accuracy and precision of the task. Thus it is probable that based on the nature of the task of dart throwing, different results be obtained. Secondly, dart throwing requires coordination between the physical components (muscle contraction) and mental components (making decision for choosing the location of hitting the dart board) (Edwards and et al., 2008). Thus since the covert self-talk is internal and dart throwing also has more information processing components an interference between these two processes is probable and maybe the participants could not well allocate the self-talk phrase to the skill of dart throwing. Also basically self-talk has a self-regulation function. Also the current research results are consistent with the research results of Bahari et al (2012). In a research Bahari (2012) studied the effect of overt and covert self-talk on the motivation and motor performance of individuals having internal and external locus of control. Results showed that overt self-talk results in improvement of dart throwing and task of producing strength. Although covert self-talk results in the improvement of performance of task of producing strength, it did not have any effect on the performance of dart throwing. Also in a research, Hatzigeorgiadis et al (2011) showed that choosing the overtness of self-talk by the coach or the athlete is not a significant moderator for the correlation between self-talk and performance. Surveying the studies about covert and overt self-talk showed that researchers mainly use overt self-talk for studying. While athletes prefer the covert self-talk. Despite this, one of the benefits of overt self-talk, especially in basic levels of using the self-talk is that the coach can observe that whether the verbal cues of self-talk are used well or not. If not, the coach can adjust the verbal cues or the scheduling of using cues (Hardy et al., 2009). Thus, according to the current research results it is better to use the overt self-talk for improvement of performance.

There are interesting questions available about the current research methodology which is discussed at the end of the discussion. In the current research novice participants and new tasks were used, because it seems that the novice participants benefit more from the self-talk than the experienced athletes (Hatzigeorgiadis et al., 2011).

Also according to the meta-analysis research of Hatzigeorgiadis et al (2011) the novelty of the task is another significant moderator in the correlation between self-talk and performance. Thus, in the current research the novice participants were chosen and they have not experienced these skills before. The project of intergroup was used for the study. A project of repeated measurement increases the sensitivity of measurement, thus it provides the possibility of detecting small differences. Also the primary evidences suggest that some of the personal characteristics such as negative self-concept, anxiety, personal desires based on motivation, and object-oriented development could be antecedents of self-talk (Hardy et al., 2009). All of these personal characteristics are also controlled by the use of intergroup project.

One of the research shortcomings in the field of overt and covert self-talk is this matter that whether the level of covert self-talk is well conducted on the participants or not. The results of protocol of ensuring the experimental conditions of the researcher showed that the experimental conditions are realized. It is unrealistic to expect that the experimental conditions of the researcher happen 100%. Numbers higher than 70% showed that most of the individuals were dealing with solution of appropriate self-talk (Tod et al., 2009 : Edwards et al., 2008). Although in overt self-talk due to the loud voice this assurance is created that the participants used the researcher's solution, in covert self-talk situation this assurance is not realized. In fact, the protocol of ensuring the experimental conditions (self-talk) of the researcher is based on the ability of participants in reminding something that they previously thought about before performing the test. Thus it is probable that in spite of reminding of researcher and use of protocol in creating the covert self-talk level some difficulty or problems might happens.

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