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Belief in Self-Talk and Dynamic Balance Performance

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ABSTRACT

The literature on *self-talk* is primarily related to its use and effect on athletic performance (Hardy & Hall, 2005). Noticeably missing is research related to the user's *belief* in self-talk. The purpose of the present study was two-fold. The first purpose was to examine the relationship between one's belief in self-talk and performance. The second purpose was to examine the influence of positive and negative self-talk on performance. Undergraduate students ($N = 125$) performed a stabilometer balance task and then completed two questionnaires. One questionnaire assessed the type of self-talk used and the other assessed belief in self-talk. Results indicated that belief in self-talk was not significantly correlated with performance; however, those who used positive self-talk performed significantly better than those who used negative/mixed self-talk. These results suggested that the *type* of self-talk used (i.e., positive or negative) was more important than one's belief in self-talk. Results supported previous literature indicating that techniques designed to produce positive self-talk should be included in psychological skills training programs.

Introduction

Athletes' use of cognitive strategies to control or modify certain psychological states is well documented in the literature (Weinberg & Gould, 2003). One commonly used strategy is *self-talk*. Self-talk has been defined as "a multidimensional phenomenon concerned with athletes' verbalizations that are addressed to themselves" (Hardy, Hall, & Hardy, 2005, p. 905). Researchers have found that Olympic qualifiers and national team athletes used self-talk as a motivation strategy (Hardy, Gammage, & Hall, 2001), to augment skill acquisition (Landin & Hebert, 1999; Ming & Martin, 1996; Perkos, Theodorakis, & Chroni, 2002), for controlling attentional focus (Gould, Eklund, & Jackson, 1992; Landin & Hebert, 1999; Papaioannou, Ballon, Theodorakis, & Auwelle, 2004), and to enhance self-confidence (Landin & Hebert, 1999). Equally important, self-talk has been found to effect performance (Highlen & Bennett, 1983; Mahoney & Avenier, 1977; Papaioannou et al., 2004; Van Raalte, Brewer, Rivera, & Petitpas, 1994).

The *type* of self-talk generated by the user will, to a large extent, determine whether performance is improved or impaired. Dagrou, Gauvin, and Halliwell (1992) studied the effect of positive, negative, and neutral self-talk on dart throwing performance. Results indicated that participants in the positive self-talk group outperformed those in the negative and neutral self-talk groups. In a similar study, Van Raalte et al. (1995) found the same results for individuals who used positive self-talk on a dart-throwing task. Finally, Weinberg, Smith, Jackson, and Gould (1984) found that positive self-talk strategies increased performance on a muscular endurance task.

Researchers have also found negative self-talk to be linked with diminished performance for novice dart throwers (Dagrou et al., 1992; Van Raalte et al., 1995) and competitive junior tennis players (Van Raalte et al., 1994). Conversely, Goodhart (1986) tested participants on an anagram task and found that the performance of negative thinkers was better than for positive thinkers. One possible explanation for the contradictory finding is that Goodhart's study used a cognitive task, while the other research utilized physical tasks. Therefore, it appears that negative self-talk diminishes performance on physical tasks.

One of the questions that remain unanswered, however, is whether one's belief in the potency of self-talk also impacts performance. Van Raalte et al. (1994) are one of the few researchers who have addressed this relationship. Using a post-match questionnaire consisting of one item, they found that competitive junior tennis players who believed in their self-talk performed better than nonbelievers. Specifically, players that responded yes to the question whether they believed what they said to themselves during the match affected the outcome won significantly more points than did those responding no. In a descriptive study of 291 athletes, Hardy, Hall, and Hardy (2004) also found that skilled athletes reported a greater belief that self-talk impacts their performance than did less skilled athletes.

Finally, while not directly examining the relationship between belief in self-talk and performance, results of the post-experimental manipulation check used by Theodorakis et al. (2000) in a series of experiments provided additional support for investigating the relationship between one's belief in self-talk and performance. Experiment 2 results indicated that the group

told to use instructional self-talk performed better than both the group instructed to use motivational self-talk and the control group. A post-experimental manipulation check revealed that the instructional group believed their self-talk statements were significantly more helpful than the motivational group. Thus, the group that performed better also believed their self-talk was more helpful.

If self-talk affects performance, then it is pertinent to examine the relationship between the belief in self-talk and performance. The first purpose of the present study, therefore, was to examine the relationship between belief in self-talk and performance. Due to the scarcity of empirical evidence, it was hypothesized that there would be no relationship between belief in self-talk and performance. A second purpose was to examine the influence of positive and negative self-talk on performance. Based on previous literature (Dagrou et al., 1992; Van Raalte et al., 1995), it was predicted that participants who generated only positive self-talk would perform significantly better on the task than those who used only negative self-talk.

Method

Participants

A total of 125 undergraduate students (39 females, 86 males) volunteered to participate in this study. Demographic data revealed that the sample consisted of freshman ($n = 9$), sophomores ($n = 33$), juniors ($n = 33$), and seniors ($n = 50$). Their average age was 21.04 years ($SD = 1.67$, range = 18 to 30). Participation in the study was one option of several that students could select for extra credit in a Psycho-Social Aspects of Sport class at a midwestern university. The participants were informed that they could cease participation at any time without fear of reprisal.

Instruments

Belief in Self-Talk Questionnaire. The Belief in Self-Talk Questionnaire (BSQ) was developed for this study to assess participants' belief in the effectiveness of self-talk. The BSQ is a self-report inventory with 8 items. Four of the items asked respondents to indicate the extent to which they agreed or disagreed with statements regarding belief in positive self-talk to enhance performance and four items examined belief in negative self-talk to harm performance (see Appendix A). Participants rated the items on a scale with anchors of *strongly disagree* (0) to *strongly agree* (5). Based on the recommendation of Embree (1996), a single total belief score was calculated for each participant, with a possible range from 0 to 40.

Before data collection, the BSQ was pilot tested. Twenty-four volunteers participated in the pilot study. Each volunteer completed the questionnaire twice with 5 days between the tests. An intraclass correlation yielded a high stability coefficient of $r = .85$, $p < .001$ for the test-retest scores.

Type of self-talk. The type of self-talk that participants used before and during performance was assessed using a 7 item post-experimental questionnaire developed for this study. Participants were asked to check the appropriate categories of self-talk used. Based on previous research (Girodo & Wood, 1979; Goodhart, 1986; Mahoney & Avener, 1977; Van Raalte et al.,

1994; Weinberg, 1985), self-talk items categorized as calming/relaxing (“Take a deep breath”), instructional (“Bend your knees”), motivational (“Yes! Come on, let’s go!”), and focus (“Don’t think about anything, just concentrate”) were operationally considered positive while self-talk categorized as performance worry (“This is too hard”), self doubts in ability (“I can’t do this”), and frustration (“This makes me mad”) were considered negative (see Appendix B). Responses were tabulated to determine item frequencies and to classify participants. Individuals marking only positive self-talk items were operationally classified as the positive self-talk group whereas individuals selecting only negative self-talk items were considered part of the negative self-talk group. Finally, individuals marking at least one positive and one negative type of self-talk were classified as using mixed self-talk.

Performance task and apparatus. The performance task utilized was a stabilometer (Model 16020, Lafayette Instrument Inc., Lafayette, IN), where time in balance represented the criterion measure. The stabilometer platform (26 in. x 42.5 in. x 1 in.) was placed 6.5 inches from the frame and 8.5 inches from the floor. In order to make the task more difficult, the sensitivity of the stabilometer was set ± 5 degree of a horizontal position (Murray, 1982; Ribadi, Rider, & Toole, 1987; Suomi, Surburg, & Meetz, 1994; Vallerand & Reid, 1984). The stabilometer task is a valid and reliable measure of balance (Murray, 1982; Ribadi, Rider, & Toole, 1987; Suomi, Surburg, & Meetz, 1994).

Time in balance was the participant’s ability to maintain stability on the platform within 5 degrees of the platform from the horizontal position. A clock-counter provided feedback to participants about the number of seconds the platform was in balance within ± 5 degrees of the horizontal position. A repeated cycle timer (Lafayette Instrument Model 51013, Lafayette, IN) was used to signal the tester when the 30 second time limit had ended.

Procedure

After receiving approval from the Human Participants Review Committee, participants came into the laboratory where the tester informed them the present study was to collect college age norms for a dynamic stability task. Participants read and signed the informed consent sheet and completed a brief demographic questionnaire. The participants were then instructed to stand on the platform by keeping balance within 5 degrees for both sides. Each participant had a 30 second practice trial followed by a 30 second rest and a 30 second test.

During the rest period, participants were told to be aware of their internal self-talk immediately before and during the test. At the end of the 30-second test, the time from the clock-counter was recorded in seconds on the participants’ information sheet. Following the test, participants completed the Belief in Self-Talk Questionnaire and the Type of Self-Talk Questionnaire. Upon completion, participants were debriefed and thanked for their participation.

Results

The mean stabilometer time in balance was 8.88 secs. ($SD = 2.87$) with a range from 3.56 to 18.09. Belief in Self-Talk scores ranged from 16 to 40 with a mean of 32.46 ($SD = 5.13$). Results from the test of internal consistency suggested that the 8 items displayed acceptable internal

consistency with Cronbach's alpha = .74. The mode and median number of self-talk types experienced was 3 with the majority of participants (82%) using 2 - 4 different types of self-talk. The *focus* category of self-talk was reported most often ($n = 106$, 85%), followed by *instructional* ($n = 81$, 65%), *motivational* ($n = 62$, 50%), *calming* ($n = 61$, 49%), *performance worry* ($n = 32$, 26%), *self-doubts* ($n = 19$, 15%), and *frustration* ($n = 17$, 14%).

Seventy-eight of the participants (62%) identified only positive self-talk, 6 (5%) cited only negative self-talk, and 41 (33%) experienced a combination of positive and negative. The positive self-talk groups had a mean time in balance (TiB) of 9.28 secs. ($SD = 3.04$) and mean BSQ score of 32.65 ($SD = 5.39$) while averaging 2.7 ($SD = 0.94$) types of self-talk. The mixed self-talk group had a mean TiB of 8.29 secs. ($SD = 2.59$), mean BSQ score of 32.05 ($SD = 5.01$), and mean of 3.85 ($SD = 1.00$) self-talk types. Finally, the negative self-talk group had means of 7.30 secs. ($SD = 1.16$), 33.00 ($SD = 2.76$), and 1.8 ($SD = 0.98$) for TiB, MSQ, and types of self-talk, respectively.

A Pearson correlation coefficient was conducted to test the relationship between participant's belief in self-talk scores and their performance on the stabilometer task. Based on the results ($r = .07$, $p > .05$), the null hypothesis could not be rejected.

In an attempt to examine potential performance differences, participants were separated into groups based on their responses to the type of self-talk questionnaire. Because very few participants indicated they experienced only negative self-talk ($n = 6$), the participants were separated into two groups. Participants checking only positive categories were included in the positive self-talk group ($n = 78$) while individuals checking only negative or a combination of negative and positive categories were included in the negative/mixed self-talk group ($n = 47$). Independent samples t-test results indicated that the positive self-talk participants performed significantly better [$t(123) = 2.07$, $p < .05$] than the negative/mixed self-talk participants, $M = 9.28$, $SD = 3.04$ and $M = 8.19$, $SD = 2.44$ respectively. The prediction that there would be a significant difference between the performance scores for the type of self-talk groups was supported.

Discussion

The purpose of this study was two-fold; to examine the relationship between one's belief in self-talk and performance, and to examine the influence of self-talk type (positive/negative) on performance. The findings suggested that the type of self-talk an individual engages in (positive or negative) was more important than his or her belief in self-talk. Participants engaging in positive self-talk performed better on the balance task than those expressing negative/mixed self-talk. Finding differences between the positive and negative/mixed self-talk groups was particularly significant because previous researchers (Dagrou et al., 1992; Van Raalte et al. 1995) have focused almost exclusively on differences between positive, neutral, and negative self-talk. In this study, however, the positive self-talk group was able to maintain their balance a full second longer than the negative/mixed group. Although not empirically examined due to limited numbers, a cursory examination of the results also showed there was approximately one-second difference between each of the three groups with the more positive group having the best performance followed by the mixed and negative self-talk groups. These results supported the

growing body of experimental research indicating that self-talk is an important cognitive component related to motor performance (Dagrou et al., 1992; Van Raalte et al., 1995; Weinberg et al., 1984).

Although it is acknowledged that self-talk in the present study was naturally occurring, the results supported previous empirical evidence suggesting that self-talk should be included in psychological skills training programs (Papaioannou et al., 2004; Rogerson & Hrycaiko, 2002; Thelwell & Greenlees, 2003). For example, athletes could be taught how to use *positive self-monitoring* during the short breaks that occur in competition. Positive self-monitoring helps individuals focus on the positive aspects of their performance, which in turn creates more positive self-talk (Kirschenbaum, 1997). Another useful technique may be to develop and practice using *affirmation statements* (Gill, 2000). These pre-planned positive thoughts (i.e., “I love competing” or “I am mentally tough”) can then be repeated in stressful times as a method of generating positive self-talk. Finally, techniques such as *thought stopping* or *changing negative self-talk to positive self-talk* may also be used to improve self-talk for optimal performance execution (Weinberg & Gould, 2003).

While not the expressed purpose of this study, it is interesting to note that almost all participants experienced a variety of self-talk types. Participants indicating they had used only positive self-talk typically identified two or three types of self-talk. For this group, the most frequently cited type was *focus* (92%) with the other three types assessed also being used by more than half of the participants (*instructional*, 67%; *calming*, 58%; and *motivational*, 52%). Conversely, participants classified as negative/mixed generally experienced three or four types of self-talk. Surprisingly, *focus* self-talk was also the most frequently cited type identified by this group (72%). However, a nearly equal percentage experienced *performance worry* (70%) with the other two types of negative self-talk assessed in this study being selected by less than half of the participants (*self doubts*, 41% and *frustration*, 37%). The variety and frequency of self-talk types experienced by participants in this study supported Hardy et al.’s (2005) emphasis on examining both the *content* and *function* of self-talk in athletes. Thus, it would appear that the broader classifications of positive and negative self-talk need to be delineated in future research.

Whereas the type of self-talk had a significant relationship with performance, the participants’ belief in self-talk did not. These results contradict those of Van Raalte et al. (1994) who found that tennis players believing in their self-talk performed better than nonbelievers. The contradictory results could have been caused by a number of factors. For instance, the present sample displayed a somewhat restricted range of belief scores. The mean belief score ($M = 32.46$, $SD = 5.13$ on a 40-pt. scale) would suggest that this sample contained individuals with fairly strong to very strong beliefs in self-talk. A sample displaying a larger range may have yielded different results. Another plausible explanation involves the small number of participants experiencing only negative self-talk. The use of a controlled stabilometer task in a laboratory setting may have limited the number of participants who generated predominantly negative self-talk. Thus, the influence of moderating variables on self-talk needs to be further addressed in other more natural competitive settings.

A third possibility is that the BSQ was not able to adequately differentiate between those individuals strongly believing in self-talk and those who did not. One of the limitations of this

study was the relative lack of information regarding the validity of the BSQ. However, results did reveal a 25-point range out of 40 possible, adequate pilot test-retest reliability, and acceptable internal consistency. Thus, while initial supportive evidence has been provided, it is recommended that future research continue to examine methods by which belief in self-talk is assessed. A final alternative explanation could be that belief in self-talk simply does not impact motor performance.

In conclusion, results of the present study supported previous research emphasizing the need to examine both the content and function of self-talk in athletes (Hardy et al., 2005). Specifically, the type of self-talk (positive vs. mixed) was linked with performance on a balance task while belief in self-talk was not. For practical relevance, the findings supported recommendations that techniques designed to produce positive self-talk should be an integral part of performance enhancing psychological skills training programs.

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Appendix A

Belief in Self-Talk Questionnaire

For each of the following statements indicate the extent to which you disagree or agree by circling a number to the right.

	Strongly disagree	Moderately disagree	Disagree somewhat	Agree somewhat	Moderately agree	Strongly agree
1. I believe that my positive thoughts really help me to concentrate on a task.	0	1	2	3	4	5
2. I believe that my negative thoughts can directly hurt my performance.	0	1	2	3	4	5
3. I believe that my positive thoughts can lead to a good performance.	0	1	2	3	4	5
4. I believe that my negative thoughts can break my concentration.	0	1	2	3	4	5
5. My belief in my ability to do a task will help to improve my performance.	0	1	2	3	4	5
6. I believe that my negative thoughts can increase my anxiety about performance.	0	1	2	3	4	5
7. I believe that my positive thoughts will relax me enough to perform well.	0	1	2	3	4	5
8. I believe that doubting my ability to do a task hurts my performance.	0	1	2	3	4	5

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Appendix B

Items in the Type of Self-Talk Questionnaire

You were asked to generate self-talk about the task prior to and during performance. How would you classify the types of self-talk you used? (Please check all that apply)

<u>Type of self-talk</u>	<u>Examples</u>
Calming/Relaxing	“Take a deep breath.” “Don’t worry, take your time and slow down.”
Performance Worry	“I hope I don’t do too badly.” “This is too hard.”
Instructional	“Bend your knees.” “Stop, stop! Balance.”
Self Doubts in Ability	“I can’t do this.” “I’m no good at balancing.”
Motivational	“Yes! Come on, let’s go!” “I know I can do it.”
Frustration	“This makes me mad.” “Why do I bother?”
Focus	“Don’t think about anything, just concentrate.” “Focus on your feet and find the best position.”