ABSTRACT

THE INFLUENCE OF TYPES AND SELECTION OF MENTAL PREPARATION STATEMENTS ON COLLEGIATE CROSS-COUNTRY RUNNERS’ ATHLETIC PERFORMANCE AND SATISFACTION LEVELS

By Abigail Jeannine Miller

This pre-test/post-test matched-groups study examined the influences of type of self-talk and who selects the self-talk on one-mile run performance. Eighty-one collegiate cross-country runners were assigned to one of six intervention groups after completing baseline one-mile time-trials: motivational self-set, motivational assigned, instructional self-set, instructional assigned, combined self-set, or combined assigned. Results of six one-way ANOVA’s revealed that although all six intervention groups had meaningful improvements in run times from pre-test to post-test, only the combined self-set group, motivational self-set group, and instructional assigned group had improvements that were statistically significant. Also, a 3(type of statement) x 2 (self/assigned) x 2(trials) repeated measures ANOVA indicated no significant between-group main effects or interactions. No significant differences between the groups regarding participants’ satisfaction levels, effort, and perceived improvement were found with all participants reporting that they tried hard and were satisfied with the intervention.
THE INFLUENCE OF TYPES AND SELECTION OF MENTAL PREPARATION STATEMENTS ON COLLEGIATE CROSS-COUNTRY RUNNERS’ ATHLETIC PERFORMANCE AND SATISFACTION LEVELS

A Thesis

Submitted to the

Faculty of Miami University

In partial fulfillment of the requirements for the degree of

Master of Science in Sport Studies

Department of Physical Education, Health, and Sport Studies

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Oxford, Ohio

2006

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Acknowledgments

There are some important and incredible people that I would like to acknowledge who helped me tremendously throughout my entire thesis process and research study. First, I would like to recognize and thank Dr. Robert Weinberg from Miami University of Ohio, who was my thesis advisor, academic mentor, and former professor. Dr. Weinberg helped guide me through my thesis process; taught me how to effectively, efficiently, and properly conduct and implement a sophisticated quantitative research study; helped me understand all of the components of developing, executing, evaluating, and analyzing a research study; guided me in the right direction to write a comprehensive thesis including the different sections and parts of the manuscript; and served as a positive and influential role model to me. Also, I would like to thank Dr. Robin Vealey and Dr. Thelma Horn who both were members of my thesis committee as well as were former professors and inspiring mentors of mine. Next, I would like to recognize all of the collegiate athletes and coaches who participated in my research study who dedicated their time, hard-working efforts, and motivation to me along with being very cooperative, respectful, and open-minded throughout my study. I would also like to thank the Physical Education, Health, and Sport Studies Department at Miami University for giving me the great opportunity to organize and implement my master’s thesis research study and for providing me with the valuable and useful resources, knowledge, and tools to be able to effectively and successfully conduct my research study. Finally, I would like to thank my loving family and cherished close friends for being remarkably supportive, encouraging, and helpful to me during my entire master’s thesis process.
Chapter 1: Introduction

Numerous intervention techniques have been and are still currently used to enhance performance, satisfaction, and personal growth and development in athletes. Particularly, cognitive strategies created to positively influence or change existing thought and affect patterns including self-talk, goal-setting, imagery, relaxation training, and arousal regulation have been shown to be effective and valuable for individual athletes. For example, data from Olympic athletes has revealed that successful athletes utilize cognitive strategies more often compared to less successful athletes (Orlick & Partington, 1988; Gould, Eklund, & Jackson, 1993). Additionally, it has been found that athletes experience their best sporting performances when they plan and execute mental strategies prior to competition (Gould et al., 1993).

The utilization of mental performance enhancement strategies immediately prior to athletic competition has been implemented in many controlled outcome studies, particularly those strategies that incorporate instructions to focus on being aroused, motivated, or specific task-relevant actions (e.g., Donohue, Barnhart, Covassin, Carpin, & Korb, 2000; Harvey, Van Raalte, & Brewer, 2002; Nideffer & Sagal, 2006; Theodorakis, Weinberg, Natsis, Douma, & Kazakas, 2000). One specific type of mental preparation technique, self-talk, is a cognitive strategy that refers to what individuals say to themselves either out loud or as a small voice inside of their head in a covert manner (i.e. person’s internal dialogue) (Sellars, 1997). Research as well as anecdotal reports have demonstrated that athletes extensively and consistently utilize self-talk to enhance and build motivation and to provide cues for physical performance (Rushall, 1984; Van Raalte, Brewer, Rivera, & Petitpas, 1994; Weinberg, Grove, & Jackson, 1992). Additionally, Zinnser, Bunker, and Williams (2006) asserted that self-talk facilitates performance by enhancing skill acquisition, building confidence and self-efficacy, modifying ineffective habits, and controlling effort. Furthermore, Nideffer (1993) suggested that self-talk promotes attention to be redirected to task-relevant cues, and other researchers (e.g. Gould, Finch, & Jackson, 1993; Madigan, Frey, & Matlock, 1992) found that athletes reported that self-talk is one of the most widely used cognitive strategies. Finally, Weinberg and Gould (2003) asserted that athletes utilize self-talk in many different ways (i.e. for skill acquisition and learning new tasks/skills, for breaking a bad habit, to become motivated and encouraged, for attention control, for creating and changing affect and mood, for increasing confidence). Hence, self-talk can be applied to many situations and circumstances and be used for different purposes.
Research has demonstrated that using self-talk and key words immediately prior to performing a skill can be beneficial for enhancing overall athletic performance and satisfaction. For example, self-talk can enhance acquisition of skating figures in figure skating (Ming & Martin, 1996); acquisition of forehand and backhand shots in tennis (Ziegler, 1987); improve speed and accuracy of performance and volume of work output of competitive rowers (Rushall, 1984), collegiate tennis players (Landin & MacDonald, 1990), sprinters (Mallett & Hanrahan, 1997), cross-country skiers (Rushall et al., 1988), and swimmers (Rushall & Shewchuk, 1989); and enhance transfer of previously learned skills from practices to competitions with college-level basketball players (Kendall, Hrycaiko, Martin, & Kendall, 1990).

There are many different types of self-talk including positive (associated with praise), negative (involving criticism), neutral, motivational, and instructional. Numerous studies have used these different types of self-talk to compare and contrast their effectiveness and influence regarding different types of tasks, conditions, and athletes. Employment of positive self-statements prior to a challenging task is thought to improve psychological and physiological preparation (Rushall, 1982, 1984; Taylor, 1979) due to its facilitation of encouragement, motivation (Weinberg, Smith, Jackson, & Gould, 1984), and instructional assistance (Chorkawy & Ford, 1982; Zinnser et al., 2006). Moreover, it has been suggested that positive self-talk reduces anxiety, increases effort, enhances self-confidence, provides self-reward, controls attention and arousal, and can aid in rehabilitation from injury (Hardy, Jones, & Gould, 1996). Additionally, positive self-talk assists athletes in remaining appropriately focused on the present, not dwelling on past mistakes, and not projecting too far into the future, whereas negative self-talk can cause distractions, debilitating, and poor performance because it is inappropriate, counterproductive, irrational, or anxiety-producing (Weinberg, 1988).

Most research studies support that positive self-talk has a beneficial and influential impact on performance. Positive self-talk was found to be an effective strategy in enhancing endurance performance (Weinberg et al., 1984), and it increased performance in a basketball task. Even though numerous studies have found that positive self-talk can lead to enhanced performance of endurance tasks or tasks in sports such as basketball, tennis, and skiing (Weinberg et al., 1984; Ziegler, 1987; Rushall, et al., 1988), there is still a controversy regarding the effectiveness of two different types of positive self-talk: motivational and instructional self-talk. Motivational self-talk appears to facilitate performance by inspiring greater effort and
creating a positive mood and confidence, whereas task-relevant instructional statements enhance performance by recalling desired actions through focus and strategy execution (Hardy, Jones, & Gould, 1996). Examples of motivational self-statements include: “you can do it,” “hang in there,” “strong,” and “get tough.” Pertaining to instructional self-talk, Zinnser et al. (2006) suggested that simple instructional cues such as “step, swing” in tennis, “step, drop, step, kick” for a soccer punt, and “arms straight, elbows in” for golf cultivate cognitive associations that will help athletes in learning proper physical execution. Other examples of instructional self-talk in sport are “elbow straight,” “reach,” “pump your arms,” and “high knee lift.”

Although many studies have investigated the effects of the different types of self-talk when employed prior to athletic tasks/competition, the results have been inconsistent because some studies have shown that instructional statements were more effective compared to motivational statements whereas other studies have demonstrated the opposite. Thus, there continues to be a debate regarding which type of self-talk is most helpful and appropriate. Also, another significant variable pertains to who creates and chooses the statements, and more specifically, whether the statements are assigned by others or self-set by the athletes themselves. Thus, the topic of choice can be a relevant and important factor associated with self-talk.

Due to the lack of research involving assigned versus self-set/participative self-talk, the literature pertaining to assigned versus self-set/participative goal-setting will be reviewed in the subsequent chapter. Results from numerous controlled outcome studies, experimental research, and meta-analyses have been inconsistent, inconclusive, and ambiguous regarding assigned versus self-set/participative goal-setting. In a meta-analysis of six studies by Mento, Steele, and Karren (1987), self-set/participant-set goal groups performed at slightly higher levels than did assigned goal groups. Other research studies have supported the notion that self-set/participative goal-setting is more valuable and beneficial compared to assigned goal-setting due to the fact that participation in goal-setting leads to greater goal acceptance and commitment, and therefore, participants involved in the goal-setting process will become more devoted and motivated to achieve their goals (Latham, Mitchell, & Dossett, 1978; Latham & Yukl, 1975). On the other hand, Boyce and Wayda (1994) found that assigned goal groups performed significantly superior to self-set goal groups on weight training performance, which could have been explained by three relevant factors: that the goals were assigned by an authority figure (their teacher) who had confidence in the participants’ abilities to achieve those goals, and thus, their self-confidence
was enhanced (Milgram, 1969; Salancik, 1977); that the assigned goals were challenging and
difficult, which could have increased their levels of intrinsic motivation (Anshel, Weinberg, &
Jackson, 1992; Mento & Locke, 1992); and that assigned goals may contribute to increased self-
satisfaction and positive feelings (Bandura, 1988). From a neutral perspective, some research
studies have found that there is no significant difference between self-set and assigned goals
regarding performance (Boyce, 1992; Hall & Byrne, 1988; Lee & Edwards, 1984). In
conclusion, there is some research supporting the benefits of self-set/participative goal-setting
and assigned goal-setting, and at times no significant differences were found. Hence, more
research needs to be conducted particularly involving the use of self-talk for athletes.

Even though a few past studies have discovered positive effects of motivational and
instructional statements regarding athletic performance (i.e. Miller and Donohue (2003) used 90
high school cross-country runners and found that listening to motivational and instructional
statements immediately prior to running a time-trial run significantly improved athletic
performance compared to baseline time-trial runs and control conditions), there still needs to be
further research. Thus, due to the dearth of research involving who generates/chooses
motivational and instructional statements for athletes prior to a competitive situation (assigned
versus self-set) and which type is more optimal and beneficial for athletes (motivational versus
instructional statements versus a combination), the present study was designed to further explore
and investigate the interactions and outcomes of these factors using competitive collegiate
distance runners. Identifying, discovering, and understanding the impact and effect of these
variables can become valuable and practical for all types of athletes.

Thus, the purpose of the present study was threefold: (a) to determine the extent listening
to motivational statements, instructional statements, or a combination influences one-mile run
performance of competitive cross-country distance runners, (b) to determine whether there is a
significant difference in athletic performance if these statements are assigned or selected by the
athletes themselves (self-set/participative), and (c) to explore any additive effects involving these
two variables regarding athletic performance.

Regarding the first purpose of the present study, it was proposed that the combined
motivational and instructional groups will significantly improve performance more than either
the motivational groups or instructional groups because the athletic task of running seems to
incorporate both endurance and strength, which favors the motivational statements (Theodorakis
et al., 2000; Weinberg et al., 1980), as well as proper running technique and form (Landin & Herbert, 1999; Theodorakis et al., 2000), which favors the instructional statements. Pertaining to the second purpose, it was predicted that the self-set groups with the athletes choosing the statements themselves will enhance their athletic performance more than the groups of athletes whose statements are assigned to them. This was predicted based on previous research that has shown that participants who have choice/perceived choice feel more confident, assertive, motivated, and committed because they know that they had a participatory role (Dwyer, 1995; Vallerand, 1997). The third purpose of the present study is not associated with an actual hypothesis, but instead an additive effect was proposed involving the two variables of the study. Thus, it was predicted that the combined motivational/instructional self-set group will significantly improve performance compared to all of the other five groups because the combined motivational/instructional group was hypothesized to significantly improve compared to the individual motivational and individual instructional groups, and the self-set groups were predicted to significantly improve compared to the assigned groups.
Chapter 2: Review of Literature

Mental Preparation

Professional, amateur, and recreational athletes in various individual and team sports are increasingly seeking out sport psychologists to assist them in performance enhancement methods (Miller, Carlyle, & Pease, 1992; Sullivan & Hodge, 1991). Indeed, psychological skills-based training has become an essential aspect of sport psychology (Hardy & Jones, 1994), and each year there have been an increasing number of sport psychology consultants who work with athletes, coaches, and teams (Gordon, 1990). Moreover, several different intervention techniques have been and are still currently used to enhance performance, satisfaction, and personal growth and development in athletes. Particularly, cognitive strategies created to positively influence or change existing thought and affect patterns including self-talk, goal-setting, imagery, relaxation training, and arousal regulation have been shown to be effective and valuable for individual athletes. As a prime example, data from Olympic athletes has revealed that successful athletes utilize cognitive strategies more often compared to less successful athletes (Gould et al., 1993; Orlick & Partington, 1988).

It has long been reported that athletes experience their best sporting performances when they plan and execute mental strategies prior to competition (Crossman, 1977; Gould, Eklund, & Jackson, 1992, 1993; Rushall, 1979; Selkirk, 1981). Consistent with the aforementioned assertion, Olympic wrestlers have claimed to have their best performances in matches after using mental preparation techniques that facilitate confidence, optimum arousal, focus, and tactics (Gould, Eklund, & Jackson, 1992), and golfers report more self-confidence in tournament play after cognitive reinforcement strategies are employed prior to their matches (Cohn, 1991).

Controlled outcome studies have supported the use of mental performance enhancement strategies immediately prior to athletic competition, particularly those strategies that incorporate instructions to focus on being aroused, motivated, or specific task-relevant actions (e.g., Donohue, et al., 2000; Gould et al., 1980; Harvey, et al., 2002; Nideffer & Sagal, 2006; Rushall et al., 1988; Theodorakis, et al., 2000; Weinberg et al., 1980). Indeed, simple cues such as “step, swing” in tennis foster cognitive associations that will aid the athlete in learning proper physical execution (Zinsser, Bunker, & Williams, 2006). Moreover, planned self-talk prior to athletic competition can improve speed performance and volume of work output for athletic tasks during practices, which can lead to improved skills in competition (Rushall, et al., 1988). However,
there is much to discover regarding the effectiveness and influence of these mental preparation strategies for use in particular athletic tasks, as the athletic tasks examined (e.g., grip strength, short-distance runs, balancing), and their methods of implementation (i.e., instructions from others, self-instructions), have varied across studies.

Investigating mental preparation or psyching-up strategies, Weinberg, Jackson, and Seaboune (1985) demonstrated that athletes who engage in specific “psyching-up” routines before competing in sporting events become more emotionally and mentally prepared, and sprinters and hurdlers have been found to run faster when “psych-up” interventions are employed 60 seconds prior to competition, as compared with control group athletes (Caudill, Weinberg, & Jackson, 1980). In the first controlled evaluation of preparatory arousal, Shelton and Mahoney (1978), assigned Olympic weight lifters to “psych themselves up” or to count backwards immediately prior to squeezing a hand dynamometer. Results indicated higher levels of performance for subjects who received the psych-up intervention. Furthermore, Weinberg, Gould, and Jackson (1980) evaluated the positive effects of “psych-up” techniques across three tasks (i.e., stabilometer balance, speed-of-movement-ball-snatch, leg extension exercise). All subjects participated in both a control condition (counting backwards) and a “psych-up” procedure, which was created to cause participants to become motivated, energized, and emotionally aroused. Results indicated that the psych-up procedure led to significant improvements in leg extension strength only, suggesting the relative effectiveness of psych-up procedures may be more effective in tasks that involve conditioned strength and endurance, as compared with complicated tasks that require greater skill and timing.

In summary, there are various mental preparation strategies that have been shown to enhance athletic performance and athletic tasks. Along these lines, the main focus of this present literature review will be on the utilization of self-talk and self-statements/cues prior to athletic competition. This particular mental preparatory strategy has been explored and evaluated with athletes in a variety of different contexts as well as with a wide range of tasks and skills.

Self-Talk and Self-Statements/Cues

Self-talk is a cognitive strategy that refers to what individuals say to themselves either out loud or as a small voice inside of their head in a covert manner (i.e. person’s internal dialogue) (Sellars, 1997). Anderson (1997) states that self-talk is what learners say to themselves to think more precisely about their performances and to direct their actions in response to those
reflections. Research as well as anecdotal reports (Gallway, 1974) dating back to the 1970s has demonstrated that athletes extensively and consistently utilize self-talk to enhance motivation, build motivation, and provide cues for physical performance (Mahoney & Avener, 1977; Meyers et al., 1979; Rushall, 1984; Van Raalte et al., 1994; Weinberg et al., 1992). Additionally, Zinnser et al. (2006) asserted that self-talk facilitates performance by enhancing skill acquisition, building confidence and self-efficacy, modifying ineffective habits, and controlling effort. Furthermore, Nideffer (1993) suggested that self-talk promotes attention to be redirected to task-relevant cues, and other researchers (e.g. Gould et al., 1993; Madigan, et al., 1992) found that athletes reported that self-talk is one of the most widely used cognitive strategies. The process of self-talk is that it functions as a mediator between an event and an individual’s response (i.e. event (environmental stimulation): missing an important shot in a tennis match; self-talk (perception, evaluation): keep your eye on the ball – this match is not over yet; response (emotional, physiological, behavioral): better concentration, optimism, calmness). Additionally, self-talk can play a critical role in reactions to situations, and these specific reactions can affect future actions, feelings, thoughts (Weinberg & Gould, 2003).

Recent qualitative research by Hardy, Gammage, and Hall (2001) has shown that the content of self-talk can be classified into the following four different categories: (a) nature (positive or negative; internal or external); (b) structure (single cue words such as “breathe” and “concentrate,” versus phrases like “park it” and “come on,” versus full sentences such as “don’t worry about mistakes that occur”); (c) person (one talks to oneself in the first person using “I” and “me” or in the second person using “you”); and (d) task instruction (skill-specific phrases such as “keep your head up” and “tackle low” in comparison to general instructions such as “stay tough throughout the race” and “get there faster”).

**Uses, Functions, and Applications of Self-Talk.** After summarizing the self-talk research literature, Weinberg and Gould (2003) concluded that athletes utilize self-talk in many different ways. First, athletes implement self-talk for skill acquisition and learning new skills/tasks, and this type of self-talk involves cue words to focus their attention (Perkos, Theodorakis, & Chroni, 2002). Second, self-talk can be beneficial for breaking a bad habit by determining the best self-instructional cue(s) that will result in the new response becoming automatic (Landin & Hebert, 1999). Third, in order to initiate an action, the motivating and encouraging aspect of self-talk can be employed (Van Raalte, Brewer, Lewis, Linder, Wildman, & Kozimor, 1995). Fourth, positive
self-talk can assist in sustaining effort and initiating action (Theodorakis et al., 2000). Finally, other uses of self-talk can focus on the psychological aspects of performance such as increasing confidence, enhancing motivation, regulating arousal levels, and improving mental preparation (Weinberg & Gould, 2003). Zinnser et al. (2006) discussed a variety of different uses and functions for self-talk including being used for skill acquisition and performance, changing bad habits, attention control, creating and changing affect and mood, controlling effort and maintaining energy, and building self-efficacy. Hence, self-talk can be applied to various situations and circumstances as well as used for many different purposes.

Regarding skill acquisition and performance, the nature of self-talk should change as performers become more proficient and competent. Thus, during the early learning stages, skill acquisition is typically aided when self-instructional talk is utilized to remind the performer of specific key aspects of a particular movement or skill. As the skills or movements are mastered, self-talk becomes shorter, less frequent, and changes focus from the mechanics of the technique to strategies and optimal feelings. Hence, the goal is to reduce conscious control and promote the automatic execution of the skill/movement. For instance, a distance runner might use a phrase such as “smooth and fluid” to maintain a pace or a soccer player might use the phrase “constant, accurate, and intense” to help focus on the flow of play. These types of simple verbal cues can be used to promote a desired and automatic action/response. Additionally, the content and effectiveness of self-talk while the athlete is learning new skills depend on the nature of the task. For example, skills that are self-paced which are initiated by performers when they are ready are positively influenced by thoughts immediately prior to performance (i.e. pitching, riflery, bowling, archery, golf, free-throw shooting, tennis or volleyball serving). Along these lines, successful execution can be programmed via positive thoughts immediately prior to physical execution. If the skills are well learned, the nature of the self-talk should concentrate on what the performer is striving to achieve instead of the physical mechanics of the act. In contrast to self-paced skills, reactive and externally paced skills (i.e. spiking in volleyball, fast breaking in basketball, volleying in tennis) involves the performer needing to rely more on being able to automatically respond correctly since there is not enough time to separately pre-program each movement. Athletes in these types of situations should learn to use the naturally occurring pauses in the game (i.e. time-outs, out-of-bounds, changing sides of the court) along with during the actual playing time of the game as good opportunities to control their self-talk and prepare.
themselves to focus on what they want to achieve when the action begins again. For example, during an actual game, a volleyball player who is about to spike the ball could use self-talk words such as “powerful”, “keep ball controlled”, or “push” in order to concentrate on what he/she would like to accomplish during that particular play of the game and to match his/her mental thoughts with his/her physical actions.

In terms of self-talk being utilized to change bad habits or a well-learned skill, it can be a beneficial way to deautomatize the old skill and create opportunities for a new and correct response. For example, a distance runner who runs with his/her body being very tense, uptight, and mechanical can change this poor running technique form into a more relaxed, smooth-flowing, strong, and more comfortable form so that he/she can avoid the risk of injury and feel more confident and swift when running. Also, the more drastic the change, then the more detailed and descriptive the self-talk must be during the relearning phase. Furthermore, it is important for the content of the self-talk to concentrate on the desired outcomes and what the athlete wants to do rather than on what the athlete is trying not to do or what the athlete wants to avoid. For instance, a distance runner who wants to improve his/her running technique of short strides and loud foot slaps using the flat part of his/her feet should focus on running with long graceful strides and bouncing off of their toes instead of simply just trying not to run using his/her old bad habit. In addition, this type of self-talk reinforces the habit of creating positive and encouraging thoughts instead of negative and debilitating thoughts.

Moreover, self-talk can assist athletes in controlling their attention, keeping their minds appropriately focused, not becoming distracted during competition and practice, and staying in the present (Gould et al, 1992; Landin & Herbert, 1999). For example, in terms of focusing on the present and on the desired action right now, a golfer could use self-talk such as “head down, smooth” rather than allowing himself to wander into the past (“if only I had made that last putt”) or focus on the future (“if I birdie the next hole, I will be leading the field”) because this will give the athlete the greatest chance of having a successful performance.

Self-talk can also be used to create affect or mood, and affective cues have been demonstrated to lead to significant changes in performance. For instance, runners who say “fast” or “quick” have been shown to increase their speed (Meichenbaum, 1975); golfers who use swing thoughts like “smooth” or “oily” have swings that appear smoother and more controlled (Owens & Bunker, 1989); and athletes who use power words such as “blast,” “hit,” and “go”
have claimed that these are essential aids in explosive movements which help create the desired mood state (Owens & Bunker, 1989). In addition, a long distance runner may wish to shift word cues throughout the race so that the self-talk is appropriate and necessary to create the desired affect and mood. Therefore, during the initial part of the race, words that promote constant pace and energy may be more suitable, and during the middle part of the race words that encourage persistence and staying concentrated on his body appear essential. Finally, during the final section of the race, the runner might use self-talk that focuses on speed and power. Thus, the self-talk/statements have an emotional quality that is connected to the movement quality or content, and the utilization of the correct affective cues/statements can lead to the best potential for peak performance (Meichenbaum, 1975).

In addition to creating affect or mood, self-talk can also modify affect or mood so that athletes can achieve desired emotional states. For example, self-talk can aid angry or over-aroused athletes to refocus their energy so that it can be used constructively and appropriately as well as helping fatigued or bored athletes activate the energy required for intense and competitive play. In a study by Hanton and Jones (1999), competitive swimmers who perceived their pre-competitive anxiety symptoms as debilitative were taught to use self-talk to reinterpret the anxiety symptoms as facilitative, which led to enhanced performance. Thus, these elite swimmers were taught that a certain amount of pre-competitive anxiety can be beneficial and valuable because it could help them become more motivated, aroused, and mentally and physically prepared for their competitions.

Self-talk can also be a valuable technique to help maintain energy and persistence as well as control effort. Harris and Harris (1984) recommended that self-talk phrases such as “go for it,” “pace,” “pick it up,” “easy,” “cool it,” “hold onto it,” “push,” and “stay” can all be remarkably beneficial to sustain energy and motivation along with to control effort. In addition, self-talk can be used to help build self-efficacy and self-confidence in athletes. According to Bandura (1977), self-efficacy can be influenced by verbal persuasion, both from others and from the self in the form of self-talk. Mahoney (1979) claimed that self-talk is a beneficial method for building the self-efficacy expectations of athletes, and Hanton and Jones (1999) discovered that an intervention which included cognitive restructuring strategies resulted in enhanced confidence levels immediately prior to athletic competition. Self-talk also can play a vital role in self-efficacy involving rehabilitation from injury. Specifically, Ieleva and Orlick (1991) found that
athletes who recovered exceptionally fast from ankle and knee injuries had a significantly higher frequency of positive self-talk regarding the process of their recovery than did athletes who healed more slowly. Thus, these authors suggested that positive self-talk directly affects an individual’s belief in the body’s healing power and in the actual healing process itself.

**Does Self-Talk Work?** Research has shown that using self-talk and key words immediately prior to performing a skill can be beneficial for enhancing overall athletic performance. For example, it has been discovered that self-talk and cues can enhance acquisition of skating figures at figure skating practices (Ming & Martin, 1996); acquisition of forehand and backhand shots in tennis (Ziegler, 1987); lead to improvements in speed and accuracy of performance and volume of work output involving previously learned skills during practices of competitive rowers (Rushall, 1984), collegiate tennis players (Landin & MacDonald, 1990), sprinters (Mallett & Hanrahan, 1997), cross-country skiers (Rushall et al., 1988), and swimmers (Rushall & Shewchuk, 1989); and enhance transfer of previously learned skills from practices to competitions with college-level basketball players (Hamilton & Fremouw, 1985; Kendall et al., 1990).

It is impressive that in the study with figure skaters, self-report follow-ups one year after the intervention revealed that the participants continued to utilize self-talk during practices as well as believed that it enhanced and improved their competitive performance (Ming & Martin, 1996). Thus, the participants were positively influenced and encouraged by initially being introduced to self-talk techniques, which resulted in them continuing to use and incorporate this strategy into their training and competitions. In a single-subject multiple-baseline across-individuals design involving self-talk and elite female youth soccer performance, results revealed that the self-talk strategy immediately improved soccer shooting performance for two of the three experimental participants (Johnson, Hrycaiko, Johnson, & Halas, 2004). Regarding the one participant who did not show immediate soccer shooting improvements, she began to demonstrate improvements during the final stages of the data collection period, and the control participant who did not receive the self-talk intervention at all showed no improvements in soccer shooting performance. The two self-talk words of “lock” and “down” selected for this study were chosen by the coaching staff of the participants’ elite under-14 female regional soccer team. Specifically, these two words were cues that focused on how the proper technique of the low drive (LD) shot is implemented. Additionally, social validity assessments indicated that both
the coach and the participants were very satisfied with the study’s results and believed that the self-talk strategy was an important component in improving their performance. In another multiple-baseline design study employed by Mallett and Hanrahan (1997) involving elite national sprinters, a specific cognitive race plan was developed to evaluate its effectiveness regarding 100 m sprint performance. Pertaining to the cognitive race plan, each participant used three different cues throughout the 100 m races, which directly corresponded to the three different phases of the 100 m races. During the first 30 m, which was the acceleration phase, participants used the word “push”; the maximum velocity phase was from 30-60 m, and participants used the word “heel”; and the final 40 m was the speed endurance phase where participants used the word “claw.” Thus, each self-talk statement was appropriate and suitable for each of the three phases of the 100 m race. Results revealed that 11 of the 12 sprinters showed improvements in 100 m sprint performances compared to control conditions using this particular cognitive race plan that included self-talk. Participants also demonstrated more consistent sprint performances when using the self-talk/cues, as well as all participants reported that the utilization of the cognitive race plan helped optimize their sprint performances and was useful and relevant.

Furthermore, Rushall et al. (1988) implemented a study using 18 members of the Canadian cross-country ski team and the effects of thought content instructions on skiing performance. Under the task-relevant statements condition (“feel really long and powerful,” “full movement range,” “up-hill quick and grip”) and positive self-statements condition (“feel great,” “it is yours to take,” “feel the best), 17 of the 18 participants improved skiing performance compared to their own control conditions, and 16 of the 18 participants improved their performance under the mood words condition (“go! blast, punch,” “drive, drive,” “rip, rip”). Thus, all three self-talk interventions resulted in improved skiing performance for the elite skiers, which demonstrated that the particular mental preparation strategy of self-talk and the utilization of self-statements/cues led to enhanced performance. Finally, in a study by Wrisberg and Anshel (1997), the use of positively-worded performance reminders to reduce warm-up decrement in the field hockey penalty shot was examined. Competitive male field hockey players performed 21 baseline trials of the standard penalty shot and then rested for three 7-minute periods, each of which were followed by four additional penalty shots. During the last two minutes of each rest period, control participants continued resting while participants in two other groups reviewed
written checklists containing positively-worded (PR) performance reminders (e.g. “watch the ball”) or negatively-worded (NR) performance reminders (e.g. “don’t rush the shot”). Results indicated that diminished post-rest performance accuracy and movement form was found for the NR group and control group but not for the PR group. Thus, post-rest warm-up decrement in performance error was eliminated only for those participants who reviewed a list of positively-worded performance reminders prior to resuming performance, while participants who reviewed a list of negatively-worded performance reminders or had non-specific cognitive activity (control condition) demonstrated the traditional warm-up decrement function during each bout of post-rest performance. Therefore, the positively-worded performance reminders (self-talk) demonstrated to be an effective warming-up activity for certain types of discontinuous sport performance, which corresponded to the notion that this type of self-talk contributed to more positive performance. In summary, there have been numerous studies and research demonstrating that the utilization of self-talk and key words/statements is helpful and favorable to athletes as well as leads to performance enhancement and performance satisfaction.

Since research has strongly suggested that self-talk can enhance and improve athletic performance as well as be a valuable and meaningful tool for athletes and coaches, Mikes (1987) recommended six guidelines for creating self-talk for performance execution: (a) keep phrases short and specific; (b) use the first person and present tense; (c) construct positive phrases; (d) say phrases with meaning and attention; (e) speak kindly; and (f) repeat phrases often. In addition, there are two main strategies that have been discovered to improve self-talk, which results in athletic performance and satisfaction being enhanced. One of these techniques involves changing negative self-talk into positive self-talk, which redirects attentional focus so that encouragement and motivation can be highlighted. It is suggested to first strive to stop the negative thought; then take a deep breath and exhale; and finally relax and repeat a positive statement/cue to replace the negative and destructive statement. Another technique to help improve self-talk refers to the process of thought stopping, which involves concentrating on the undesired thought briefly and then using a cue or trigger to stop the thought and clear the mind. Examples of a trigger can be a simple word such as “stop” or a trigger like snapping the fingers or hitting the hand against the thigh. For instance, when an athlete begins to think a negative thought, he/she can say the word “stop” aloud or quietly to himself/herself and then concentrate on a task-related cue. For both of the strategies to improve self-talk mentioned above, it is
recommended to do them in practice before trying them in competition so that they become more familiar and comfortable.

Types of Self-Talk. There are many different types of self-talk including positive (associated with praise), negative (involving criticism), neutral, motivational, and instructional/task-relevant. Numerous studies have been conducted utilizing these different types of self-talk with the intention to compare and contrast the effectiveness and influence of these various kinds of self-statements regarding different types of tasks, conditions, and athletes.

Positive and Negative Self-Talk. Employment of positive self-statements prior to a challenging task is thought to improve psychological and physiological preparation (Rushall, 1982, 1984; Taylor, 1979) due to its facilitation of encouragement, motivation (Desiderato & Miller, 1979; Kirschenbaum & Bale, 1979; Rushall, 1975; Weinberg et al., 1984), and instructional assistance (Chorkawy & Ford, 1982; Moore, 1976; Rushall, 1975; Selkirk, 1981; Zinnser et al., 2006). Moreover, it has been suggested that positive self-talk reduces anxiety, increases effort, enhances self-confidence, provides self-reward, controls attention and arousal, and can aid in rehabilitation from injury (Finn, 1985; Weinberg, 1988; Hardy et al., 1996). Additionally, positive self-talk assists athletes in remaining appropriately focused on the present, not dwelling on past mistakes, and not projecting too far into the future, whereas negative self-talk can cause distractions, debilitating, and poor performance because it is inappropriate, counterproductive, irrational, or anxiety-producing (Weinberg, 1988). Negative self-talk has also been associated with thoughts of failure and doubt, overanalyses, and inappropriate questions that interfere with athletes’ performances (Zinnser et al., 2006).

The majority of research studies support the notion that positive self-talk has a beneficial and influential impact on performance. For instance, positive self-talk was found to be an effective strategy in enhancing endurance performance (Weinberg et al., 1984), and it increased performance in a basketball task, while negative self-talk showed decrements in performance (Hamilton & Fremouw, 1985). In addition, positive self-talk led to better performance in a dart throwing task compared to using negative self-talk (Dagrou, Gauvin, & Halliwell, 1992). Furthermore, in a single-subject evaluation of self-talk in figure skating, Ming and Martin (1996) determined that the utilization of positive self-talk enhanced competitive performance. Finally, Van Raalte et al. (1995) found that athletes who had used positive self-talk performed significantly better than athletes who had used negative self-talk on a dart throwing task.
Contrary to most studies, there has been some research conducted that has resulted in either negative or neutral consequences using positive and/or negative self-talk. For instance, Dagrou, Gauvin, and Halliwell (1991) claimed that self-talk did not differ between Ivory Coast athletes’ reports pertaining to their best and worst matches. Likewise, Van Raalte et al. (1994) found that observed and self-reported positive self-talk did not correlate with winning for junior tennis players, even though negative self-talk was associated with losing. In addition, self-talk was not effective in enhancing performance of figure-skating skills (Palmer, 1992). However, most studies and previous research have found positive self-talk to be an effective, beneficial, and appropriate mental preparation strategy, while demonstrating that negative self-talk can be detrimental and debilitative to performance.

**Instructional/Task-Relevant and Motivational Self-Talk.** Although many studies have confirmed that positive self-talk can lead to improved and enhanced performance of endurance tasks or tasks in sports such as basketball, tennis, and skiing (Weinberg et al., 1984; Hamilton & Fremouw, 1985; Ziegler, 1987; Rushall, et al., 1988), there is still the debate regarding the effectiveness and value of motivational and instructional self-talk. Zinnser et al. (2006) claimed that motivation and instruction are the two key functions of self-talk. Motivational statements appear to facilitate performance by inspiring greater effort and creating a positive mood and confidence, whereas task-relevant instructional statements enhance performance by recalling desired actions through focus and strategy execution (Hardy, Jones, & Gould, 1996). In particular, motivational self-talk is considered to facilitate performance by enhancing confidence, inspiring greater effort and energy expenditure, and by creating a positive mood. Examples of motivational self-statements include: “you can do it,” “hang in there,” “strong,” and “get tough.” On the other hand, instructional/task-relevant self-talk enhances performance by prompting desired actions via proper attentional focus, correct technique, and strategy execution (Hardy et al., 1996). Zinnser et al. (2006) suggested that simple instructional cues such as “step, swing” in tennis, “step, drop, step, kick” for a soccer punt, and “arms straight, elbows in” for golf cultivate cognitive associations that will help athletes in learning proper physical execution. Other examples of instructional self-talk in sport are “elbow straight,” “reach,” “move your feet,” “stay low,” “pump your arms,” and “high knee lift.” Hendrix (1994) declared that instructional self-talk has been associated with concentration on specific tasks or
goals and with stress coping capabilities since athletes do not have time to create inappropriate thoughts when they are focusing on the task.

To empirically investigate the effectiveness of instructional self-talk on acquiring and performing three basketball skills (dribbling, passing, and shooting), Perkos et al. (2002) had young novice players use self-talk while practicing the three specific drills, and the control group simply performed the drills without any self-talk for a duration of 12 weeks. Results revealed that the self-talk group participants performed better than the control group participants when dribbling and passing. Also, the self-talk group participants and their coaches reported using self-talk more when passing and dribbling and less when shooting, as well as achieving significantly better dribbling and passing scores between assessment sessions. In accordance with research from other authors (i.e. Landin, 1994; Wrisberg, 1993; Zinnser et al., 2006; Landin & Herbert, 1999; Masser, 1993), Perkos et al. (2002) concluded that self-talk was effective for dribbling and passing because it has been shown to enhance technique (especially movement patterns more than actual outcome), which may then lead to performance improvement. Regarding the findings that self-talk did not help athletes perform better when shooting, the authors suggested that this skill might have been too complex for self-talk to be effective. In addition, the participants and the coach reported a lower rate of using self-talk when shooting. Furthermore, the participants’ young age and low level of experience could be attributed to these findings. In summary, the authors determined that in order for self-talk to be successful and useful for athletes, it needs to be simple, well designed, clearly understood by the participant, linked to a specific skill/task, and used frequently.

Using a multiple baseline design, Landin and Herbert (1999) employed an instructional self-talk program with elite collegiate tennis players, which emphasized movement pattern elements. All players significantly improved; reported using the specific technique most of the time; increased their confidence; and were effective on focusing their attention on proper aspects of execution. In accordance with suggestions by Ming and Martin (1996), these researchers designed the self-talk program so that it was simple and included only a few key words as well as monitoring and assessing how much the athletes were actually using self-talk. Another study which emphasized the effectiveness of instructional self-talk was conducted by Mallett and Hanrahan (1997), who showed that the use of predetermined instructional/task-relevant self-talk resulted in positive effects on the performance of a 100 meter dash race.
To examine the impact of motivational and instructional mental preparation interventions across four athletic performance tasks, Theodorakis et al. (2000) conducted four intervention outcome studies. The investigators predicted a motivational intervention (instructions to say “I can” immediately prior to the task) would lead to significant improvements in strength and endurance tasks (i.e., knee extension test, isokinetic dynamometer), whereas instructional techniques (i.e., “I see the net, I see the target,” “breath out,” “I move fast and strong”) would lead to significant improvements in tasks that required relatively greater skill, timing, and precision (i.e., soccer accuracy test, badminton service test). In the first study, male soccer players in high school were matched for performance in a soccer accuracy test, and then assigned to a control condition (no self-talk instructions), a motivational condition, or an instructional condition. Participants were asked to attempt the soccer test four more times. As predicted, participants in the instructional group did significantly better on this skill task, as compared with control and motivational participants. The experimental design of the second experiment was similar to the first although the task included the badminton serve test. The results found in the first study were replicated, as participants in the instructional condition improved their performance significantly more than participants in the other control and motivational conditions. Using a similar experimental design, the third study consisted of three minutes of sit-ups. Although participants in the motivational condition did perform more sit-ups during the last trial, relative to the other two conditions, the difference was not found to be statistically significant. Finally, in the fourth study, a leg extension test measuring strength and endurance was employed. Again, participants were matched for performance and split equally into one of the three experimental groups mentioned above. Results indicated that the motivational and instructional interventions led to significantly greater improvements in the leg extension test, as compared with control participants. Thus, the combined results appear to indicate that when the athletic task involves fine motor movements and precision, an instructional technique may be warranted, whereas both instructional and motivational techniques appear equally effective for strength and endurance tasks. This conclusion is consistent with the results of other studies that have found improvements in athletic performance consequent to the receipt of instructional mental performance techniques when examining athletic tasks (e.g., swimming, track). For instance, superior age-group swimmers have been found to improve their performance most
when their self-talk is focused on task-relevant content, followed by positive mood words and other positive thinking approaches (Rushall & Shewchuk, 1989).

In an attempt to investigate the efficacy of the utilization of instructional/task-relevant versus motivational statements, Hatzigeorgiadis, Theodorakis, and Zourbanos (2004) assessed the effects of both types of self-talk on the occurrence of interfering thoughts and performance on two water polo tasks with similar characteristics in the same environment. In the experiment involving a precision task (throwing a ball at target), both self-talk groups improved their performance in comparison to baseline measures, with participants in the instructional self-talk group yielding greater improvements. In the experiment involving a power task (throwing a ball for distance), only the motivational self-talk group improved performance significantly. Also, occurrence of interfering thoughts was reduced in both experiments for both self-talk groups. The authors suggested that by concentrating on the correct technical execution of the throw, the element of strength for throwing the ball for distance was undermined by participants, and thus, the instructional self-talk might not have been appropriate for this power task. In terms of the motivational self-talk, the authors concluded that this type of self-talk content is similar to the content of many previous studies involving positive self-talk, which demonstrated that there were beneficial effects for both fine (Hamilton & Fremouw, 1985; Rushall et al., 1988) and gross tasks/skills (Weinberg et al., 1984). Therefore, this study emphasized the importance of appropriately matching type of self-talk with the demands of the task in order for performance enhancement or improvement to occur.

The use of various self-statements in sport may be interfered with due to performance anxiety, lack of practice, memory deficits, and distractions. Indeed, immediately prior to the athletic event, perhaps when it is most necessary, it may be difficult for an athlete to spontaneously generate positive, motivational, or task-relevant instructions that are most useful. Therefore, in an attempt to build upon the existing outcome literature, and improve the implementation of self-statements prior to athletic competition, Donohue et al. (2000) examined the effectiveness of having facilitators state task-relevant or motivational statements to cross-country runners during their warm-up exercises prior to running. In this study, six NCAA Division 1 female cross country distance runners were instructed to run 1000 meters to the best of their ability. After the 1000-meter baseline was obtained for each runner, they were again instructed to run 1000 meters on three separate occasions. However, in each of these three trial
runs the athletes were administered an intervention five minutes prior to running. The three interventions included a facilitator repeating motivational statements (e.g., “you are the definition of speed”), instructions to focus on specific running techniques (e.g., “run through the finish line”), or asking what the runner was thinking (control condition). Unique from other mental preparation techniques, each athlete selected their own statements from a broader list of statements (an exception is a research study by Harvey, Van Raalte, & Brewer (2002) involving self-selected self-talk and golf performance). These statements were subsequently administered to these athletes during the five minutes prior to running while performing their warm-up. Instructions to focus on particular aspects of proper running performance appeared to be slightly more effective than motivational statements, although not statistically significant, and both of these interventions were significantly more effective than the control condition. The low number of participants and use of a quasi-controlled experimental design did not allow the drawing of any definitive conclusions. The results of this study do suggest, however, that mental preparation methods can be tailored to meet the unique needs of athletes, while maintaining a standardized protocol that can be replicated. Moreover, the study results demonstrate the effective implementation of mental performance strategies (i.e. instructional and motivational cues and statements) by non-athlete facilitators.

Similar to the study by Donohue et al. (2000) that gave participants the opportunity to select their own self-statements, Miller & Donohue (2003) demonstrated that listening to a personalized script (selected by the athlete) of a combination of motivational and instructional statements/cues on headphones immediately prior to a post-test one-mile time-trial run appeared to be more effective in enhancing athletic performance compared to either listening to music (approached statistical significance even though did not reach significance) or no sound control condition (reached statistical significance) on headphones for 90 high school long-distance runners. Satisfaction ratings of perceived running performance improvement and satisfaction with the interventions indicated that participants felt both the motivational/instructional statements intervention and music intervention helped improve their running performance and were more enjoyable compared to the control group. However, the motivational/instructional statements group yielded slightly higher consumer satisfaction ratings on both scales compared to the music condition, although the results were not statistically significant.

Research Involving All Types of Self-Talk. To investigate the effects of different
types of self-talk on elite skiers, Rushall et al. (1988) compared the use of positive self-statements (“I feel great”), mood words (“blast, rip”), and task-relevant statements (“full movement range”). Results indicated that all three self-statement interventions significantly improved performance for 16 of 18 skiers. However, Meyers et al. (1979) found that there were no significant differences among four different types of self-talk (positive, negative, neutral, and coping words) regarding the acquisition of gymnastic skills. Harvey, Van Raalte, and Brewer (2002) assessed the effects of positive, instructional, negative, or no self-talk on golfers of different skill levels and discovered that instructional self-talk appeared to be the best type of self-talk to enhance performance. Also, Highlen and Bennett (1983) found that elite divers who qualified for the Pan American games were using more content-based self-instructions during competition and less positive self-talk than nonqualifiers.

In conclusion, numerous studies have investigated the effects and outcomes of the different types of self-talk/self-statements when employed prior to athletic tasks or competition. The results of many of these studies have been inconsistent because some studies have shown that instructional/task-relevant statements were more effective compared to motivational statements whereas other studies have demonstrated the opposite findings. Thus, there continues to be a debate regarding which type of self-talk is most helpful and appropriate for athletes, although positive, motivational, and instructional/task-relevant statements have been shown to be more helpful and valuable compared to negative statements or no self-talk at all. In addition to assessing the various types of self-talk, another significant variable that is associated with self-talk pertains to who creates and chooses the statements and more specifically whether the statements are assigned by others or self-set by the athletes themselves.

*Choice (Perceived and Actual)*

One variable that will be manipulated in the present study is who selects/assigns various motivational and instructional self-statements to athletes (the athletes themselves or another person). Along these lines, the topic of choice is associated with this variable because some of the athletes in this study will have the opportunity to listen to their own choice of motivational or instructional/task-relevant statements compared to the other intervention groups who will be listening to motivational or instructional statements that were selected for them. Thus, it seems very logical and appropriate to discuss literature and research related to the topic of choice, with an emphasis on the topics of assigned and self-set/participative activities.
Assigned Versus Self-Set/Participative Exercise. According to Daley and Maynard (2003), individuals’ preferences or likings of certain activities may be one factor that could possibly influence whether individuals claim to have positive affective emotions during and after exercise. The idea of choice or preference has been investigated in concurrence with exercise intensity (Dishman et al., 1994; Eston et al., 1998; Parfitt et al., 2000), exercise environments (McAuley et al., 1996), and time of day to exercise (Trine & Morgan, 1997). In a study by Parfitt et al. (2000), they discovered that work rate was higher in the preferred group condition, although affective responses and ratings of perceived exertion (RPE) scores did not differ between exercising at preferred and prescribed intensities. Additionally, Thompson & Wankel (1980) explored the effect of perceived choice on exercise behavior using adult female participants. The authors determined that the exercisers in the choice condition who were convinced that their exercise program was based on their expressed preferences had better attendance and subsequently conveyed a greater intention to continuing exercising at the health club compared to exercisers in the no-choice condition who were informed that they were assigned a standardized exercise program.

In another study examining the influence of choice of exercise mode on psychological responses, Parfitt & Gledhill (2004) used 20 low-active male and female adults who exercised for 20 minutes on each mode of exercise (high-preference/first choice of exercise mode versus low-preference/third choice of exercise mode) with affect and heart rate recorded pre-exercise, every five minutes during exercise, and five minutes post-exercise while RPE scores were assessed only every five minutes during exercise. Their results indicated that positive well-being was higher in the high-preference condition whereas fatigue, psychological distress, and RPE scores were higher in the low-preference condition. Furthermore, Daley and Maynard (2003) found that when 26 physically active men and women were given a choice of exercise modes (cycle ergometry, treadmill running, gradient walking, rowing ergometry, stair climbing, or ski simulator), they reported lower negative affect scores from pre-exercise to post-exercise compared to when they were not given a choice. These authors’ findings supported claims by Deci and Ryan (1985), who suggested that by participating and overcoming challenges that are optimal for their capabilities, individuals often feel a sense of personal efficacy. Thus, feelings of enjoyment are experienced when involvement in an activity leads to a sense of competence, self-determination, and freewill. Along the same lines, cognitive evaluation theory is associated with
choice and self-determination since this theory proposes that individuals’ intrinsic motivation increases when they have the opportunity to have choice, and their intrinsic motivation decreases when they are denied the chance to have choice (Deci & Ryan, 1985; Anderson & Rodin, 1989; Swann & Pittman, 1977; Zuckerman, Porac, & Lathin, 1978). Vallerand (1997) and Deci and Ryan (1985) have proposed that being intrinsically motivated or maintaining more self-determined forms of behavioral regulation result in the most positive affective, cognitive, and behavioral consequences. Therefore, it is suggested that when individuals have choice or perceive that they have choice in a situation/activity, then their intrinsic motivation tends to increase, which can also lead to greater satisfaction, enjoyment, and ultimately improved or enhanced performance.

Dwyer (1995) conducted a study investigating the effect of perceived choice of music on exercise intrinsic motivation using 34 female adult exercisers. Each participant was randomly assigned to either the experimental group, where she was led to believe that the music played during her 25-minute aerobics activity represented her previously reported music preferences (along with other participants’ music preferences) or the control group, where she was not asked about her music preferences. Also, each participant exercised to the 25-minute videocassette in privacy and subsequently completed an intrinsic motivation questionnaire. Results revealed that the perceived choice group reported higher intrinsic motivation than did the control group. In addition to choice/perceived choice producing the high likelihood that individuals’ intrinsic motivation will become enhanced, choice can also have other positive and beneficial outcomes for individuals. For example, Stotland and Blumenthal (1964) found that giving students the opportunity to choose the order in which they took a series of important ability tests led to less anxiety during the test taking compared to when students were given the same tests in an assigned order. Also, research studies have shown that preferred exercise intensity conditions resulted in participants having improved affect post-exercise using the Feeling Scale (Eston et al., 1998). Therefore, giving individuals (specifically athletes for the purposes of this present study) the opportunity to have choice instead of experiencing an assigned condition could lead to greater satisfaction, gratification, performance enhancement, and other positive outcomes.

Assigned Versus Self-Set/Participative Goal-setting. Due to the dearth of research and literature involving assigned versus self-set/participative self-talk and self-statements, the literature pertaining to assigned versus self-set/participative goal-setting was reviewed. Results
from numerous controlled outcome studies, experimental research, and meta-analyses have been mixed, inconclusive, ambiguous, and controversial regarding assigned versus self-set/participative goal-setting. Differences between participative and assigned goal-setting regarding performance have been proposed to be attributed to differences in mediating variables such as goal difficulty (Kernan & Lord, 1988; Latham & Saari, 1979a; Latham, Steele, & Sarri., 1982), information (Latham & Saari, 1979b), experimental support (Latham, Erez, & Locke, 1988), and strategy development (Latham, Winters, & Locke, 1994). When these factors are considered and controlled for, Locke and Latham (1990) claimed that there are no significant differences in performance between assigned and participatory-set goal groups. Moreover, Locke (1968) proposed that having participants involved in the process of choosing their own goals should only have an indirect effect on their level of performance. In addition, Tubbs (1986) claimed that performance should only be greater in participant-set goal conditions if the participants select higher goal levels compared to participants with assigned goals. Also, when Locke, Frederick, Buckner, and Bobko (1984) conducted a study involving the effects and influences of previously assigned goals on self-set goals and performance, participants were strongly influenced in their self-set goals by their previously assigned goals. Thus, there are many factors and variables that must be considered and accounted for regarding discovering the differential effects of assigned versus self-set goal-setting.

In a meta-analysis of six studies by Mento et al. (1987), participant-set goal groups performed at slightly higher levels than did assigned goal groups. Furthermore, Ludwig and Geller (1997) found that participative goal-setting demonstrated significant increases in performance regarding non-targeted behaviors, although no significant findings existed between participative and assigned goal-setting concerning targeted behaviors. Latham and Yukl (1975) conducted a field experiment on the effects of assigned and participative goal-setting using 24 educated and 24 educationally disadvantaged (less than nine years of education) logging crews, who were all randomly assigned to a participative goal-setting condition, an assigned goal-setting condition, or a “do your best” condition. Their results revealed that in the sample of educationally disadvantaged crews, the participative goal-setting condition resulted in higher performance and more frequent goal attainment during the eight week period of the study compared to the assigned goal-setting condition. Additionally, the average goal level was significantly higher for the participative condition than for the assigned condition, and thus, the
authors concluded that since goal attainment was higher in the participative condition than in the assigned condition despite more difficult goals, goal acceptance was increased by crew members participating in the goal-setting process. However, in the sample of educated crews, there were no significant differences regarding performance, goal attainment, and average goal level for the participative and assigned conditions. Pertaining to these results, the authors were unable to determine whether the failure to find significant differences in the participative and assigned groups of educated crews was due to education level or to other factors (i.e. geographical region, lack of support by management).

In another study assessing the effects of assigned versus participative goal-setting, Lawrence and Smith (1955) discovered that groups of workers who set production goals and standards of production had higher production than they had in the past as well as had higher production than control groups who had not set their own production goals. Other research studies have supported the notion that self-set/participative goal-setting is more valuable and beneficial compared to assigned goal-setting due to the fact that participation in goal-setting leads to greater goal acceptance and commitment, and therefore, participants involved in the goal-setting process will become more devoted and motivated to achieve their goals as well as set higher goals for themselves (Latham et al., 1978; Latham & Yukl, 1975). For example, after reviewing several empirical studies regarding participative decision making in general, Vroom (1964) declared that performance was improved and satisfaction was enhanced as individuals were given an increasing voice in decisions affecting their jobs. This belief can be transcended outside of this particular context and into the assigned versus self-set realm of self-talk, meaning that there could be explanations why self-set/participative self-talk could be more useful and meaningful for athletes.

Contrary to the suggestion that self-set/participative goal-setting is superior and more advantageous compared to assigned goal-setting, Boyce and Wayda (1994) used 252 female weight training class students and discovered that assigned goal groups performed significantly superior to self-set goal groups on weight training performance, which could have been explained by three relevant factors: that the goals were assigned by an authority figure (their teacher) who had confidence in the participants’ abilities to achieve those goals, and thus, their self-confidence was enhanced (Milgram, 1969; Salancik, 1977); that the assigned goals were challenging and difficult, which could have increased their level of intrinsic motivation to
accomplish the tasks (Anshel et al., 1992; Mento & Locke, 1992); and that assigned goals may contribute to increased self-satisfaction and positive feelings (Bandura, 1988). Also, this study found that performance was significantly enhanced for the self-set goal groups compared to the control group only during the later trials, which reflects that the self-set goal groups took time to improve along with the fact that the assigned goal groups showed significant improvements starting from the beginning trials because of the novelty of the task involved (Boyce & Wayda, 1994). This study paralleled previous research regarding the suggestion that when individuals perceive a task as novel, then the possible impact/influence of assigned performance goals becomes valuable and advantageous (Boyce, 1990; Hillery & Wexley, 1974).

Taking a neutral stance, some research studies have found that there is no significant difference between self-set and assigned goals regarding performance (Boyce, 1992; Hall & Byrne, 1988; Lee & Edwards, 1984). For instance, Boyce (1992) determined that there were no significant differences between assigned and participative goal-setting groups regarding skill acquisition and retention of a shooting task, even though both groups performed significantly better compared to the “do your best group” during the second, fourth, fifth, and retention trials. Moreover, in a study by Ivancevich (1976) comparing participative and assigned goal-setting for sales personnel, it was discovered that although both goal-setting groups demonstrated performance increases, no significant differences were found between the participative and assigned goal conditions. Additionally, in a field experiment implemented by Latham and Yukl (1976) using 41 typists evaluated over a 10-week period, results revealed that there were no significant differences between the participative and assigned goal-setting groups regarding typing performance, even though both groups improved their performance significantly after the specific goals were set. Likewise, Latham et al. (1978) found that there were no differences in performance between the participative and assigned goal-setting groups using a sample of engineers and scientists, even though the participative group significantly outperformed the control group. In summary, there is some research supporting the superiority and benefits of self-set/participative goal-setting, assigned goal-setting, and for there being no significant differences between both types of goal-setting procedures. Hence, more research studies need to be conducted regarding this topic as well as be applied to the utilization of self-talk and self-statements for athletes within the sport arena.

Purpose
Due to the lack of research involving who generates and chooses motivational and instructional/task-relevant statements to athletes prior to a competitive situation (assigned versus self-set) and which type is more optimal and beneficial for athletes (motivational versus instructional/task-relevant statements versus a combination of both types), the present study was designed to further explore and investigate the interactions and outcomes of these factors using competitive distance runners. Identifying, discovering, and understanding the impact and effect of the aspects of type and generator of mental preparatory statements prior to athletic competition can become extremely beneficial, valuable, and practical for all types of athletes (i.e. youth, high school, collegiate, professional, recreational, elite). Thus, the findings and conclusions of this present research study could help athletes, coaches, applied practitioners in the field, and researchers gain knowledge and insight pertaining to the most favorable, appropriate, and advantageous methods of administering mental preparatory statements prior to athletic competition (i.e. what types of statements, who creates and selects the statements).

Thus, the purpose of the present study was threefold: (a) to determine the extent listening to motivational statements, running technique/instructional statements, or a combination of both types of statements influences one-mile run performance of competitive cross-country distance runners, (b) to determine whether there is a significant difference in athletic performance if these statements are assigned or selected by the athletes themselves (self-set/participative), and (c) to explore any additive effects on athletic performance regarding the type of statements and who chooses the statements.

Hypotheses

Overall, it was hypothesized that there would be a significant difference among the six different mental preparation intervention groups regarding running performance on a one-mile race and overall social validation ratings with the independent variables of choice and type of statements playing critical roles in the explanations of running performance. Specifically, regarding the first purpose of the present study, it was proposed that the combined motivational and instructional/task-relevant groups would significantly improve performance more than either the motivational groups or instructional/task-relevant groups because the athletic task of running seems to incorporate both endurance and strength, which favors the motivational statements (Theodorakis et al., 2000; Weinberg et al., 1980), as well as proper running technique and form (Landin & Herbert, 1999; Perkos et al., 2002; Theodorakis et al., 2000), which favors the
instructional/task-relevant statements. Previous studies have only either evaluated motivational versus instructional statements or a combination of motivational and instructional statements versus other mental preparatory techniques or control conditions. Thus, this present study was designed to assess the differences between motivational statements only, instructional statements only, and a combination of both types of statements. Also, no control groups were used in the present study because previous research has consistently shown that all of the above types of mental preparation strategies have resulted in enhanced performance compared to control conditions in a wide variety of contexts and with different tasks (Donohue et al., 2000; Harvey et al., 2002; Miller & Donohue, 2003; Perkos et al, 2002; Theodorakis et al, 2000).

Regarding the second purpose of the present study, focusing on the variable of choice of the statements, it was predicted that the self-set groups with the athletes choosing the statements themselves will enhance their athletic performance more than the groups of athletes whose statements are assigned to them. The justification for this supposition is that the athletes in this present study who listen to their own self-selected statements prior to competing will feel more confident, assertive, motivated, and committed because they will know that they had a participatory role in choosing the statements that were personal and individual to them. Also, their sense of competence, self-determination, and personal efficacy will more likely increase compared to the assigned-statement groups due to the fact that the statements in which they will be listening to will be individually customized for them, have more personal meaning and importance, and be their chosen preferences instead of having general statements assigned to them (Deci & Ryan, 1985; Dwyer, 1995; Vallerand, 1997).

The third purpose of the present study was not associated with an actual hypothesis, but instead an additive effect was proposed involving the two variables of the study. Thus, it was predicted that the combined motivational/instructional self-set group will significantly improve performance compared to all of the other five groups because the combined motivational/instructional group was hypothesized to significantly improve compared to the individual motivational and individual instructional groups, and the self-set groups were predicted to significantly improve compared to the assigned groups.
Chapter 3: Methods

Overview

The present experimental study using competitive collegiate distance runners used a pre-test/post-test matched groups design to assess and understand the effects and interactions of the independent variables of type of mental preparatory statements/cues (motivational versus instructional versus a combination of both types) and who selects/assigns the statements (athletes themselves versus another person) regarding athletic performance (post-test one mile time-trial) and social validation ratings. Following baseline one-mile time-trial runs and completion of consent forms, demographic forms, and motivational and instructional questionnaires, athletes were matched (based on baseline one-mile times) and assigned to one of the six intervention groups: motivational statements chosen by the athlete, motivational statements assigned to them, instructional statements chosen by the athlete, instructional statements assigned to them, combination of both types of statements chosen by the athlete, or combination of both types of statements assigned to them. One week after pre-test baseline runs, each athlete was administered his/her respective intervention by listening via headphones to his/her script of statements on a compact disc immediately prior to running his/her post-test one-mile time-trial. Also, all participants filled out social validation questionnaires upon completion of the post-test one-mile run. Post-test run times of each group were then compared to determine the influence that the various interventions had on the runners’ athletic performances.

Participants

Participants were recruited via contact with NCAA Division I, II, and III collegiate cross-country coaches in Ohio, Indiana, and Kentucky by telephone and e-mail correspondence. Approximately 10 local and regional university cross-country teams were contacted to inquire about participating in this study. The target number of participant athletes for this study was 60 so that there would be at least 10 athletes in each of the six intervention groups. Additionally, at one of the collegiate track and field invitational meets in May 2005, the principal investigator met some of these coaches and inquired about the possibility of them and their athletes willing to participate in the study. Thus, the principal investigator obtained additional contact information via these coaches. The coaches who were contacted by the principal investigator contacted the principal investigator if they decided to allow their athletes on their cross-country teams to participate in the present study. Additionally, if the principal investigator did not hear back from
a coach after approximately two weeks, she re-contacted that coach to inquire again if he/she would let his/her team become involved in the study. Finally, the principal investigator and university coaches scheduled convenient and appropriate times for the principal investigator to come to one of their scheduled cross-country practices in order to recruit the athletes herself for the study. During the first session/practice that the principal investigator attended, she personally recruited participants and explained to them that it was completely optional to participate in the study. Before the athletes ran their pre-trial run (baseline run), they signed informed consent forms (approved by the University Institutional Review Board), which explained the risks, benefits, confidentiality issues, rationale of the study, right to withdraw at any time, etc. that were associated with the present research study. Also, the coaches encouraged their runners to work hard and run at a fast pace for this one-mile time-trial run, and the coaches informed their runners that the time-trial would be considered a hard workout and to put great effort into it. The coaches also told their runners that they would be recording their times, which seemed to be an incentive for the participants to run fast. Following the baseline time-trial run, all athletes provided demographic characteristics and background information about their cross-country experiences as well as how hard/fast they felt that they ran in this baseline time-trial run (See Appendix A).

Regarding the demographic characteristics and background information of the 81 participants in the present study, there were 41 male and 40 female runners from six different collegiate cross-country teams in Ohio, Kentucky, and Indiana. There were 76 Caucasian/White participants, two African-American/Black participants, and three Hispanic/Latino/Chicano participants. The age of the participants ranged from 18 to 24 years old (M = 19.54, SD = 1.32); the age of participants’ first running competition ranged from seven to 19 years old (M = 12.55, SD = 2.22); the mean for number of years running competitively on their collegiate cross-country team (including current year) was 3.05 years; and prior to this present research study the mean one-mile personal record times for the male participants was 4 min 34 s (SD = 13.8 s) and 5 min 24 s for the female participants (SD = 17.2 seconds). When responding to the question regarding whether they had ever engaged in mental preparation strategies prior to competition, 45 participants responded that they had while 36 responded that they had not. Additionally, involving the type of mental preparation strategy, 29 participants had previously engaged in
imagery/visualization, and 16 other participants indicated engaging in other mental preparation strategies such as self-talk, listening to music, relaxation exercises, goal-setting, and prayer.

Procedures

Baseline Trial Run. After completing the baseline one-mile time-trial run on the track (pre-test), all participants were administered a list of 40 motivational statements (e.g. “You’re going to dominate today,” “You’re the definition of speed,” “You’re a champion and a winner,” “You’ve got the power today”) with an additional space provided to include their own self-generated statements (See Appendix B) and a list of 25 instructional/task-relevant statements (e.g. “Run on your toes,” “Take perfect strides,” “Pump your arms,” “Start your kick at the right time”) with an additional space provided to include their own self-generated statements (See Appendix C). Both of these lists of statements were generated from athletes in a previous controlled outcome study (see Donohue et al., 2000) and also used in a previous outcome study using high school cross-country runners (see Miller & Donohue, 2003). In the present study, all participants rated each motivational statement on a 5-point Likert-type scale ranging from 1 (not at all motivating) to 5 (extremely motivating), and they rated each instructional/task-relevant statement using a similar 5-point Likert-type scale ranging from 1 (not at all helpful for a “perfect run”) to 5 (extremely helpful for a “perfect run”). Also, all participants were instructed to circle their top 12 statements from each list, which were used to create their personalized self-talk scripts.

Experimental Conditions. Matched (“yoking”) assignment to the six intervention groups was used in this study based on participants’ baseline pre-trial runs. Specifically, after the baseline runs, the top six participants (top one-mile times) were randomly assigned to the six intervention groups, and this procedure was repeated until all participants were equally matched into the six different intervention groups. Thus, all six groups contained runners of equal ability level so that there would be no differences amongst groups prior to running the post-trial run. The reason that “yoking” was used in this study was because the three groups of participants who were in the assigned groups actually listened via compact disc to the same scripts of statements as the self-set groups. Thus, a participant in the assigned-statements motivational/instructional group was actually listening to the same exact script of statements as a participant in the self-set motivational/instructional group; a participant in the assigned-statements motivational group was actually listening to the same exact script of statements as a participant in the self-set...
motivational group; and a participant in the assigned-statements instructional group was actually listening to the same exact script of statements as a participant in the self-set instructional group. In this way, there was no confounding variable or controversy regarding the content of the statements because participants in the three different group sets were actually listening to the same exact statements, even though the participants in the assigned-statements groups were told by the principal investigator that they were listening to statements assigned to them by their coach. Although this involved some deception regarding the study, all participants and coaches were thoroughly informed of these details in a debriefing session following the post-test time-trial one-mile run.

During the week between the athletes’ pre-test and post-test time-trial one-mile runs and using sophisticated and advanced computer technology, the principal researcher recorded in her voice the athletes’ personalized scripts of statements on compact discs. The six highest rated motivational and six highest rated instructional statements were used for participants in both motivational/instructional groups (i.e. self-set and assigned); the 12 highest rated motivational statements were used for participants in both motivational groups (i.e. self-set and assigned); and the 12 highest rated instructional/task-relevant statements were used for participants in both instructional groups (i.e. self-set and assigned). The compact discs were approximately 3 minutes in length and included two full cycles of the 12 chosen statements, and thus, there were 24 statements included in each personalized compact disc. The compact discs that contained both the motivational and instructional statements alternated in type of statements with a motivational statement followed by an instructional statement followed by a motivational statement and so on. Three minutes was selected for the duration of the intervention based on recommendations from cross-country runners in a previous study that evaluated similar interventions (Donohue et al., 2000; Miller & Donohue, 2003).

Post-Intervention Trial Run. For the post-intervention time-trial run (post-test), all runners were encouraged to engage in their usual warm-up routines and stretches, and then they were all instructed to listen to their specific scripts on compact disc via headphones away from the other runners approximately five minutes prior to running the post-test race. When distributing the compact discs and headphones to the participants, the principal investigator individually whispered into their ears which group they were in so that they would know what they were listening to (i.e. self-set or assigned; motivational, instructional, or a combination of
statements). Also, similar to the baseline pre-test time-trial run, the coaches encouraged their runners to work hard and run at a fast pace for this post-test one-mile time-trial run, and the coaches informed their runners that the time-trial would be considered a hard workout and to put great effort into it. The coaches also told their runners that they would be recording their times, which seemed to be an incentive for the participants to run fast. After completing the post-test one-mile time-trial, all runners completed social validation questionnaires (See Appendix D) focusing on items such as how much they felt their respective intervention conditions improved their run performance, how satisfied/how much did they enjoy their respective intervention conditions, the likelihood that they will continue to incorporate their mental preparation intervention into their training and competition routines, why/why not they will continue to use this type of mental preparation strategy in the future, their top three statements/cues that they listened to during their respective intervention, and how hard/fast they felt they ran during the post-test time-trial run.

Along with completing the social validation forms, the principal investigator engaged in a motivational activity with the participants and coaches, which she called the Starburst Motivational Activity. She gave them starburst candies with a corresponding handout that said, “If you associate motivational and instructional statements and other mental preparation strategies with delicious starburst candies, then you will be reminded that you can “BURST” with motivation, energy, enthusiasm, persistence, and determination just as starburst candies “BURST” with flavor! So, use these mental preparation techniques to “BURST” with effort, dedication, confidence, and concentration! This will result in enhanced performance and positive attitudes!” The principal investigator had previously done this motivational exercise with various high school and collegiate athletes, and it had seemed to be very enjoyable, beneficial, and meaningful to them. It appeared as though the majority of the participants in the present study responded very positively to this motivational activity and enjoyed it very much as well as found it to be valuable, encouraging, and stimulating for them. Also, the principal investigator distributed thank-you bags filled with healthy treats to all participants (athletes usually always eat a healthy and a nutritious diet, right?) as well as allowed each participant to keep their personalized compact disc of statements for future use. Before concluding, the principal investigator conducted a comprehensive debriefing session with all participants to inform the coach assigned groups that their statements were actually not chosen by their coaches but instead
were matched to athletes in the self-set groups. Additionally, during this debriefing session, the principal investigator answered any questions or concerns the participants had as well as listened to feedback and comments from the participants and coaches regarding the research study.

**Statistical Analyses**

The research design for this study was a 3(type of statement) x 2(self-set or assigned selection of statements) x 2(trials) with repeated measures on the trials variable. The levels of the type of statement variable were motivational statements, instructional statements, and combinations of both types of statements. The levels of the self-set/assigned variable were whether the athlete chose/selected the statements or if the statements were assigned to them. A within-groups analysis on the six different groups was conducted to test for any changes in run times from pre-test (control/baseline/no intervention) versus post-test run times for the different groups. Post-hoc tests were conducted regarding any significant type of statement main effect or type of statement by statement selection interaction. Furthermore, social validation ratings were compared (i.e. how much did the intervention help improve their running performance, how much did they enjoy their intervention, the likelihood that they will continue to use this type of mental preparation intervention and incorporate it into their training and competition routines) using 3 x 2 ANOVAs.
Chapter 4: Results

Effectiveness of Interventions

To investigate between-group differences, a 3 (type of statements) X 2 (self-set or assigned) X 2 (trials) ANOVA with repeated measures on the trials factor was conducted. Results revealed no significant main effects or interaction for the between-group factors. However, there was a significant trials effect $F(1,75) = 37.16, p < .001$. The direction of the means indicated that performance improved (i.e. time decreased) from baseline Trial 1 ($M = 5 \text{ min}, 31 \text{ sec}$) to post-test Trial 2 ($M = 5 \text{ min}, 25 \text{ sec}$).

To further evaluate the within-subject differences, additional within-groups analyses were conducted. Specifically, for each of the six experimental conditions, Table 1 includes the means and standard deviations of participants' baseline and post-intervention one-mile time-trial runs, along with the mean improvement times from baseline to post-intervention runs. For the analyses, a Bonferroni correction was done, and thus, the new alpha level became 0.008. Even though all six intervention groups had improvements in running time from pre-test to post-test, only three groups had time improvements that were statistically significant. These three groups were the combined motivational/instructional self-set group ($p < .008$), the instructional assigned group ($p < .008$), and the motivational self-set group ($p < .008$). Although the other three intervention groups’ mean time improvements were not statistically significant, from a practical and applied perspective, the time improvements were meaningful with regards to the actual sport of collegiate cross-country running. These time improvements from pre-test to post-test were five seconds for both the motivational assigned group and instructional self-set group and two seconds for the combined motivational/instructional assigned group. After speaking with several collegiate cross-country coaches, they indicated that any time improvement that was greater than two seconds for the one-mile run within a one-week time frame (the present study) was a meaningful running performance improvement and should be worthy of noting.

Additionally, statistical analyses indicated that there were no significant differences regarding effort (how hard/fast each participant felt that they had run) between pre-test and post-test one-mile time-trial runs for any of the six different intervention groups. Table 2 includes the means and standard deviations for each of the six intervention groups’ baseline and post-test runs, which are based on a 5-point Likert-scale (1 = not hard/fast at all, 3 = somewhat hard/fast, 5 = extremely hard/fast). Specifically, regarding how hard/fast they felt they had run during the
baseline (amount of effort expended), 36 participants reported that they had run somewhat hard/fast, 35 participants reported that they had run very hard/fast, and 10 participants reported that they had run extremely hard/fast. Likewise, pertaining to how hard/fast they felt they had run during the post-test trial, one participant reported to have run a little hard/fast, 24 participants reported that they had run somewhat hard/fast, 47 participants reported that they had run very hard/fast, and nine participants reported that they had run extremely hard/fast.

*Top Chosen Motivational and Instructional Statements*

After participants completed the post-test one-mile run, they were asked to list their top three statements that they listened to via their personalized scripts on compact disc prior to the post-test one-mile time-trial. Table 3 presents the top chosen statements that were reported by the participants, however it should be noted that not all 81 participants had the option to list both motivational and instructional statements due to the fact that some participants only listened to motivational statements, some participants only listened to instructional/task-relevant statements, while some participants listened to a combination of both motivational and instructional statements. The first column lists ten different motivational statements that were listed as a top three choice from the participants, and the second column lists the corresponding number of participants who selected these ten motivational statements. Therefore, as can be seen via the table, the top two chosen motivational statements included: “Today is your day” and “This is what you have been training for.” Similarly, the third and fourth columns of Table 3 list ten different instructional/task-relevant statements that were listed as a top three choice from the participants along with the corresponding number of participants who selected these 10 instructional statements. Hence, as can be seen from the table, the top two chosen instructional statements included: “Relax each muscle in your body” and “Drop your shoulders while you run.”

*Social Validation Questionnaire Results*

Table 4 presents the means and standard errors of participant responses to three Likert-scale items on the social validation questionnaire reflecting perceived improvement in run performance from their respective intervention condition, personal satisfaction with their respective intervention, and the likelihood that they will continue to utilize the type of mental preparation strategy that they received and incorporate it into their training and competition.
routines. Statistical analyses indicated that there were no significant differences between the six different intervention groups regarding any of the three items mentioned above.

**Qualitative Analysis: Reasons to Continue/Not Continue This Mental Preparation Technique**

There was one open-ended qualitative question on the social validation form that participants responded to following their post-test one-mile run which inquired about reasons that participants would or would not continue to utilize in the future the type of mental preparation intervention that they received in the present research study. To explore and assess the participants’ responses to this qualitative question, the principal investigator comprehensively coded all of the responses and grouped similar responses together. Table 5 includes the top reasons that participants mentioned with the corresponding number of participants for each reason. Some of the most common reasons why participants said that they would continue to use this type of mental preparation strategy included, “It helped me stay focused during the race,” “It reminded me of what I should think about during the race,” “It helped me stay relaxed before and during the race,” “It helped motivate me,” and “The statements were good positive messages and reminders.” On the other hand, the top reasons why participants said that they would not want to continue to use this type of mental preparation strategy included “It would be better if music is also playing in the background with the statements,” “I enjoy listening to music more than listening to statements,” and “It would be more effective and beneficial if statements were in my coach’s voice.”
Chapter 5: Discussion

The purpose of the present study was threefold: (a) to determine the extent listening to motivational statements, instructional statements, or a combination influences one-mile run performance of competitive cross-country distance runners, (b) to determine whether there is a significant difference in athletic performance if these statements are assigned or selected by the athletes themselves (self-set/participative), and (c) to explore any additive effects involving these two variables regarding athletic performance.

Results of the present study revealed that there were no statistically significant differences between groups regarding mean time improvements from baseline to post-intervention one-mile time-trial runs. Thus, there were no significant differences found relating to time improvement between the motivational, instructional, and combination groups as well as between self-set and assigned groups. Pertaining to the variable of type of self-talk/statements, these results support the previous research of Rushall et al. (1988) who investigated the effects of different types of self-talk on elite skiers and found that all three self-statement interventions (positive, task-relevant, and mood words) significantly improved performance for 16 of 18 skiers. Additionally, results of the present study correspond with previous research by Meyers et al. (1979) who found that there were no significant differences among four different types of self-talk (positive, negative, neutral, and coping words) regarding the acquisition of gymnastic skills.

Although the self-talk findings of the present study do support the outcomes of some previous research studies, other studies have demonstrated that motivational self-talk or a combination of motivational and instructional/task-relevant self-talk is most effective and advantageous when strength and endurance tasks are involved (i.e. Miller & Donohue, 2003; Theodorakis et al, 2000), whereas other studies have shown that instructional/task relevant self-talk is more beneficial involving fine motor movements and precision (i.e. Hatzigeorgiadis, 2004; Theodorakis et al, 2000). In the present study, one possible explanation as to why there were no differences found between groups regarding the variable of type of self-talk could be because the messages themselves that were behind the various statements could have been very meaningful, powerful, and positively influential to the participants, and thus, the specific type of statements (motivational, instructional, or combination) may not have mattered so much to the participants. Therefore, it did not matter which intervention group participants were in.
(motivational, instructional, or combination) because all of the types of statements became valuable, potent, and evocative to the runners. Thus, the specific content of the statements (motivational, instructional, or combination) was presumed to not have become a pertinent factor to the participants, although the actual messages behind the content of the statements appeared to have an influential, beneficial, and noteworthy impact on the participants. However, it should be noted that all six intervention groups demonstrated improvements from pre-test to post-test when type of self-talk was combined with the selection of the statements (self-set or assigned). Future research should be conducted regarding the variable of type of self-talk to discover under what conditions self-talk would optimally enhance performance.

In terms of the variable of selection/choice of statements, the present findings parallel some previous research that found no significant differences between self-set and assigned groups regarding goal-setting. For example, Boyce (1992) determined that there were no significant differences between assigned and self-set/participative goal-setting groups regarding skill acquisition and retention of a shooting task, even though both groups performed significantly better compared to the “do your best group” during the second, fourth, fifth, and retention trials. Moreover, in a study by Ivancevich (1976) comparing self-set/participative and assigned goal-setting for sales personnel, it was discovered that although both goal-setting groups demonstrated performance increases, no significant differences were found between the self-set and assigned goal conditions. Furthermore, in a field experiment implemented by Latham and Yukl (1976) using 41 typists evaluated over a 10-week period, results revealed that there were no significant differences between the participative and assigned goal-setting groups regarding typing performance, even though both groups improved their performance significantly after the specific goals were set. Moreover, other research studies have found that there was no significant difference between self-set and assigned goal-setting, although these groups were more effective and beneficial compared to control conditions (i.e. Boyce, 1992; Hall & Byrne, 1988; Lee & Edwards, 1984). Therefore, the present study’s results support these previous research studies by demonstrating that there were no significant differences between the self-set and assigned groups regarding mean run time improvement, although both types of groups when combined with the self-talk type manipulation had meaningful run improvements compared to the control conditions (i.e. baseline run times).
However, the findings of the present study do not correspond with some previous research studies that have found that self-set exercise or goal-setting is most effective and valuable (i.e. Daley & Menard, 2003; Dwyer, 1995; Latham et al., 1978; Latham & Yukl, 1975; Parfitt & Gledhill, 2004); or conversely with other studies that have demonstrated that assigned exercise or goal-setting is most beneficial and practical (i.e. Boyce, 1990; Boyce & Wayda, 1994).

One feasible explanation as to why no differences were found in the present study between groups regarding the selection of self-talk/statements (self-set or assigned) is similar to the viable reasoning proposed earlier involving the type of self-talk. Along these lines, the messages themselves that were behind the various statements could have been very meaningful, prevailing, and positive. Therefore, who chose/selected the statements (self-set or assigned) may have not necessarily been germane or essential to the participants. In essence, it is assumed that it did not matter which intervention group participants were in (self-set or assigned) because all of the statements that participants listened to became valuable, evocative, and useful to them regardless whether they thought that the statements were selected by themselves or chosen for them. Thus, it is suggested that future research be conducted regarding the variable of selection of self-talk to discover under what conditions the selection of self-talk (who creates/generates/delivers it) becomes most critical.

Results revealed a significant trials main effect indicating that all six groups significantly improved performance from pre-test to post-test. Post-hoc tests illustrated that participants in all six intervention groups had meaningful improvements in one-mile run performance (ran faster) from baseline Trial 1 to post-intervention Trial 2, even though only three of the intervention groups indicated running time improvements that were statistically significant (i.e. combined motivational/instructional self-set group, motivational self-set group, and instructional assigned group). These three groups had mean time improvements of ten seconds, eight seconds, and eight seconds, respectively, while the motivational assigned group and instructional self-set group both had mean improvements of five seconds and the combined motivational/instructional assigned group had a mean improvement of two seconds. After speaking with several collegiate cross-country coaches, they indicated that improvement greater than two seconds for the one-mile run within a one-week time frame (the present study) was a meaningful running performance improvement and should be worthy of noting. Thus, from a practical and applied perspective
regarding the sport of collegiate cross-country running and given the fact that cross-country
distance runners on collegiate teams are talented, competitive, and are on a high caliber level, all
six groups of participants in the present study appeared to have meaningful run performance
improvements on the one-mile time-trial from baseline to post-intervention. Hence, the present
study supports the idea that different types of self-talk (motivational, instructional, or
combination) when combined with either self-set or assigned self-talk via compact disc on
headphones, had a positive and influential impact on their running performance.

Thus, why did the combination of the content and the delivery of the self-talk produce
significant improvements in performance? One explanation is that the participants may have
been focusing on both the content of the self-talk (i.e. motivational, instructional, or
combination) along with who chose the self-talk (i.e. self-set or assigned) when they listened to
their scripts of self-talk prior to running their post-test time-trials. In this sense, participants were
concentrating on the exact words and phrases of the self-talk and whether the statements were
selected by themselves or assigned to them. Hence, the type of self-talk that participants listened
to could have positively altered their moods, thoughts, attitudes, and beliefs, and this could have
affected them in different ways (i.e. helped them feel more motivated, confident, strong, and/or
focused; put optimistic and encouraging thoughts into their minds while eliminating negative
thoughts; caused them to feel more relaxed, calm, and/or prepared to run; gave them more
energy and enthusiasm). The participants in the motivational groups whose run times improved
might have done so because they were strongly influenced by the uplifting, inspiring, and
arousing content of this type of self-talk whereas the participants in the instructional groups
might have had run time improvements due to the fact that they were positively affected by
listening to running technique/task-relevant statements which helped them concentrate on their
actual running technique and specific parts of the race. Furthermore, the participants in the
combined groups might have been equally influenced by both the motivational and instructional
statements, and thus, they benefited from the encouraging content of the self-talk as well as the
helpful running technique reminders.

Moreover, who selected the self-talk could have had a positive impact on their
perceptions, confidence levels, and/or attitudes. For example, the runners who received the self-set
statements might have increased their confidence levels and felt more motivated and
determined after recognizing the specific statements that they had chosen from the list as well as
the personalized statements that they had added to the list the week prior. Additionally, the runners whose statements were selected for them and who were told that these statements were selected by their coaches (although the statements were really matched to participants in the self-set groups), might have been positively impacted because they had respect, trust, and belief in their coaches and felt that their coaches were trying to help them improve their running performance and become more successful, confident, and better runners overall. Thus, these participants in the assigned groups could have felt that their coaches were trying to do anything to benefit and strengthen them as athletes, and therefore, they were positively influenced by the fact that they thought that their coaches chose the statements for them. In conclusion, both variables of self-talk (type and selection) produced meaningful improvements in one-mile run times with various explanations to support these findings.

According to the results of the present study, it appeared that the combined motivational/instructional self-set intervention group had the greatest mean time improvements on one-mile performance. Previous research has demonstrated that alternating and/or combining motivational and instructional/task-relevant statements is conceptually grounded and leads to the greatest performance improvements. For instance, Rushall and Shewchuk (1989) found superior age-group swimmers improved their performance most when their self-talk was focused on task-relevant content, followed by positive mood words and other positive thinking approaches. This particular concept parallels the structure of the combined motivational/instructional intervention group in the present study because the motivational and instructional statements were equally alternated in the self-talk scripts. Thus, listening to the first motivational statement (i.e., “you’re going to dominate today”) was associated with positive feelings that are incompatible with negative self-statements (i.e., “I don’t know if I’m ready today”) that may otherwise have occurred and interfered with performance in the upcoming event. Hence, the first motivational statement appeared to assist the athlete in being more receptive, or capable of, focusing on the first instructional/task-relevant statement (i.e., “relax each muscle in your body”). Positive feelings associated with the second motivational statement may have then reinforced the act of focusing on the first instructional statement, and prepared the athlete to focus on the second instructional statement. This cycle of alternating and combining motivational and instructional statements continued until the upcoming event was initiated (i.e. one-mile time-trial).
Furthermore, the combined motivational/instructional group was predicted to have the greatest improvements in performance due to the fact that the athletic task of running seems to incorporate both endurance and strength, which favors the motivational statements (Theodorakis et al., 2000; Weinberg et al., 1980), as well as proper running technique and form (Landin & Herbert, 1999; Perkos et al., 2002; Theodorakis et al., 2000), which favors the instructional/task-relevant statements. This hypothesis was shown to be supported in the present study only with the self-set group as the findings indicated that the combined motivational/instructional self-set group had the greatest mean time improvements in one-mile run performance from baseline to post-test conditions. The reasoning behind this particular finding is that the motivational statements were designed to inspire, arouse, and have an uplifting and energetic impact on the participants; the instructional statements were designed to help the participants stay concentrated and focused on their running technique and specific running strategy for the race as well as contributed to them feeling more relaxed and calm before and during the race; and the self-set statements encouraged the participants to feel more confident, assertive, and committed because they knew that the statements were personalized and individualized to them as well as they felt that they had a participatory and highly-involved role in the intervention. Thus, the participants in the combined motivational/instructional self-set group may have demonstrated the greatest improvements in one-mile run times from baseline to post-test because the statements were stimulating and invigorating, task-relevant and focused on specific running technique, and individually customized, had personal meaning and importance, and were their chosen preferences.

Although the present study found that the combined motivational/instructional self-set group had the most significant mean one-mile time improvements followed by the motivational self-set group and instructional assigned group, more importantly the trials main effect revealed that all of the types of self-talk (when combined with who generated and delivered the self-talk) that were used in this study can be helpful, useful, and practical to collegiate cross-country distance runners. Specifically, the results of the present study indicated that it did not necessarily matter what type of self-talk (or if the self-talk was self-set or assigned) the collegiate runners listened to prior to running their post-test one-mile time-trial because all groups had meaningful time improvements compared to their baseline time-trials only one week prior to their post-test runs. Hence, the present study illustrated that when a type of self-talk (motivational,
instructional, or combination) was combined with the selection of the self-talk (self-set or assigned), then meaningful improvements in athletic performance were discovered.

Regarding theoretical explanations and linkages, there also were some parallels discovered relating to specific theories and the results and findings of the present study. Pertaining to the theory of self-efficacy and self-confidence, Bandura (1977) noted that self-efficacy can be influenced by verbal persuasion, both from others and from the self in the form of self-talk. In addition, self-talk can be used to help build self-efficacy and self-confidence in athletes. Additionally, Mahoney (1979) claimed that self-talk is a beneficial method for building the self-efficacy expectations of athletes, and Hanton and Jones (1999) discovered that an intervention which included cognitive restructuring strategies resulted in enhanced confidence levels immediately prior to athletic competition. Thus, in terms of the present study, participants might have felt more self-efficacy and self-confidence subsequent to listening to their script of statements on compact discs, and thus this prompted them to try harder and put more effort into their post-test one-mile time-trial run. Even though participants reported that they put forth similar effort for both their baseline and post-test time-trial runs, the self-talk statements that they listened to prior to their post-test run could have provoked them to feel more encouraged, motivated, and prepared for their post-test run. Hence, participants might not have necessarily been aware of the fact that they were trying harder and increasing their effort levels during their post-test time-trial run. However, in reality, the self-talk statements from participants’ respective interventions could have positively influenced and impacted them in a way that triggered them to subconsciously try harder and put forth greater effort into their post-test run, although they might not have been aware of this fact. Future research would be needed to test the potential self-talk effort linkage.

Another theoretical linkage discovered in the present study involves a theory by Deci and Ryan (1985), who suggested that by participating and overcoming challenges that are optimal for their capabilities, individuals often feel a sense of personal efficacy. Thus, feelings of enjoyment are experienced when involvement in an activity leads to a sense of competence, self-determination, and freewill. Along the same lines, cognitive evaluation theory is associated with choice and self-determination since this theory proposes that individuals’ intrinsic motivation increases when they have the opportunity to have choice (Deci & Ryan, 1985; Anderson & Rodin, 1989; Swann & Pittman, 1977; Zuckerman, Porac, & Lathin, 1978). Vallerand (1997) and
Deci and Ryan (1985) have proposed that being intrinsically motivated or maintaining more self-determined forms of behavioral regulation result in the most positive affective, cognitive, and behavioral consequences. Therefore, it is suggested that when individuals have choice or perceive that they have choice in a situation/activity, then their intrinsic motivation tends to increase, which can also lead to greater satisfaction, enjoyment, and ultimately improved or enhanced performance.

Relating to the present study, participants in the combined motivational/instructional self-set group and the motivational self-set group demonstrated significant improvements in performance from pre-test to post-test, and participants in both of these intervention groups had the opportunity to choose and listen to self-talk statements that were chosen by themselves. Thus, a possible explanation for this improvement from pre to post-test is that participants felt more self-determination, free-will, and intrinsic motivation. Furthermore, their personal efficacy and competence levels might have increased after listening via headphones to the statements that were self-selected by themselves and that were individualized, customized, and had personal meaning and importance to them. Future research is needed to test the relationship between self-determination theory, self-talk, and who chooses the self-statements.

Another interesting and important finding that should be discussed involves one of the qualitative items that participants responded to on their social validation form after running their post-test one-mile time-trial. Specifically, participants listed the top statements that they enjoyed listening to most during their respective self-talk intervention. Regarding the instructional/task-relevant statements, there was one particular statement that received far more positive and favorable responses from participants compared to any other instructional statement, which was “Relax each muscle in your body.” This specific self-talk statement involves the participants concentrating and focusing on their entire body as a whole, and thus, they do not simply give more attention to a particular part of their body or a certain muscle group (i.e. legs, arms, feet, lungs, shoulders, head). Therefore, participants appeared to want to focus on every muscle in their bodies, which corresponded with them striving to relax and loosen up every muscle in their bodies. It seemed as though participants wanted to try to be as calm and composed as they could prior to their post-test time-trial run, and hence, they responded very positively to the statement that involved relaxing each muscle in their bodies (i.e. rated this specific statement as their top choice).
Additionally, another top chosen instructional statement that participants reported was “Stretch your muscles well,” which also involved all of the muscles in their bodies and related to them as a whole instead of just a single muscle, body part, or group of muscles or joints. Again, this reflected that participants wanted to stretch, loosen, warm-up, and think about all of their muscles, which appeared to help calm them down and allow them to stay more concentrated and focused prior to running their post-test time-trial. Regarding the top chosen motivational statements, many participants ranked their own personalized statements (the statements that they added in the “Other” section of the List of Motivational Statements: Appendix B) as being one of their top three statements that they enjoyed listening to most. Hence, many participants appeared to be positively influenced and impacted by the individualized statements that were specifically customized for them. Along these lines, participants had the tendency to remember these personalized statements more compared to some of the other motivational statements from the list and their compact disc recording. Additionally, regarding the instructional statements, one possible explanation as to why participants did not list personalized statements from the “Other” section as being in their top choices could be because all of the instructional/running technique statements that were already noted on the List of Instructional Statements were common and useful statements that participants had previously been familiar with. Thus, participants might not have had any need to add any “Other” instructional statements since the ones already listed were relevant and comprehensive for them. On a concluding note, future research should be conducted involving the rationale, foundation, and justification of specific top chosen self-talk statements (both instructional and motivational in nature), and whether these particular top chosen statements/cues are truly more meaningful and beneficial compared to other statements.

Methodological Considerations

One important fact to mention is that all of the one-mile time-trial runs were completed only one week apart during the middle of the collegiate cross-country season. This eliminated the confounding variable of a long duration of time between both trials (i.e. very beginning of the season and then the end of season), and thus, it can not be argued that the participants had an entire season to get more running experience, get into better athletic shape, improve their running performance, or become overall stronger and faster runners. Additionally, regarding the fact that the study was conducted during the middle of the competitive cross-country season rather than during pre-season or post-season, it should be noted that most of the participants were on similar
training and competition schedules as well as had similar mind-frames (i.e. were very serious about their sport including all aspects of training; were dedicated, devoted, and motivated regarding their training and competing; and worked hard and put forth great effort). If the study was conducted during pre-season or post-season when the participants would probably not be as serious or dedicated to their sport, then there could have been a good chance that their training schedules and mental mind-frames would have been vastly different from each other. Thus, it seemed appropriate and sufficient that the present study was implemented during the regular cross-country season. Also, since all participants were experienced runners of competitive collegiate cross-country teams, it can not be argued that they were beginner-level runners who had the potential of demonstrating significant time improvements just due to the fact that over the duration of one week of time they could improve their one-mile performances. Moreover, the weather and temperature conditions were for the most part very similar for each university team’s pre-test and post-test time-trial runs, and therefore, performance improvements as well as any of the study’s results can not be attributed to changes in climate and/or temperature conditions.

Another key factor is that all of the collegiate coaches approached both the baseline time-trial runs and post-test time-trial runs in the same manner meaning that they similarly encouraged and motivated their runners to try to run at a hard and fast pace for both one-mile time-trials. In this way, the participants were coached in the same way for both the baseline and post-test runs and were not told to run faster or slower for either of the trials. Additionally, all of the baseline and post-test one-mile runs were done exactly one week apart from each other at the same location and approximately at the same time. Hence, the improvements in run time can not be attributed to a different location or time of day since these variables were controlled for in the present study. Finally, there were no significant differences found between groups regarding amount of effort expended for the baseline and post-intervention one-mile runs. Thus, participants responded that they had put forth similar effort and worked hard for both the baseline and post-test runs, eliminating the potential confounding variable of amount of effort expended for the baseline and post-test runs.

One other essential aspect to mention is that there is strong support for ecological validity of the present study. Specifically, all of the one-mile time-trial runs (pre-test and post-test) were completed on each collegiate cross-country team’s track where participants felt comfortable,
were familiar with, and had experience of running on that particular track on a regular basis. Moreover, all of the time-trial runs were exactly one-mile in distance, which is a length of a race that all of the participants had ran competitively before and is a common distance to run in the sport of collegiate cross-country and long-distance running for both males and females. Additionally, the participants approached both their pre-test and post-test runs in a competitive and aggressive manner, which resembled a “race-like” setting instead of a practice training session. Thus, it was assumed that participants would put forth just as much effort and try just as hard compared to if they were running a one-mile race in a competitive meet, although future research would have to empirically test this proposition. Regarding the social validation responses subsequent to running the post-test one-mile time-trial, all six groups of participants indicated that they were satisfied with their interventions, had perceived improvements in run performance due to the interventions, and were likely to continue to use this type of mental preparation technique in the future for their training and competition. Therefore, analyses revealed that there were no particular intervention groups that responded significantly more positively to any of these social validation questions, and thus, there was not one group who significantly enjoyed their intervention more than other groups, had greater perceived improvement levels, or were more likely to continue to use this mental preparation strategy in the future. These social validation results corresponded with the mean one-mile time improvements from pre-test to post-test because all self-talk groups had meaningful performance improvements in run time, and thus, there was not one single group that demonstrated significant performance improvements compared to another intervention group. Thus, there were no significant differences found between groups regarding social validation responses, which parallel the results indicating no significant differences between groups regarding mean time improvements. Also, results indicated that the majority of participants responded positively to the social validation questions, which is analogous to the fact that all groups had meaningful run time improvements from baseline to post-test.

Future Research

The findings of the present study are likely to raise questions regarding at which point during the post-intervention one-mile time-trial run did the self-talk statements demonstrate their greatest influence. It can be conceptualized that the statements were specifically effective and helpful in improving run performance during the initial stages of the one-mile time-trial run, as
the statements are likely to be most pronounced during this time as well as fresh in the participants’ memories. However, it is also possible that the intervention effects may have occurred later in the one-mile trial run, when energy wanes and determination and motivation become factors. Unfortunately, it is not possible to determine at which point in the time-trial run the experimental interventions may have influenced and impacted run performance. Thus, future outcome studies will need to be conducted that attempt to replicate the present study findings across different distances or at various stages of races.

Relevant to the implementation of mental preparation methods in sporting events, there are certain advantages in utilizing compact disc players in mental preparation. These compact disc players assure reliable adherence to the systematic application of the interventions, and permit the athlete to participate in concurrent pre-event warm-up routines with few restrictions. Moreover, athletes are not dependent on others, or themselves, to deliver relevant prescribed statements, which has been the case in past studies (e.g., Donohue et. al, 2000; Gould, et al., 1980; Theodorakis et al. 2000; Weinberg, et al., 1980). The latter advantage supports the external validity of the self-talk interventions, as the compact disc player allowed this intervention to be conducted in a realistic setting. Also relevant to external validity, with minor adjustments in the generation of instructional statements, the combined intervention package can be easily modified to accommodate athletes in other sports (e.g., gymnastics, boxing, swimming, tennis, golf, diving). However, the effectiveness of such an approach will need to be examined in future controlled trials using different types of sports and athletes as well as exploring the effects these interventions have on team sports and individual sports.

Additionally, future research should be conducted to find out why certain combinations of these statements/self-talk (motivational, instructional, combined, self-set, assigned) are most effective and beneficial to athletes. It is suggested that in future research studies, after athletes receive their respective interventions and complete their post-test trials, they should be directly asked more social validation questions regarding why they thought that their specific intervention was effective and valuable and also have the opportunity to give more feedback and comments pertaining to the specific combination of statements that they listened to. Thus, this particular information along with the opinions from the athletes themselves could help determine why certain combinations of the statements are most influential and helpful.
Furthermore, future research could be conducted involving personality types/traits/factors of participants and their chosen preferences of different types of self-talk (i.e. motivational, instructional, combination, self-set, assigned) as well as investigating whether people with certain personality types/traits/factors respond more positively or differently to various types and selection of self-talk statements. For example, do people who are high in task/mastery-oriented personality traits demonstrate greater performance improvements and are more satisfied with (or prefer) instructional/task-relevant self-talk statements compared to motivational statements? Hence, future research studies could be implemented that assess and evaluate whether participants with a certain personality type (i.e. task/mastery-oriented or ego-oriented) demonstrate more improvements in performance and/or are more satisfied and positively impacted when they listen to a specific type of statement (i.e. motivational, instructional, or combined) or select/choose statements themselves or are assigned the statements by another person.

Limitations

One noteworthy limitation that should be mentioned is that most outcome studies of mental preparation strategies, including the present study, have failed to conduct follow-up examinations/studies to determine the durability of study results. Of course, such investigation is difficult and inconvenient to arrange with competitive athletes, as athletes’ training and competition schedules are often inflexible and extremely demanding. Nevertheless, follow-up assessments should be attempted in future mental preparation studies to ascertain durability of study findings across time. Additionally, it should also be noted that there were no control groups in the present study due to the fact that the baseline runs served as the controls for each group. One reason that no control groups were used in the present study was because previous research has consistently shown that mental preparation strategies have resulted in enhanced performance compared to control conditions in a wide variety of contexts and with different tasks (Donohue et al., 2000; Harvey et al., 2002; Miller & Donohue, 2003; Perkos et al, 2002; Theodorakis et al, 2000).

Conclusion

The present study found that although all types of self-talk/statements produced meaningful improvements in run time from baseline to post-test and three of the groups demonstrated statistically significant improvements in run time, the combined motivational/
instructional self-set group had the greatest overall improvement. The reasoning behind this particular finding is that possibly the motivational statements were inspiring, arousing, and had an uplifting and energetic impact on the participants whereas the instructional statements may have helped the participants stay concentrated and focused on their running technique and specific running strategy for the race as well as contributed to them feeling more relaxed and calm before and during the race. In addition, the self-set statements appeared to encourage the participants to feel more confident, assertive, and committed because they knew that the statements were personalized and individualized to them as well as they felt that they had a participatory and highly-involved role in the intervention. Thus, the participants in the combined motivational/instructional self-set group demonstrated the greatest improvements in one-mile run times from baseline to post-test possibly because the statements were stimulating and invigorating; task-relevant and focused on specific running technique; and were individually customized, had personal meaning and importance, and were their chosen preferences. Also, it is important to mention that although there were no differences found between groups regarding mean time improvement from baseline to post-test runs, there were differences found within groups when the variables of type and selection of self-talk were combined. Hence, it seems appropriate, valuable, and practical to combine the variables of type and selection of self-talk, which can result in the most improved and most enhanced performance for athletes.
References


D. Shapiro (Eds.), *Consciousness and self-regulation: Advances in research*. New York: Plenum.


Palmer, S.L. (1992). A comparison of mental preparation techniques as applied to the developing


Appendix A

Demographic Form

1. Gender (Please circle one): Male      Female

2. Age: _________ years old

3. Year in school (Please circle one): Freshman Sophomore Junior Senior Other

4. Ethnicity (Please circle one): Caucasian/White African-American/Black Asian Hispanic/Latino/Chicano American Indian/Alaskan Native Native Hawaiian/Pacific Islander

5. Academic major in college: _______________________________

6. At what age were you when you experienced your first competition in a track or cross country event: ________ years old

7. Number of years in Cross Country and/or Track & Field in college: ________ years

8. Personal records (PRs): 400 meters: _______ 800 meters: _______ 1500 meters: _______
   1600 meters (one mile): _______ 3000 meters: _______ 3200 meters (two mile): _______
   5 kilometer cross-country race: _______ 6 kilometer cross-country race: _______
   8 kilometer cross-country race: _______ 10 kilometer cross-country race: _______

9. Have you ever engaged in mental preparation strategies prior to athletic competition? ______

10. If you have used mental preparation strategies in the past, how often? __________________

11. If you have used mental preparation strategies prior to athletic competition, please briefly describe them.

   ___________________________________________________________________________
   ___________________________________________________________________________
   ___________________________________________________________________________
   ___________________________________________________________________________

12. How hard/fast did you run your one-mile time-trial today? (how much effort did you expend)

   1 Not hard/fast at all  2 A little hard/fast  3 Somewhat hard/fast  4 Very hard/fast  5 Extremely hard/fast
Appendix B: List of Motivational Statements

The following is a list of statements identified by other athletes and coaches to motivate athletes to do their best. Rate how much each of the following phrases would motivate you to run your best, according to the following scale: 1=not at all motivating, 2=somewhat motivating, 3=motivating, 4=very motivating, 5=extremely motivating. There is also a category labeled “Other” where you can add any additional motivational statements that you can think of and then rate these additional statements accordingly. After you have completed rating each statement, please circle your top 12 ones.

1. It’s time to kick butt. ____
2. It’s time to go to work. ____
3. You’re in control. ____
4. You’re going to dominate today. ____
5. This is what you’ve been training for. ____
6. This is the best day of your life. ____
7. You’ve worked hard for this. ____
8. You’re ready and totally prepared. ____
9. You’re strong and explosive. ____
10. You’re the definition of speed. ____
11. You’re in an elite class, 2nd to none. ____
12. You respect all, but fear none. ____
13. It’s your destiny to win today. ____
14. You feel the need for speed. ____
15. Today is your day. ____
16. Nobody can keep up with you today. ____
17. You’re going to shatter the records today. ____
18. You’re a force today. ____
19. You can do it. ____
20. You’re going to destroy the competition. ____
21. You’re a champion and a winner. ____
22. This will be your best performance ever. ____
23. Nobody’s going to take away your glory today. ____
24. Let’s go, let’s do it. ____
25. No one’s in your class today. ____
26. You’ve got the power today. ____
27. You own the competition. ____
28. You can go all the way. ____
29. No one’s going to deny you today. ____
30. This is your moment. ____
31. This is your playground. ____
32. I believe in you. ____
33. The competition wishes they were you. ____
34. You run the show. ____
35. This is your time to shine. ____
36. This is the day of your dreams. ____
37. You’re in the best shape of your life. ____
38. You’ve earned the right to win. ____
39. Let them feel your power and strength. ____
40. Let them feel what it is to be dominated. ____
41. Other: ____________________________________________________________________

__________________________________________________________________________
Appendix C: List of Instructional Statements

The following is a list of instructional/running technique factors that other athletes and coaches have reported that would help athletes accomplish their “perfect run.” Rate how much each statement would help you to experience your “perfect run” according to the following scale: 1=not helpful, 2=somewhat helpful, 3=helpful, 4=very helpful, 5=extremely helpful. There is also a category labeled “Other” where you can add any additional instructional statements that you can think of and then rate these additional statements accordingly. After you have completed rating each statement, please circle your top 12 ones that are most helpful to you regarding running technique and instruction.

1. Stretch your muscles well. 
2. Get your body warmed up. 
3. Plan a good strategy for your run. 
4. Stick with your plan. 
5. Get an explosive start. 
6. Get a good position at the start. 
7. Keep mouth opened and relaxed. 
8. Keep hands open and relaxed. 
9. Drop your shoulders while you run. 
11. Run on toes. 
12. Pump your arms. 
13. Take deep breaths before making any major moves. 
14. Relax each muscle in your body. 
15. Focus on your running technique. 
16. Strike your heals against ground softly. 
17. Point your toes straight ahead. 
18. Breathe nice and relaxed. 
19. Take perfect strides. 
20. Maintain a perfect pace. 
21. Start your kick at the right time. 
22. Get your body in perfect rhythm. 
23. Keep your head still. 
24. Swing your arms effortlessly. 
25. Keep your eyes focused straight ahead. 
26. Run through the finish line. 
27. Other: __________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________


Appendix D
Consumer Satisfaction Ratings

1. How much did your intervention of listening to the statements immediately prior to athletic competition help improve your running performance? _______
   1                              2                             3                            4                            5
   not much                  a little                     somewhat                a lot                     very much

2. How much did you like your intervention that you received? _______
   1                              2                             3                            4                            5
   not much                  a little                     somewhat                a lot                     very much

3. What is the likelihood that you will continue to utilize the specific mental preparation intervention that you received and continue to incorporate it into your training and competition routines?
   1                              2                             3                        4                            5
   not likely                 possibly                maybe                  likely                 extremely likely

4. Why will you continue to use/not use this type of mental preparation technique?
   __________________________________________________________
   __________________________________________________________

5. Please list your top three statements/cues that you liked best.
1. __________________________________________________________
2. __________________________________________________________
3. __________________________________________________________

6. How hard/fast did you run your one-mile time-trial today? (how much effort did you expend)
   1                                    2                                     3                                   4                       5
   Not hard/fast at all         A little hard/fast        Somewhat hard/fast      Very hard/fast    Extremely Hard/fast
Table 1
Participants’ Baseline and Post-Intervention One-Mile Time-Trial Run Times (minutes:seconds)

<table>
<thead>
<tr>
<th>Interventions</th>
<th>N</th>
<th>Baseline Mean</th>
<th>SD</th>
<th>Post-Intervention Mean</th>
<th>SD</th>
<th>Mean Improvement</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Motivational/Instructional Self-Set</td>
<td>14</td>
<td>5:31</td>
<td>0:55</td>
<td>5:21</td>
<td>0:47</td>
<td>0:10</td>
<td>0:02</td>
</tr>
<tr>
<td>Combined Motivational/Assigned</td>
<td>14</td>
<td>5:31</td>
<td>1:00</td>
<td>5:29</td>
<td>0:59</td>
<td>0:02</td>
<td>0:02</td>
</tr>
<tr>
<td>Motivational Self-Set</td>
<td>13</td>
<td>5:31</td>
<td>0:58</td>
<td>5:23</td>
<td>0:48</td>
<td>0:08</td>
<td>0:02</td>
</tr>
<tr>
<td>Motivational Assigned</td>
<td>14</td>
<td>5:31</td>
<td>0:48</td>
<td>5:26</td>
<td>0:46</td>
<td>0:05</td>
<td>0:02</td>
</tr>
<tr>
<td>Instructional Self-Set</td>
<td>13</td>
<td>5:32</td>
<td>0:52</td>
<td>5:27</td>
<td>0:47</td>
<td>0:05</td>
<td>0:02</td>
</tr>
<tr>
<td>Instructional Assigned</td>
<td>13</td>
<td>5:31</td>
<td>0:49</td>
<td>5:23</td>
<td>0:45</td>
<td>0:08</td>
<td>0:02</td>
</tr>
</tbody>
</table>
### Table 2
Participants’ Reports of Amount of Effort Expended for Baseline and Post-Test Runs

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Baseline Effort*</th>
<th>Post-Test Effort*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Motivational/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Self-Set</td>
<td>3.64 0.63</td>
<td>3.71 0.62</td>
</tr>
<tr>
<td>Combined Motivational/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Assigned</td>
<td>3.71 0.73</td>
<td>3.79 0.70</td>
</tr>
<tr>
<td>Motivational Self-Set</td>
<td>3.77 0.73</td>
<td>3.92 0.64</td>
</tr>
<tr>
<td>Motivational Assigned</td>
<td>3.86 0.77</td>
<td>3.86 0.66</td>
</tr>
<tr>
<td>Instructional Self-Set</td>
<td>3.54 0.66</td>
<td>3.69 0.63</td>
</tr>
<tr>
<td>Instructional Assigned</td>
<td>3.54 0.66</td>
<td>3.77 0.73</td>
</tr>
</tbody>
</table>

*1 to 5 Likert Scale (1 = not hard/fast at all, 3 = somewhat hard/fast, 5 = extremely hard/fast)
Table 3
Top Motivational and Instructional/Task-Relevant Statements Chosen by Participants

<table>
<thead>
<tr>
<th>Motivational Statements</th>
<th>n</th>
<th>Instructional/Task-Relevant Statements</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today is your day</td>
<td>16</td>
<td>Relax each muscle in your body</td>
<td>17</td>
</tr>
<tr>
<td>Personalized statements</td>
<td>14</td>
<td>Drop your shoulders while you run</td>
<td>8</td>
</tr>
<tr>
<td>This is what you have been training for</td>
<td>12</td>
<td>Stretch your muscles well</td>
<td>7</td>
</tr>
<tr>
<td>You are going to dominate today</td>
<td>11</td>
<td>Get an explosive start</td>
<td>7</td>
</tr>
<tr>
<td>You can do it</td>
<td>10</td>
<td>Breathe nice and relaxed</td>
<td>7</td>
</tr>
<tr>
<td>You are in control</td>
<td>8</td>
<td>Pump your arms</td>
<td>7</td>
</tr>
<tr>
<td>You are in the best shape of your life</td>
<td>8</td>
<td>Maintain a perfect pace</td>
<td>6</td>
</tr>
<tr>
<td>You are the definition of speed</td>
<td>7</td>
<td>High knee lift</td>
<td>6</td>
</tr>
<tr>
<td>You have worked hard for this</td>
<td>6</td>
<td>Stick with your plan</td>
<td>5</td>
</tr>
<tr>
<td>You are ready and totally prepared</td>
<td>5</td>
<td>Run through the finish line</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 4
Social Validation Responses of Participants Subsequent to Post-Intervention One-Mile Run

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Perceived Improvement*</th>
<th>Satisfaction of Intervention*</th>
<th>Likelihood of Continuing To Use this Mental Preparation Technique**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SE</td>
<td>Mean</td>
</tr>
<tr>
<td>Combined Motivational/Instructional Self-Set</td>
<td>3.29</td>
<td>0.18</td>
<td>3.50</td>
</tr>
<tr>
<td>Combined Motivational/Instructional Assigned</td>
<td>3.36</td>
<td>0.18</td>
<td>3.21</td>
</tr>
<tr>
<td>Motivational Self-Set</td>
<td>3.31</td>
<td>0.18</td>
<td>3.23</td>
</tr>
<tr>
<td>Motivational Assigned</td>
<td>3.21</td>
<td>0.18</td>
<td>3.29</td>
</tr>
<tr>
<td>Instructional Self-Set</td>
<td>3.31</td>
<td>0.18</td>
<td>3.38</td>
</tr>
<tr>
<td>Instructional Assigned</td>
<td>3.31</td>
<td>0.18</td>
<td>3.31</td>
</tr>
</tbody>
</table>

* 1 to 5 Likert Scale (1 = not much, 3 = somewhat, 5 = very much)

** 1 to 5 Likert Scale (1 = not likely, 3 = maybe, 5 = extremely likely)
Table 5  
Qualitative Social Validation Question: Why Will You Continue/Not Continue to Use This Mental Preparation Technique of Listening to Motivational/Instructional Statements?

<table>
<thead>
<tr>
<th>Reasons to Continue This Mental Preparation Technique</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>It helped me stay focused during the race</td>
<td>12</td>
</tr>
<tr>
<td>It reminded me of what I should think about during the race</td>
<td>12</td>
</tr>
<tr>
<td>It helped me stay relaxed before and during the race</td>
<td>7</td>
</tr>
<tr>
<td>It helped motivate me</td>
<td>7</td>
</tr>
<tr>
<td>The statements were good positive messages and reminders</td>
<td>5</td>
</tr>
<tr>
<td>It seemed to help improve my running</td>
<td>4</td>
</tr>
<tr>
<td>I think it will help my running and racing in the future</td>
<td>4</td>
</tr>
<tr>
<td>I enjoyed it</td>
<td>3</td>
</tr>
<tr>
<td>It helped me maintain a strong and positive attitude during the race</td>
<td>3</td>
</tr>
<tr>
<td>It helped me feel mentally prepared for the race</td>
<td>3</td>
</tr>
<tr>
<td>It helped give me energy during the race when I felt tired</td>
<td>3</td>
</tr>
<tr>
<td>It helped replace my negative thoughts</td>
<td>3</td>
</tr>
<tr>
<td>I enjoyed trying new mental preparation techniques</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons Not to Continue This Mental Preparation Technique</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>It would be better if music is also playing in the background with the statements</td>
<td>10</td>
</tr>
<tr>
<td>I enjoy listening to music more than listening to statements</td>
<td>10</td>
</tr>
<tr>
<td>It would be more effective and beneficial if statements are in my coach’s voice</td>
<td>4</td>
</tr>
<tr>
<td>I have my own individual mental preparation techniques that I like to use</td>
<td>2</td>
</tr>
<tr>
<td>More helpful if my coach or teammates told me the statements in person</td>
<td>2</td>
</tr>
<tr>
<td>It can be time-consuming</td>
<td>1</td>
</tr>
<tr>
<td>Laziness</td>
<td>1</td>
</tr>
<tr>
<td>I do not really enjoy listening to anything before I run</td>
<td>1</td>
</tr>
</tbody>
</table>