Function and Preferences of Motivational and Instructional Self-Talk for Adolescent Basketball Players

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ABSTRACT

The objective of the present study was to explore players’ perceptions on self-talk (ST) helpfulness and on the mechanisms through which ST facilitated execution, as well as their preferences over the use of motivational and instructional ST during skill execution. Thirty-eight novice basketball players ($M_{age} = 12.8$) participated in a regular practice session and used both motivational and instructional ST cues during the execution of passing, dribbling and shooting skill-tests. Athletes reported a significant preference for motivational ST when dribbling and shooting, while they did not favor one ST type over the other when passing. Moreover, athletes' motivational ST was perceived as a significant aid for their concentration, confidence, and sense of relaxation during shooting, while instructional ST as more beneficial for improving their technique during passing. Results offer some substantiation for possible mechanisms through which ST can influence performance at a young age.

Introduction

Adolescent athletes akin to their adult counterparts learn and develop sport skills through practicing, and eventually they are asked to apply the acquired skills in game situations. Similar to adult players, adolescents talk about both feeling good and feeling nervous; they get excited about practicing and playing, and occasionally they become frustrated; they love working out or find countless reasons not to attend workouts. For the most part, adolescent athletes appear to face comparable stress (e.g., pressure, performing well or poorly) and possess analogous mental needs and characteristics (e.g., motivation, concentration, self-confidence, anxiety) to adult athletes (Smoll & Smith, 2002; Weinberg & Gould, 2003). To enhance players' skills and performance, youth sport coaches provide feedback, use verbal cues, relaxation tips,
concentration cues as well as other learning and performance boosting techniques—usually modified to match the age and level they coach (Weinberg & Gould, 2003). Research on the application of cognitive techniques to youth sport athletic performance is relatively limited.

ST is acknowledged as one of the most widely used cognitive techniques for a number of reasons: It occurs unconsciously and consciously; it can be used with or without prior training; it can be an overt or covert technique. Athletes, coaches, and sport psychology researchers attest to the widespread use of ST (Gould, Finch & Jackson, 1993; Gould, Hodge, Peterson, & Giannini, 1989; Heishman & Bunker, 1989; Madigan, Frey, & Matlock, 1992; Murphy & Ferrante, 1989; Park, 2000; Sullivan & Nashman, 1998; Weinberg, Grove & Jackson, 1992). Most importantly, ST’s definition as external and internal dialogues applied to offer instruction and reinforcement to performers during skill execution provides a versatile day-to-day performance aid (Hackfort & Schwenkmezger, 1993). In simple terms, ST can be described as what athletes say to themselves either overtly or covertly. Athletes use self statements in order to direct their attention (e.g., "focus"), to control their anxiety (e.g., "relax"), to judge their performance (e.g., "great job"). Through these dialogues, individuals have a chance to express their feelings, to verbalize their perceptions, to regulate and revise their thoughts in order to facilitate and enhance skill learning and execution (Zinsser, Bunker, & Williams, 2001).

More comprehensively, Zinsser et al. (2001) advocated that ST can boost one's self-confidence; focus one on goals and goal achievement; enhance and maintain motivation; sustain a positive mindset; interrupt debilitating thoughts and restructure them; help the athlete focus and refocus or shift attentional focus; as well as mentally prepare for the upcoming performance. These facilitative functions of ST for skill acquisition and performance enhancement have not been fully substantiated. Since the 1980's, researchers have published a number of articles on positive and negative ST, effective and non-effective ST, and recently on instructional and motivational ST. The existing literature supports positive, instructional, and motivational ST as effective ways to communicate with oneself during skill execution aiming to enhance performance (Landin & Hebert, 1999; Rushall, Hall, Roux, Sasseville, & Rushall 1988; Van Raalte Brewer, Lewis, Linder, Wildman, & Kozimor, 1995; Ziegler, 1987). However, the absence of methodical investigations on the mechanisms through which ST influences performance has been discussed as a significant obstacle for its effectiveness as a cognitive strategy (Hardy, Gammage, & Hall, 2001; Perkos, Theodorakis & Chroni, 2002).

According to Zinsser et al. (2001) the two primary functions of ST are motivational and instructional in nature. The motivational function of ST assists athletes in building confidence and motivation, to increase their effort, and to control arousal and anxiety (Hardy, Jones, & Gould, 1996). The instructional function of ST is thought to enhance performance by triggering desired actions through proper attentional focus, technical information, and tactical choices. The functions of adult athletes’ ST were recently investigated (Hardy et al., 2001; Hatzigeorgiadis, Theodorakis, & Zourbanos, 2004; Van Raalte, Brewer, Rivera, & Petitpas, 1994) while the functions of ST used to facilitate skill acquisition for youth sport athletes has not been explored. Given the high numbers of young people participating in sport (Wissel, 2004) it was deemed prudent to further examine the proposed functions of ST in this sample.

In athletic settings, athletes’ performance showed improvement through the use of
instructional ST in the sports of rowing (Rushall, 1982), swimming (Rushall & Shewchuk, 1989),
tennis (Ladin & Hebert, 1999; Ladin & McDonald, 1990), running 100m sprints (Mallet &
Hanrahan, 1997), and golf (Harvey, Van Raalte, & Brewer, 2000). Rushall et al. (1988) reported
that both instructional and motivational ST improved performance in a cross-country ski task. For
novice performers, instructional ST has been found to aid skill acquisition in tennis (Ziegler,
1987), figure skating (Ming & Martin, 1996), and basketball (Perkos et al., 2002; Theodorakis,
Chroni, Laparidis, Bebetsos, & Douma, 2001).

Recently, Hatzigeorgiadis et al. (2004) investigated the function of motivational and
instructional ST on a water polo precision and a power-throwing task. They reported that when
throwing the ball at a target (precision task) both groups improved while instructional ST was
reported by participants to be more effective than motivational ST. In the power-task of throwing
the ball for distance, only those participants using motivational ST improved significantly.
Moreover, occurrence of interfering thoughts during execution of both tasks declined for all
participants during execution. The researchers emphasized the importance of matching ST with
the demands of the task, even for tasks with similar characteristics (i.e., throwing the ball for
distance or precision). Most notably though, they provided considerable evidence for ‘reduction
of interfering thoughts’, as a possible mechanism through which ST may facilitate performance.

Previously, Landin (1994) highlighted the importance of matching ST with the demands of
each task, as the effectiveness of ST depends on its brevity, accuracy, and nature of the task,
aspects that have been reported by a number of studies. Theodorakis et al. (2001) examined the
effectiveness of two different types of ST on a basketball-shooting task. Participants were asked
to shoot at the hoop using either the cue-word ‘relax’ (to regulate speed and increase accuracy) or
‘fast’ (to enhance speed and reduce accuracy), based on group assignment. Results showed that
only the ‘relax’ cue-word group participants improved their performance significantly as
compared to the ‘fast’ and control group participants. The researchers suggested that ‘relax’ was
more effective as it was task-appropriate by briefly decreasing performers’ arousal levels and
allowing them to lock on the target momentarily. Theodorakis, Weinberg, Natsis, Douma, and
Kazakas (2000) reported in their results that for tasks requiring skill, timing, and precision,
instructional ST aided performers more than motivational ST. Conversely, in tasks that required
strength and endurance both strategies were effective. They rationalized that instructional ST was
more beneficial for tasks requiring skill, timing, and precision, as it facilitated the execution of
desired movement patterns through proper attentional focus on the task-relevant cues.

Donohue, Barnhart, Cavassin, Carpin, and Korb (2000) examined the effectiveness of task-
relevant cues over motivational statements used by cross-country runners during warm-up drills
prior to running. Five minutes prior to running, six female runners applied three different
interventions. Two of the interventions included a repetition of either motivational statements or
task-relevant instructions in order to focus on specific running techniques. The third intervention-
control condition--consisted of what the runner was thinking by herself. Each athlete in the
statement-intervention groups selected her own statements from a proposed statement list. Task-
relevant instructional statements were reported by the participants to be slightly more effective
than the motivational statements, while both ST statement-interventions were more effective than
the control condition.
Aside from these studies, little empirical research has been conducted focusing on the effectiveness of different types of ST. Hardy et al. (1996) noted that given the important role of ST in athletic performance, the amount of systematic research in this area is rather inadequate. Although peak performance may not be expected from novice athletes, learning about young basketball players’ preferences for one of the most commonly used cognitive techniques, may provide coaches with new ideas for enhancing their athletes’ learning during practices. The objective of the present study was (a) to explore young basketball players’ perceptions on the helpfulness of ST, (b) to look into their perceptions on possible mechanisms through which ST cues may facilitate execution, (c) to investigate the players’ preferences over the two types of ST (motivational and instructional) that accompanied their practice.

Method

Participants

Novice players who were systematically involved in organized basketball practices participated in this study. Thirty-eight boys 11 - 13 years of age ($M$ age = 12.83, $SD$ = 0.76) from a basketball academy located in northern Greece volunteered to participate. Novice was defined as 'first year participant in organized basketball practices'. The players’ parents and coaches granted written permission for participation.

Task Measures

Three valid and reliable skill tests were selected to be used to assess for dribbling, passing, and shooting. The same three skill-tests were used in the study by Perkos et al. (2002). Participants’ test scores were recorded in personal scorecards. The skill tests are presented hereafter.

**Dribbling test.** The dribbling test was part of the Harrison Basketball Battery (as cited in Barrow & McGee, 1979). It involved weaving in and around cones continuously for 30 seconds while dribbling the ball. Each cone successfully passed earned one point. According to Harrison’s work, the test-retest reliability coefficient was .95 (see Barrow & McGee, 1979).

**Passing test.** The Stubbs’ Ball Handling Test was utilized (as cited in Barrow & McGee, 1979). On a vertical flat wall, three adjacent circles each one 30 cm in diameter were drawn at a distance of 160 cm from each other. The first circle was drawn at 151 cm above the floor, the second at 121 cm, and the third circle at 136 cm above the floor. The athlete stood behind a painted line located at 450 cm away from the wall. On the verbal signal “Ready, … Go” the athlete threw the ball towards the first circle using a chest pass, retrieved the ball and passed to the second circle, retrieved the ball and passed to the third circle, then retrieved the ball and passed to the second circle again, then to the first, second, third, etc. The athlete continued passing the ball to the three circles for 30 seconds consecutively. Each bounce, either inside the painted circle or on its perimeter, earns one point. According to Stubb, a validity coefficient of .74 was achieved when the ratings were correlated with best of two trials on the test (see Barrow & McGee, 1979).
**Shooting test.** A three-minute shooting test was used; similar to the one performed in the Weinberg, Fowler, Jackson, Bagnall, and Bruya (1991) study. More specifically, the participant was asked to execute as many shots as possible from any position on a marked perimeter of 366 cm radius from the hoop for 90 seconds. The participant was responsible for shooting and retrieving the ball himself. Each successful shot earned one point. Test-retest reliability has been reported at .91 (Weinberg et al., 1991).

**Post-skill test questionnaires**

Upon completion of each skill-test using both types of ST cues, participants completed a one-page written questionnaire that assessed the subjective rate of ST use, the perceived helpfulness of ST cues, and potential mechanisms of ST functioning that originated from the existing literature on how ST works (Weinberg & Gould, 2003; Zinsser et al., 2001). Hereafter the questions for dribbling are presented—italics indicate the words that were replaced with the task-relevant instructional ST cue or the motivational cue. The three questions presented here appeared twice in the one-page questionnaire in order to assess players' rate of use and perceptions for both instructional and motivational ST cues used with each task.

1. How often did you repeat the words "low, rhythm", during execution?
2. How much do you believe that they helped you perform?
3. How much do you think the words "low, rhythm" that you used helped you:
   a. To concentrate better?
   b. To feel more confident?
   c. To feel stronger?
   d. To feel more relaxed?
   e. To execute with better technique?

Participants responded on each statement using a 10-point Likert scale ranging from "1 = not at all" to "10 = very much". After responding to the same sequence of questions for the motivational ST cue "I can", participants answered one final question: "Which one of the two ST cues that you used did you like more?" This question explored their subjective preference for one of the two types of ST (instructional vs. motivational). A semantic differential answer format was used for this question, with the motivational ST cue being on one end and the instructional ST cue on the other end, while the word "none"—corresponding with "0"—appeared in the middle of the scale (5, 4, 3, 2, 1, 0, 1, 2, 3, 4, 5).

**Procedure**

Prior to the onset of the study, the researchers met extensively with the two participating coaches in order to train them on the experimental procedure and the skill tests that would be used. The two participating coaches were assistant coaches under the second authors’ leadership, who was the academy head coach and present at practices. The experimental procedure was completed during one practice session. Upon players’ arrival on the court, the head-coach and the two assistant coaches introduced the drills and explained to them how practice would run for the day. Then the participants were randomly divided in two equal groups (n = 19) and completed a
10-minute warm-up.

The passing-test was the first to be performed and each group was randomly assigned to a ST type--motivational or instructional--for execution. ST was introduced and the selected ST cue were explained to the players’ in their respective groups. Upon completion of the passing-test, the players had a short break for rest. During the rest break, the ST type cue that were not used during the previously executed passing-test were presented and explained to each group’s players (i.e., Group A previously performed the passing test with motivational ST cue and at rest break the instructional ST cue was presented, Group B previously performed with instructional ST cue and at rest break the motivational ST cue was presented). After the rest break the participants re-performed the passing test using the newly presented ST type cue. Prior to each player’s execution, the player was reminded of the designated ST cue, how its content relates to the task (Landin, 1994), and to repeat the cue out loud. When players completed the passing test using both ST types the post-skill test questionnaire was administered to them to be completed onsite.

The second task performed was the dribbling test followed by the shooting test, where the same procedure was followed as for the passing test. To control for a learning effect, the order of the ST types was alternated between groups for every test (i.e., Group A started the passing test using the motivational cue, then started the dribbling test using the instructional cue, and proceeded to the shooting test with the motivational cue, while Group B started the passing test using instructional cue, continued with the dribbling test using motivational cue, and finally performed the shooting test starting with instructional cue.)

**Self-talk content.** The instructional ST cues used in this study were “low, rhythm” for dribbling, “fingers, target” for passing, and “wrist, center” for shooting. The dribbling ST cue intended to focus one’s attention on changing direction while maintaining a relatively low body position and sustaining a rhythm when dribbling the ball. The passing ST cue aimed to help the player hold the ball efficiently and focus his attention on the target. The selection of these cues was based on Wissel’s (2004) rating of key elements for technique improvement on dribbling and passing and 25 experienced coaches survey results (see Perkos et al., 2002). The instructional cues that accompanied the shooting test were selected based on Mikes’ (1987) suggestion and the previously mentioned coaches’ survey, aiming to direct the players’ attention to a smooth wrist bend as well as to the center of the hoop. The affirmative statement “I can” was used in all three skill-tests as the motivational ST cue. The selection of the motivational cue was based on the existing ST literature (e.g., Theodorakis et al., 2000; Van Raalte et al., 1995).

**Results**

To explore any possible differences on the self-reported rate of use for each type of ST, players’ perceived helpfulness for instructional and motivational ST, and through which mechanisms they perceived that ST aided execution paired samples t-tests were computed.

Results revealed non-significant differences between participants’ reported rate of use for each type of ST used during the dribbling \((t = -1.37, df = 37, p > .05)\) and passing tests \((t = -.79, df = 37, p > .05)\). However, significant differences were found for shooting \((t = -4.04, df = 37, p < .01)\). More specifically, motivational ST \((M = 7.24, SD = 3.09)\) was reported to be used
significantly more often than instructional ST ($M = 5.71, SD = 2.97$).

On the aspect of perceived helpfulness (“how much do you believe they helped you perform?”), players believed that when shooting ($t = -3.25, df = 37, p < .05$) the affirmation “I can” ($M = 7.34, SD = 3.03$) was more helpful for their performance than the instructional cue “wrist-center” ($M = 5.97, SD = 2.95$). No significant differences were observed in participants’ perceptions of helpfulness for passing ($t = .18, df = 37, p > .05$) and for dribbling ($t = -.18, df = 37, p > .05$). Table 1 shows the obtained mean scores for motivational and instructional ST rate of use and perceived helpfulness (Table 1).

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<thead>
<tr>
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<th>Dribbling</th>
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<th>Passing</th>
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<th>Shooting</th>
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<td>$M$</td>
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<td>How often did you repeat the words “...” during execution?</td>
<td>7.71</td>
<td>7.21</td>
<td>7.58</td>
<td>7.24</td>
<td>7.24$^*$</td>
<td>5.71</td>
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<td></td>
<td>$±2.40$</td>
<td>$±2.30$</td>
<td>$±2.32$</td>
<td>$±3.09$</td>
<td>$±3.09$</td>
<td>$±2.97$</td>
</tr>
<tr>
<td>How much do you believe that they helped you perform?</td>
<td>7.45</td>
<td>7.39</td>
<td>7.03</td>
<td>7.11</td>
<td>7.34$^*$</td>
<td>5.97</td>
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<tr>
<td></td>
<td>$±2.24$</td>
<td>$±2.53$</td>
<td>$±2.67$</td>
<td>$±3.34$</td>
<td>$±3.03$</td>
<td>$±2.95$</td>
</tr>
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*Note 1: $M$ = Motivational ST, $I$ = Instructional ST
*Note 2: * = $p < .05$, obtained in statistical comparisons between motivational and instructional ST cues accompanying each skill-test execution.

Paired $t$-tests were used to explore possible differences between the players’ answers on potential mechanisms through which they perceived that each type of ST aided skill execution (to concentrate better, to feel more confident, to feel stronger, to feel more relaxed, and to execute with better technique). For dribbling, no significant differences were observed. For passing, significant differences were observed only for the function ‘to execute with better technique’ ($t = 4.72, df = 37, p < .01$), where the instructional cue “fingers, target” was perceived as more effective than the motivational cue “I can”. For shooting, differences were found for the functions ‘to concentrate better’ ($t = -3.86, df = 37, pp < .01$), ‘to feel more confident’ ($t = -3.79, df = 37, p < .01$), and ‘to feel more relaxed’ ($t = -2.32, df = 37, p < .05$). In particular, adolescent players’ perceived that motivational ST “I can” aided their performances through these three functions more than the instructional cue did. Table 2 presents the obtained mean scores for each sub-question and the significant differences that emerged between motivational and instructional ST (Table 2).
To examine potential differences in the participants' preferences between the two types of ST used during task execution chi-square analyses were used. Based on the analyses, adolescent players did not differ in their preferences between instructional and motivational ST for passing ($p = 1.00$). Differences however were observed in dribbling ($X^2 (1, N = 38) = 0.95, p = .03$) and shooting ($X^2 (1, N = 38) = 2.63, p < .01$), where young players reported being more fond of repeating the motivational ST cue during execution than the instructional cues.

**Discussion**

Our study aimed to explore young basketball players’ perceptions on the implementation of a cognitive technique while practicing. The main objectives of the present study were (a) to explore their perceptions on the helpfulness of ST, (b) to look into their perceptions on possible mechanisms through which ST may facilitate task execution, and (c) to investigate the players’ preferences over the two types of ST (motivational and instructional) that accompanied their practice. Whether the players enhanced their performances by the use of ST was not explored in this study.

In exploring the players’ perceptions on the helpfulness of ST during the execution of
dribbling, passing and shooting skill-tests interesting findings emerged. For dribbling, players did not report using either of the two ST types more often than the other and did not perceive either of the two ST types as more helpful. In general, the players did not perceive differently that either motivational or instructional ST facilitated execution through the suggested mechanisms. Nonetheless, the participants reported a preference for motivational ST. Perhaps, the brief and powerful motivational cue “I can” which in Greek language is provided also by a single yet very powerful word attracted them. According to Landers and Arent (2001), basketball dribbling and passing skills are classified as simple ones, thus easier for novices to execute. Possibly, novice players in this study did not put much effort or pay enough attention on the execution logistics of a simple, easy, and playful skill-test--dribbling around cones.

Likewise for passing, players again did not report using either of the two ST types more often than the other, did not perceive motivational or instructional ST as more helpful, and did not show a preference for either of the two ST types. However, the players perceived that instructional ST helped them ‘execute with better technique’. Although, the gross motor skill of throwing, which is fundamental for passing is developed at early ages, it is most likely that the instructional cue “fingers, target” provided significant help for executing with better passing technique and being more accurate as interfering thought occurrence during execution declines with the use of ST (Hatzigeorgiadis et al., 2004). Similarly, the use of instructional ST in the study of Perkos et al. (2002) also facilitated the execution of passing.

For the skill of shooting, motivational ST was perceived and reported as a significant aid in many occasions. Motivational ST during the shooting task was used more often than instructional and it was also perceived as more helpful. Furthermore, players thought that motivational ST also helped them to concentrate better, to feel more confident and be more relaxed to a greater extent than their use of instructional ST. In their study Hardy, Hall, and Hardy (2005) found that athletes tend to use motivational ST more often than instructional ST. Therefore, particular attention should be paid to the motivational function of ST since athletes report using it extensively. As suggested in the introduction, motivational ST assists athletes to build their confidence and motivation, to increase their effort, and to control arousal and anxiety (Hardy et al., 1996), which was further supported by the players’ perceptions about facilitating their senses of confidence and of relaxation. Finally, with regard to the participants’ perception that it also helped them concentrate better we are in accordance with the work of Hatzigeorgiadis et al. (2004) who reported a reduction of interfering thoughts with motivational ST use. Earlier on, Hardy et al. (2001) using open-ended questions also stated that motivational ST helps athletes to clear their minds and focus on the task-at-hand and to concentrate on their task and not let them get too overly concerned with how everyone is doing.

Perhaps a more critical view of the shooting skill should take into account the fact that the test performed was an “against the clock” task involving the self retrieval of the basketball and then shooting both as quickly as possible. As a result, the relatively more complex shooting task also involved a high reliance on quick reactions and running pace. These final two aspects are not fine motor skills. Consequently, it is possible to interpret the shooting related findings as subjective support for the motivational/instructional ST. Also, because motivational ST was viewed as impacting on three proposed mechanisms of ST to a significantly greater extent than instructional ST, this may help explain why participants viewed motivational ST as more helpful,
used more of it and also preferred to use when executing. However, in the study conducted by Theodorakis et al. (2001), examining the influence that two different types of self-talk (“relax” and “fast”) had on individual shooting performances (a similar test was used), results showed that only the participants of the ST group who used the word “relax” improved their performance significantly as compared to the other two groups (“fast” and control group). Hence, there may be a difference between what really works and what one prefers to say.

Even though the results fulfilled our objectives aiming to explore young, novice players’ perceptions on the implementation of a cognitive technique while practicing, various factors limit the results of this study. The players’ lack of familiarity with the cognitive technique of ST may have complicated their task execution. In addition, we did not verify whether the young participants were comfortable with the ST technique they used in their practice. Another limiting feature of the procedure followed may be that each skill-test was performed twice to accommodate the use of both ST types and most likely a learning effect was present at the second test execution that influenced execution with the second type of ST. Finally, the fact that participants were not asked if they had used any other ST statements during execution beside the proposed ones by their coaches, may also limit the results of our study.

In summary, shooting was the task that shaped some preferences and views over the use of ST. The young participants used more, liked more and were more persuaded on the functionality of motivational ST. From a practical standpoint, coaches should help their young novice basketball players to learn and use brief cue words that are motivational in nature as they make them feel more confident and calm, and because they also prefer them. Instructional ST even in the form of key-words did not appear to be as attractive as motivational ST for young basketball players. As a final point, future studies should aim to further clarify the content and potential functions of different ST types (overt vs. covert ST, self-chosen vs. imposed ST) while taking into consideration the influence of ST on their performances.
References


