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**Team factors as antecedents of athletes' self-talk:  
Relationships between collective efficacy, cohesion and self-talk in team sport**

By

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## Dedication

I dedicate this work to myself, my family and my Copenhagen brothers for their goodness and kindness.

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## Abstract

Previous studies have demonstrated that collective efficacy beliefs and group cohesiveness contributes to team performance in sport (Carron et al., 2002; Feltz & Lirgg, 1998). Although perceptions regarding the team may also influence an athlete's individual self-talk, there is sparse research on team factors contribution of athlete's self-talk. The purpose of this study was to examine the relationships between collective efficacy, team cohesion, and self-talk. A total of 226 male and female athletes from three different team sports (football, basketball, volleyball) completed the Automatic Self-talk Questionnaire for Sport (ASTQS), Youth Sport Environment Questionnaire (YSEQ) and Collective Efficacy for Sport Questionnaire (CESQ). Results indicated significant correlations between collective efficacy, cohesion and self-talk. Multiple regression was used to predict athletes self-talk from cohesion and collective efficacy. Results revealed that cohesion and collective efficacy significantly predicted athletes' positive ( $R^2 = .08$ ,  $p < .01$ ) and negative ( $R^2 = .09$ ,  $p < .01$ ) self-talk. The results further showed collective efficacy and cohesion having a unique significant contribution to the prediction of positive and negative self-talk respectively. Furthermore, task cohesion was statistically a significant predictor of negative self-talk than social cohesion. These results have implications for practitioners in terms of the importance of cohesion and perceptions of collective efficacy to improve athletes' self-talk.

**Keywords:** collective efficacy, cohesion, self-talk, team sport, athletes.

## Table of contents

Introduction.....	1
Literature Review.....	4
Description of self-talk.....	4
Measurements of self-talk.....	5
Antecedents of Self-Talk.....	6
Personal Factors.....	6
Situational Factors.....	7
Social – Environmental factors.....	8
Team Factors.....	9
Team cohesion.....	10
Measurement of cohesion.....	11
Antecedents of cohesion.....	12
Situational factors.....	12
Personal factors.....	13
Leadership factors.....	14
Team factors.....	15
Collective Efficacy.....	15
Measurement of Collective Efficacy.....	16
Antecedents of Collective Efficacy.....	17
Past Performance Accomplishment and Vicarious Experience.....	17
Verbal Persuasion, Motivational Climate & Group Leadership.....	17
Team Size and Team cohesion.....	18

Outcomes of cohesion and collective efficacy.....	19
The Relationship between the Constructs and the Gap in the Literature.	21
The importance of this research question.....	24
The present study.....	24
Method.....	25
Participants.....	25
Measures.....	25
Self-talk.....	25
Cohesion.....	26
Collective efficacy.....	26
Procedure.....	27
Data Analysis.....	27
Results.....	28
Cronbach’s alpha and descriptive statistics.....	28
Correlations.....	29
Analysis of Variance.....	31
Regression analysis.....	31
Discussion.....	32
Applications/future directions & Limitations.....	35
Conclusion.....	36
References.....	37
Appendix.....	48

## INTRODUCTION

In the sport literature, self-talk is the terminology used to describe athletes' thoughts. Self-talk has received great attention in the field of sport psychology over the years and has been defined in relation to its patterns (inherent thoughts and as a mental strategy), functions (motivational self-talk and instructional self-talk), contents (positive self-talk and negative self-talk), and its impacts (facilitative effects and debilitating effects) based on its antecedents (Hardy, 2006). To date, researches on self-talk have centered on its description and content, its antecedents (factors that influence self-talk) and the consequences of self-talk in relation to performance. Its importance in sport has been related to performance and as a technique used by sport psychology consultants. Self-talk has been used to enhance performance in a variety of competitive sport tasks such as sprinting performance (Mallett & Hanrahan, 1997) and football shooting task (Johnson, Hrycaiko, Johnson, & Halas, 2004). Furthermore, researches within the sport psychology literature have examined three antecedents of self-talk. These are personal, situational and socio-environmental antecedents. Until recently the personal and situational factors have received considerable attention. In line with researches regarding the factors influencing the content of athletes' self-talk, the works of Zourbanos and colleagues (Zourbanos, Hatzigeorgiadis, Tsiakaras, Chroni, & Theodorakis, 2010; Zourbanos, Hatzigeorgiadis, Goudas, Papaioannou, Chroni, & Theodorakis, 2011) have initiated socio-environmental factor as another factor influencing athletes' use of self-talk. Zourbanos and colleagues (2006; 2007; 2010; 2011), posit the role of significant others in shaping athletes' self-talk, and in particular the role of the coach. In a nutshell, the literature on the antecedents of self-talk from the works of Zourbanos and colleagues (2006; 2007; 2010; 2011), Hardy (2006), and Hardy, Oliver & Tod (2009), have enriched our understanding, however, there is still a lot to explore in relation to antecedents of self-talk with regards to team dynamics.

One major important domain in team sport is the factors that affect the interaction and interdependency of team mates in team sport. Interaction and interdependency on team mates is important in team sport (Carron, 1982). Team factors such as cohesion, collective efficacy, team roles and norms, team processes and functioning play crucial role in team sport. Among the most researched team factor is team cohesion. In 1982, Carron developed an operational definition that describes group cohesion as a multidimensional entity having both task and social properties that comprise of both individual and group aspects. Social aspects includes members' feelings about their social interactions (ATG-S; individual attractions to the group-social) and the degree to which the team is seen as a social unit (GI-S; group integration-social). The task aspects explains members' feelings about personal involvement with the team's tasks and goals (ATG-T; individual attractions to the group-task) and members' feelings about the degree to which the team is seen as working towards the tasks and goals as a unit (GI-T; group integration-task). In developing the multidimensional model of cohesion, Carron (1982) proposed both antecedents and consequences to influence perceptions of cohesion. Carron's (1982) multidimensional model placed leadership, situational/environmental, personal, and team factors as antecedents of cohesion and categorizes the consequence to have two major effects; thus on individual and group outcomes.

Another important team factor is collective efficacy. Bandura (1997) provided a sound platform for the understanding of collective efficacy by extending the concept of self-efficacy within sport to mean a group's confidence in performing collective tasks successfully; thus, a team that feels confident in themselves, in each other, and in their ability to perform well against the opponent is thought to have a high degree of collective efficacy. Although collective efficacy is a group's shared belief, it still reflects individuals' perceptions of the team's capabilities (Bandura, 1997). Researchers have over the years (Beauchamp, 2007; Feltz Short, & Sullivan, 2008; Hodge & Carron, 1992) found collective efficacy as important team factor in sports

because cognitive (e.g., decision making), behavioral (e.g., performance accomplishments) and affective (e.g., satisfaction) outcomes are dependent on how team members independently and collectively interact and communicate.

To this end not many researches have considered team factors (cohesion and collective efficacy) contribution to athletes' self-talk. In an effort to "*speak clearly*" on self-talk, Hardy (2006), suggested Bandura's (1997) self-efficacy theory (extended to collective efficacy) as another possible theory applicable to the study of self-talk that has yet to be fully embraced by researchers interested in understanding self-talk. Again just like significant others especially coaching behavior, support, and statements addressed to athletes' by coaches affects athletes self-talk as suggested by Zourbanos and colleagues (2006; 2007; 2010; 2011), the present study hypothesized an extension of significant others to include team mates and the effects of their interaction to influence individual athlete's self-talk. In view of these propositions, the present study aimed to examine the relationship between team cohesion, collective efficacy and athletes' self-talk. The purpose of this study was therefore to introduce a new class and direction of the antecedents of self-talk. Thus, to explore the relationship between these two team factors, cohesion and collective efficacy with athletes' self-talk.

## LITERATURE REVIEW

### Description of self-talk

Researches into the study of human thoughts especially within the field of sports have received great attention in the past decades. Self-Talk in simple term is what athletes say to themselves internally or out loud before, during and/or after training or competition. Definition(s) of self-talk have centered on its contents and impacts. In striving to expand on previous definitions to enrich the scientific knowledge base of self-talk, Hardy (2006) defined self-talk as: “(a) verbalizations or statements addressed to the self; (b) multidimensional in nature; (c) having interpretive elements association with the content of statements employed; (d) is somewhat dynamic; and (e) serving at least two functions; instructional and motivational, for the athlete” (p. 84). Prior to this definition, Hackfort and Schwenkmezger (1993) used the term *verbal dialogues* to describe athletes self-talk.

Hatzigeorgiadis and Biddle (2008) suggested two approaches of studying self-talk. Firstly, self-talk as a content of thought and secondly as a mental strategy. Self-talk as a content of thought refers to its valence dimension and also explores factors that influence and shape athletes' self-talk. Researches on the contents of self-talk have received considerable attention in the sports literature than other aspects of self-talk. Researchers have categorized its valence content dimension into positive and negative self-talk: positive self-talk, relates to statements involving praise and encouragement and negative self-talk, relates to statements involving criticism and self-preoccupation (Moran, 1996). In view of the purpose self-talk serves, it is further classified into instructional and motivational: instructional self-talk relates to attention focus, technical information, and tactical choices whereas motivational self-talk relates to confidence building, effort input, and positive moods (Zinsser, Bunker, & Williams, 2001). Moreover, the impact of self-talk on performance outcomes is classified as facilitative and

debilitative. As a mental strategy, self-talk has become central to cognitive and cognitive-behavioral interventions (Conroy & Metzler, 2004) to direct athletes' attention and regulate athletes' effort (Zinsser et al, 2001), increase confidence (Feltz, 1994), increase positive mood and enhance and maintain self-esteem (Branden, 1994; McKay & Fanning, 1992). Self-talk has been found to have positive effects on performance of experimental tasks. In a meta-analysis (Hatzigeorgiadis, Zourbanos, Galanis, and Theodorakis, 2011) of the effects of self-talk interventions on task performance in sport, self-talk interventions revealed to be effective for fine motor and novel tasks than gross motor and well-learned tasks respectively. Instructional self-talk was found to be effective than motivational self-talk for fine tasks and interventions that included self-talk training were more effective than those without self-talk training.

### **Measurements of self-talk**

Research measurements of self-talk in sports have revolved around its content, antecedents and impact. Both qualitative (interview) and quantitative (questionnaire) methods as well as mixed approaches have been implored to examine athletes self-talk. Inventories such as Test of Performance Strategy (TOPS) by Hardy, Roberts, Thomas and Murphy (2010) explores athletes' use of self-talk strategy in training and competition and the Self-Talk Use Questionnaire (STUQ; Hardy, Hall & Hardy, 2005) which also explores what Hardy et al (2001) refers to as the 4W's of self-talk, thus; where, when, what and why athletes use self-talk. In line with this research, Zervas, Stavrou & Psychountaki (2007) developed the self-talk questionnaire (S-TQ) and with a more elaborative method, Theodorakis, Hatzigeorgiadis, & Chroni (2008) also developed the Functions of Self-Talk Questionnaire (FSTQ) to assess key self-talk function (instructional and motivational) and examine ways self-talk facilitates performance respectively.

To address the question of what athletes say to themselves inherently or automatically, Zourbanos, Hatzigeorgiadis, Chroni, Theodorakis, and Papaioannou (2009) developed the

Automatic Self-Talk Questionnaire for Sport (ASTQS) to evaluate the content of athletes self-talk. Prior to Zourbanos et al's (2009) ASTQS development, Van Raalte, Brewer, Rivera, and Petitpas (1994) and Hatzigeorgiadis & Biddle (2000) have developed the Self-Talk and Gestures Rating Scale (STAGRS) and Thought Occurrence Questionnaire for Sport (TOQS) respectively.

### **Antecedents of Self-Talk**

In recent years, the study of self-talk has centered on its impacts on performance. However, research exploring the antecedents of self-talk is sparse urging Conroy and Metzler (2004) to suggest that determining the origins of self-talk should become a priority in sport psychology research. In addition, Hardy (2006) attributed the lack of theory based-research to the limited research work and understanding of the self-talk construct. This is in support of Kerlinger's (1986) proposition of the essence of a theory in the study of human behavior. In view of this limited research and in an effort to enrich the self-talk literature, Hardy, Oliver and Tod (2009) provided a model framework of self-talk. Their model postulates personal and situational factors as antecedents of self-talk. In line with this research, Zourbanos et al's (2011) also suggested social-environmental factors as another antecedent of self-talk. Below is a description of the antecedents of self-talk.

#### ***Personal Factors***

Personal factors are the factors that cause an athlete to implore self-talk from a personal level. Most studies on the antecedents of self-talk at the personal level have centered on athlete's emotions and achievements goals. In a study examining the relationship between state-specific self-talk and situation-specific trait performance anxiety, Conroy and Metzler (2004) reported a strong correlation between athletes self-talk with athletes fear of failure and sport anxiety, and weakly associated self-talk with fear of success. Hatzigeorgiadis and Biddle (2001) conducted two studies with middle-distance cross-country events to examine the relationships between pre-

competition anxiety, goal-performance discrepancies, and athletes' negative self-talk while performing. The first study examined the relationship between negative self-talk and the intensity and direction of anxiety and the second study examined anxiety components and discrepancies between performance-goals and performance as predictors of negative self-talk. Their findings indicated that pre-competition anxiety and the quality of performance in relationship to pursued goals are important predictors of negative self-talk athletes experience while performing.

### ***Situational Factors***

Situational factors are the circumstances or situations that trigger athletes' use of self-talk. Such situations include task difficulty (Behrend, Rosengren, & Perlmutter, 1989), match circumstances (Van Raalte, Cornelius, Hatten & Brewer, 2000) and anxiety (Hatzigeorgiadis & Biddle, 2008). Investigating match circumstances as a predictor of positive and negative self-talk in tennis players, Van Raalte et al's (2000) found that negative self-talk was evident following lost points or fault serving, whereas for some participants positive or instructional self-talk was observed after losing a point. In relation to task difficulty, Behrend et al, (1989) and Fernyhough and Fradley (2005) found a correlation between task (puzzles) difficulty and use of private speech. Hatzigeorgiadis and Biddle (2008) conducted two folds of study with middle-distance cross-country events runners to firstly examine the relationship between negative self-talk and the intensity and direction of anxiety and secondly examine anxiety components and discrepancies between performance-goals and performance as predictors of negative self-talk. Their findings showed a strong correlation between cognitive anxiety intensity with negative self-talk than somatic anxiety intensity whereas cognitive anxiety direction and goal-performance discrepancies significantly predict negative thoughts. Again, athletes who perceived symptoms of anxiety as facilitative reported less negative self-talk than those experiencing anxiety symptoms as debilitating. In all the above studies and other related studies (e.g.

Hatzigeorgiadis, 2006), there is sparse research in relation to situational factors in team sports as contributing factors to athletes use of self-talk.

### *Social – Environmental factors*

The newly emerging factor of self-talk currently in the sport psychology literature is social-environmental factors. These factors include the contributing role of significant others such as team mates, coaches and parents in shaping athletes self-talk. In addition to Hardy et al's (2009) model of classifying the antecedents of self-talk as personal (cognitive processing preferences, belief in self-talk, personality traits) and situational (task difficulty, match circumstances, coaching behaviors, competitive settings) factors, Zourbanos et al (2006) and Zourbanos et al (2007) suggested the influence of significant others especially the coaches as part of the broader antecedents known as social - environmental factors. Zourbanos and his colleagues (2007) explored the relationship between coaches' behaviour and statements, and athletes' self-talk in a variety of sports. Findings of their study showed coaches' positive statements to mediate the relationship between coaches' supportiveness and athletes' positive self-talk whereas coaches' negative statements mediated the relationship between coaches' negative activation and athletes' negative self-talk. In line with similar literature, Zourbanos and his colleagues (2011) further investigated the relationship between perceptions of received support provided by a coach and athletes' self-talk in a cross sectional study. They found perceptions of support received from the coach to have a positive relation with athletes' positive self-talk dimensions and negatively to athletes' negative self-talk dimensions. Similar findings support this proposition in a different study (Zourbanos et. al's 2006; 2010) that revealed coaching behavior to have effect on athletes self-talk. Nevertheless, the work of Zourbanos et al. (2006; 2007; 2010; 2011) suggests further studies of social – environmental parameters that shape athletes' self-talk, hence support for this current study.

Having considered the above literature on the antecedents of self-talk, it is evident that previous studies have centered mostly at personal and situational levels of the athlete and the circumstances of the current situations such as cognitive processing preferences, personality traits and match circumstances, respectively. At the current stage of the self-talk antecedents' literature, contributing factors considered to be of relevant to the socio-environmental factors have only been researched with the role of significant others especially the coach. There is sparse research from the socio-environmental factors especially from the effects of team mates' interaction in team sport. Previous literatures have not considered team factors, and the role of team members as significant others and the effects of their interaction to influence athletes self-talk.

## **TEAM FACTORS**

In Carron et al's book entitled Group dynamics in sport, they define a team "as a collection of two or more individuals who possess a common identity, have common goals and objectives, share a common fate, exhibit structured patterns of interaction and modes of communication, hold common perception about group structure, are personally and instrumentally interdependent, reciprocate interpersonal attraction, and consider themselves to be a group" (p.13). The characteristics of a group, the energy, vitality and the nature of the group activity describe what is referred to as teams' factors. Similarly, this dynamism is manifested in the way sport teams are structured, their nature, collective efficacy, cohesion, decision making, and communication among members. To this end, the current study is to investigate the relationship between team cohesion, collective efficacy and self-talk; thus whether the cohesion-collective efficacy relationship could predict athletes self-talk in team sport.

## **Team Cohesion**

The topic of team cohesion, especially within the field of sport has been long studied for more than half a century. It is therefore not surprising to realize the kind of attention team sport gives to team cohesion for performances. As the world renowned NBA player, Micheal Jordan said “Talent wins games, but teamwork and intelligence wins championships” recognizes the effect and outcome of a united team in winning a championship. Festinger, Schacter and Back (1950) defined cohesion as the total field of force that causes members to remain in a group. Although Festinger et al’s definition focuses on the underlining factor of participation and involvement with a group, they further proposed two binding forces around which team members unite: attractiveness of the group (social and affiliative aspects) and means of control (task related and productive concerns of the group). Due to the shortfall (failure to consider the group as a totality) of Festinger et al’s (1950) proposition, Gross and Martin (1952) felt it makes more sense to define cohesion as a resistance of a group to disruptive forces. Gross and Martin (1952) were of the view that if a team is highly cohesed around the forces that draws individuals to a group as proposed by Festinger et al (1950), the team should also be able to tolerate any challenges arising from unfavourable events with the potential to tear the team apart. Thus; the factors that unite a team should resist any disruptive pressures that have the capability to tear it apart. All these works have had an impact on Carron et al’s (1985) conceptual model of cohesion which has been the most widely accepted framework for the study of cohesion in the sport psychology literature.

Carron, Widmeyer and Brawley (1998) defined cohesion as “a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (p.213). One characteristics of cohesion is its multidimensionality. The multidimensional nature of cohesion suggests different binding factors for each and every team and can vary from group to group.

Another characteristic is the dynamics of team cohesion. This explains the unstable nature of cohesion to suggest that it has the potential to change from time to time. A third characteristics of team cohesion is its instrumental objective, thus the purpose for which a group is formed. Finally, its affective dimension compensates for members affective needs and social interactions. In view of their definition, Carron et al (1995) conceptualize a cohesion model that distinguished two main types of cognitions about the team. The first refers to individual's perceptions of the personal attractiveness of the group and is referred to as Individual attraction to the group whereas the other relates to an individual's perceptions of the group as an integrated whole and also referred to as Group integration. Both Group integration (GI) and Individual attraction to the group (ATG) are oriented on task and social aspects. A task orientation represents a general motivation toward achieving the group's objectives and assesses members' personal performance and group performance issues whereas a social orientation describes a general motivation toward developing and maintaining social relationships within the group and in addition assesses members' personal relationship of their togetherness, closeness and affiliations. The model therefore yielded four manifestations of team cohesion: Individual attractions to the group-task (ATG-T), Individual attractions to the group-social (ATG-S), Group integration task (GI-T), and Group integration-social (GI-S). Since the mid-1980s, most researchers have considered this construct from the perspective of the above conceptual framework advanced by Carron and colleagues (Brawley, Carron, & Widmeyer, 1987; Carron, Widmeyer, & Brawley, 1985; Carron et al., 1998; Widmeyer, Brawley, & Carron, 1985).

### ***Measurements of Cohesion***

Earlier works on the measurement of cohesion have centered on interpersonal relations and similarity among team members (Fiedler, 1954; McGrath, 1962), esteem for team members (McGrath & Myers, 1962), social and leadership choices and observation of participants (Lenk, 1969). These modes of cohesion measures drew much criticism. Some critics suggest that

attraction of interpersonal relations and similarity among team members only underrepresent the concept of cohesiveness and do not explain why groups stick together even when there is conflict. In view of the above gap in the measurements of cohesion, Martens, Landers and Loy (1972) developed the sport cohesiveness questionnaire to measure cohesion with dimensions that assess major aspects of cohesion. Moreover, among the first cohesion inventory to acknowledge the multidimensional (task and social) nature of cohesion were the inventory by Gray and Gruber (1981) and the multidimensional sport cohesion instrument by Yukelson, Weinberg and Jackson (1984).

In recent sport psychology literatures on team cohesion, most researchers have used the Group Environment Questionnaire (GEQ) by Carron, Widmeyer and Brawley (1985). The GEQ is currently acclaimed as the most unique cohesion inventory to measure all aspects of cohesion. The GEQ was developed on the basis of a conceptual model of social cognitive theories and group dynamics theories following Carron et al's (1985) cohesion model as explained above.

### ***Antecedents of cohesion***

The factors that influence team cohesion as seen in Carron's et al's (1985) cohesion conceptual model are circular in nature, thereby making it difficult to assign a group feature to a permanent factor. However, four broad distinct factors have been used to categorize the antecedents of cohesion; namely personal, situational, leadership, and team factors.

***Situational.*** In team cohesion especially at elite levels, contractual responsibilities are among the binding situational forces that keep members in a group. A study by Gruber and Gray (1982) found both members of elementary and junior high schools teams to be significantly satisfied with their individual and team's performance and were more affiliated to and valued their team membership to a greater degree than did college team. In addition to this level of competition and contractual responsibilities are also organizational orientation, geographical

factors such as physical and functional proximity and normative pressures associated with cohesion especially for quitters. One important situational factor is group size. Widmeyer et al's (1990) examined the team roster size to cohesion relationship in recreational basketball teams in two studies. They found that task cohesion was greater in small group (3-persons) and lower in the larger group (9-persons). Moreover, the mid group (6-persons) had the highest social cohesion and was the most successful. The second study investigated the relationship between the number of members actually competing at a given time and group cohesion in a volleyball tournament and found the level of group cohesiveness to be greater in the smallest unit and least in the largest group.

***Personal.*** Personal factors are the individual characteristics of team members. These characteristics are associated with development and maintenance of team cohesion. Demographic factors, cognitive shared perceptions, affect and team members' behavior are the major correlates of team cohesion personal factors. With regard to behaviour, athletes are likely to demonstrate behaviour in adherence to group norms, loaf, or demonstrate sacrificial behavior. In a study by Prapavessis and Carron (1997) with cricket teams to examine the effects of sacrifice to cohesion and team norms, it was found that sacrificial behavior contributes to task and social cohesion which in turn conforms to group norms. Athletes shared perceptions such as common beliefs, motives and attitudes also contribute to team cohesion. Also perceived cognitive behavior of shared perception such as self-deception, attributions of responsibility and self-handicapping are contributing factors of team cohesion personal factors. The impact of these personal factors differs from person to person and in turn fluctuates with teams' cohesion. For example, in a highly cohesed team, self-handicapping is likely to be minimized as the responsibility of loss is fairly shared among all team members. Carron, Prapavessis and Grove (1994) and Hausenblas and Carron (1996) examined self-handicapping with male and female athletes respectively. Their findings showed that self-handicapped athletes of both high and low

cohesed teams rated the severity of their previous self-handicapping as high and low when they perceived cohesion of their team to be high and low respectively. It is perceived that the stronger the bond or cohesed a team is, the more content, satisfied and less anxious the team will experience and vice versa. One affective measure that has received attention in the sport psychology domain is individual satisfaction. In a study to examine the causal relationships among cohesion, satisfaction, and performance in women's intercollegiate field hockey teams, Williams and Hacker (1992) found that cohesion, satisfaction and performance are related to each other in a circular fashion, hence support for Martens and Peterson's 1971 proposition. Martens and Peterson (1971) proposed that cohesion contributes to team performance and in turn team success. Success therefore produces higher individual satisfaction which leads to greater sense of cohesiveness.

***Leadership Factors.*** A very important correlate of team cohesion is the role leaders' play and the content of their verbal persuasion as perceived by the athletes. Such behavior consists of style of leadership and leadership behavior. This aspect has received great attention in recent years. In a study by Westre and Weiss (1991), higher levels of task cohesion were found to be highly associated with higher levels of training and instruction, social support behavior, positive feedback and a more democratic style of decision making. Later studies (e.g. Kozub, 1993, Brawley, Carron & Widmeyer, 1993) with high school basketball teams reported similar findings. Researchers have underlined the important role of coaches and/or leaders in impacting athletes' perceptions of their team's cohesiveness (e.g., Carron & Hausenblas, 1998; Zaccaro et al., 1995). In sport settings, some studies have supported this idea and have shown that coaches influence team efficacy (e.g., Feltz & Lirgg, 2001; Vargas-Tonsing, Warners, & Feltz, 2003) and cohesion (e.g., Carron and Hausenblas, 1998; Turman, 2003) through behaviors such as positive feedback provided to athletes, training and instruction, social support, or behaviors affecting athletes' psychological skills and states.

***Team factors.*** Team factors to a larger extent relate to group structure properties such as position, norms, roles, status, team success and collective efficacy. These are associated with the psychological structure of team sport. The interrelationship of these elements exhibited by team members as expected develops team cohesion. Collective efficacy has been the most influential team factor of team cohesion and vice versa. As constructs in this current study, the relationship between cohesion and collective efficacy shall be discussed below in detail. Athletes' status (starters, nonstarters) about either their role or position in a team is important to the kind of perception they hold about the team and also the team's perception about the athlete. In a study by Granito and Rainey (1988) with high school and college football teams, they found that starters of high school and college football teams held a stronger perception of task cohesion than nonstarters. Spink (1992) found support for Granito and Rainey (1988) findings when he compared the starters and nonstarters of less successful volleyball teams. However, no difference in cohesion was present when starters and nonstarters of successful teams were compared. Another antecedent of cohesion is collective efficacy.

### **Collective Efficacy**

The construct of collective efficacy was first proposed by Bandura (1982, 1986, and 1997) as an extension of self-efficacy theory because many human activities require interaction among people working in groups. Zaccaro, Blair, Peterson, and Zazanis (1995) defined collective efficacy as "a sense of collective competence shared among individuals when allocating, coordinating, and integrating their resources in a successful concerted response to specific situational demands" (p. 309). Their definition highlights that collective efficacy refers to shared beliefs about perceived competence in coordinated group activities, consideration of collective resources available within the group, and reflects situational or behavioral group task specificity (Paskevich, Brawley, Dorsch, & Widmeyer, 1999). Bandura (1990, 1997) suggested that this construct has important implications for sport teams because it affect team choices,

effort, persistence and performance, especially in sports that required interaction and interdependence to achieve task success (e.g. basketball). Bandura (1997) further defined collective efficacy as a “group shared belief in its conjoint capability to organize and execute the courses of action required to produce given levels of attainment” (p.477). In view of the above conceptualizations, some psychologists have described cohesion as an antecedent of collective efficacy (Bandura, 1986, 1997; Kozub & McDonnell, 2000), whereas others consider it as a consequence of collective efficacy (Zaccaro et al’s, 1995) and vice versa. Following these suggestions, some studies have examined the relationship between these two constructs in the sport domain.

### ***Measurements of Collective efficacy***

Unlike cohesion, collective efficacy is measured with a reflection of the total sum of each individual’s perception of the group’s capabilities. The works of Bandura (1997) and Zaccaro et al (1995) have dominated the field of collective efficacy in sport. In view of Bandura’s definition, collective efficacy is measured by the sum of team member’s responses to appraisal of their own capabilities within the team and of their team’s capability as a whole which conforms to Bandura’s (1997) conceptualisation of collective efficacy. Zaccaro et al (1995) suggested that collective efficacy can be measured by aggregating individual responses about their team’s belief in its capabilities rather than their belief in their team’s capabilities. In view and in support of Bandura’s collective efficacy conceptualisation, Short, Sullivan and Feltz (2005) developed a more general measure of collective efficacy across all sport known as Collective Efficacy Questionnaire for Sports (CEQS). The CEQS measured athletes shared belief in their team’s conjoint capability to organize and execute the courses of action required to produce given levels of attainment by informing athletes to rate their team’s confidence in relation to its abilities.

### *Antecedents of Collective Efficacy*

Certainly, the antecedents of collective efficacy is based on many of the sources that affect the efficacy of the individual (self-efficacy) and somewhat similar to cohesion. This could be due to the more complex social and situational mediated interactions involved in team sports. Among the most common antecedents are past performance accomplishment, verbal persuasion and other unique sources such as vicarious experiences, leadership factors, team size and team cohesion.

***Past Performance Accomplishment and Vicarious Experience.*** A team's past performance accomplishment has shown to correlates with the team's efficacy beliefs. Both Bandura (1997) and Zaccaro et al (1995) suggested past performance as the most powerful source of efficacy. Thus successful teams perceive the team's efficacy on subsequent engagement in similar situations. Team members thereby become much confident in events they have successfully executed with a high expectation for future success in similar context. Wise and Trunnel (2001) examined the influence of different sources of efficacy information on self-efficacy strength. Past performance accomplishment was found to be stronger predictor of self-efficacy than other sources of efficacy.

***Verbal Persuasion, Motivational Climate & Group Leadership.*** The one most significant other in team sport is the coach. It's therefore obvious that what coaches say to their athletes directly or indirectly is likely to affect their beliefs. Positive reinforcement speeches from coaches in a mastery climate have shown to improve athletes' perception of their team's efficacy beliefs. In a study by Vargas-Tonsing (2004) with soccer teams and their coaches, efficacies of the athletes were measured prior to and immediately after the coaches speeches to the athletes. It was found that efficacy increased from before to immediately after the speech,

thus coaches speeches increased the efficacy of the athletes. Such positive speeches could likely cause an effect (increased athletes efficacy) in a much developed mastery climate. In view of this, researchers (Magyar, Feltz & Simpson, 2004; Heuzé, Sarrazin, Masiero, Raimbault & Thomas, 2005) suggested motivational climate as one factor in enhancing team's efficacy through individual efficacy. The above propositions obviously would suggest that group leadership also plays a role in athletes' collective efficacy. Zaccaro and his colleagues (1995) are in support of the contribution of group leadership to teams collective efficacy by enhancing group functioning.

***Team Size and Team cohesion.*** The sizes of a group in terms of the number of its members and available resources have shown to influence members' efficacy of the team. Zaccaro and his colleagues (1995) opined that, group size can affect both small and big groups positively and/or negatively depending on their available resources. Thus, the pattern of efficacy is uncertain. However, in smaller teams, members' efficacy of the team could be greater than members in bigger teams due to well-coordinated actions of small group members. That is, team members collective efficacy is likely to decline in bigger teams as team mates loaf, and exhibit greater disagreement and dissension and vice versa. Moreover, efficacy in bigger teams could incline if the availability of different resources can be applied to a task. In a study by Short (2006), which is of interest to this present study was that a positive relationship between collective efficacy and team size was found across sports, hence support for Zaccaro et al (1995) proposition. However, the unity dimension of collective efficacy was not positively correlated to team size. This finding is in view of the fact that the unity dimension of collective efficacy is most closely related to team cohesion as previous studies have shown team cohesion to be higher in smaller teams. In fact, team cohesion has been considered both an antecedent (Bandura, 1997) and a consequence (Zaccaro et al, 1995) of collective efficacy. Team cohesion has been the most

influential team factor of collective efficacy and vice versa. As constructs in this current study, the relationship between cohesion and collective efficacy shall be discussed below in detail.

### **Outcomes of cohesion and collective efficacy**

As mentioned above, team cohesion and collective efficacy are pervasive concept in sport and have shown to be positively related to team performance, individual and team satisfaction and/or enjoyment. In relation to team performance, Warner, Bowers, and Dixon (2012) explored the structural cohesiveness of two women's collegiate basketball teams using social network analysis (SNA) in a case study. The study revealed that the higher performing team showed improved structural cohesion in the efficacy network over the four phases, and highlighted the movement of key players in the different networks (friendship, trust, advice, and efficacy) over time. Past studies have shown the importance of cohesion in causality direction to the effect that cohesion leads to performance success and/or performance success leads to cohesion and also in a circular relationship with collective efficacy. Martens and Peterson (1971) demonstrated this circular relationship in one of their empirical studies. Their research focused on the effect that team cohesiveness had on individual player satisfaction levels and overall team performance. Their results indicate a strong relationship between levels of team cohesiveness and team performance, implying that teams with higher levels of perceived cohesion are more likely to succeed, and more successful teams are in turn more cohesive. Their study established the proposition that: As levels of cohesion rise, so should team performance, and same is true as team performance improves, the levels of cohesion should continue to increase. Since Martens and Peterson's (1971) empirical study, similar studies have supported this proposition across many different studies with different types of sports. In view of this relationship, Carron and his colleagues (2002) in a meta-analysis indicated the lack of sufficient explanatory insight found in

the literature. Although the relationship between cohesion and performance have been established Carron et al's (2002), they apparently suggested, an examination of mediating variables to better understand the cohesion-performance relationship. This necessitated Heuzé, Raimbault, and Fontayne, (2006) to examine the mediating effects in the relationships between cohesion, collective efficacy and performance in French and foreign professional players professional basketball teams. Their findings showed strong evidence that collective efficacy can often be an important mediator of the relationship between cohesion and performance. Logically, "players in more cohesive teams may hold stronger shared beliefs in their team's competence, which in turn may lead to greater team success. And group performance success may increase players' perceptions of collective efficacy, which in turn may contribute to the development of cohesion" (Heuzé et al., 2006, p. 61). Furthermore, Myers, Payment, and Feltz (2004) examined the reciprocal relationships between collective efficacy and team performance over a season of competition in women's intercollegiate ice hockey. Their findings revealed a positive reciprocal relationship between team performance and collective efficacy. As demonstrated above, strong positive reciprocal relationships have been found to exist between cohesion and performance (e.g. Carron et al., 2002) and collective efficacy and performance (e.g. Myers et al., 2004). This indicates that athletes in more cohesive teams may hold stronger shared beliefs in their team's competence and capabilities, which in turn may lead to greater team success. Group performance success may increase athletes' perceptions of collective efficacy, which in turn may contribute to the development of cohesion. In relation to satisfaction, Jowett, Shanmugam and Caccoulis (2012) examine the mediating role of collective efficacy between the association of team cohesion and athlete satisfaction. The results showed that collective efficacy have the capacity to explain the association between team cohesion and athlete satisfaction. Similarly, the cause-effect relationship between cohesion and performance on satisfaction was examined by Williams and Hacker (1982). Findings of the studies suggest that satisfaction may be a mediating variable

in the cohesion-performance circular relationship. Further studies (e.g., Myers, Paiement, and Feltz, 2007) have found similar findings and support for Martens and Peterson's (1971) proposition.

### **The Relationship between the Constructs and the Gap in the Literature**

It's interesting to note that both team factors in this study (team cohesion and collective efficacy) are grounded in Bandura's social cognitive theory. Bandura's social cognitive theory forms one of the foundations of Carron et al (1985) conceptual model of team cohesion. In view of this and in addition to the demand of interdependence and coordination in team sports, Bandura (1986) extended self-efficacy theory to include collective efficacy and suggested that collective efficacy is more than just the sum of individual efficacy levels within the team. Components of collective efficacy include members' coordinative capabilities, collective resources for task success, shared beliefs among the team, and situational demands (Zaccaro et al., 1995). This individual cognitive perceptual belief regarding the team's performance capabilities have implications for the team's collective effort, persistence in tough situations or defeat, and performance. This shared belief regarding the collective competence of individuals that make-up a team has been viewed as both an antecedent and outcome of team cohesion and vice versa. Thus, as the bond and unison among team members increases, so likely would their shared belief in the team's competence also increase. Researches have also shown that if a group has a shared belief about its competence, then its attraction to the group (cohesion) would also increase. Subsequent to these propositions, studies in sport have empirically examined the relationship between team cohesion and collective efficacy. Paskevich et al. (1999) investigated the team cohesion – collective efficacy relationship in university and club volleyball teams. Findings revealed a positive correlation between task cohesion (ATG-T and GI-T) and collective efficacy. Spink (1990) found that male and female recreational volleyball players rated their

teams as highly efficacious and also reported high levels of task (ATG-T) and social (GI-S) cohesion. Another study involving rugby-union teams by Kozub and McDonnell (2000) found support for these propositions as findings of their study revealed that task cohesion predicted collective efficacy (GI-T was a slightly better predictor than ATG-T), while social cohesion (ATG-S & GI-S) did not add significantly to the prediction of collective efficacy. In line with Kozub and McDonnell's (2000) results, Heuzé et al (2006) reported that professional male basketball players' perceptions of task cohesion (ATG-T and GI-T) and social cohesion (GI-S) were positively related to their perceptions of collective efficacy. Moreover, they showed that GI-T and GI-S were better predictors of collective efficacy than ATG-T. Finally, in an effort to examine the direction of the effect between team cohesion and collective efficacy in elite female handball teams, Heuzé, Bosselut, and Thomas (2007) found that collective efficacy served only as an antecedent of task cohesion (ATG-T).

Although it's apparent that the pattern of associations generally differs from study to study, it is clear that team cohesion and collective efficacy are related constructs within team sport, hence supporting the theoretical assumptions (Bandura, 1986; Zaccaro et al., 1995). If collective efficacy and team cohesion and/or their relationship are significant component of team sport as indicated in the above studies, then exploring their outcome independently or in relation to each other to individual team members is warranted.

To this end not much research has considered team factors contribution to athletes' self-talk. In an effort to "*speak clearly*" on self-talk, Hardy (2006), suggested Bandura's (1997) self-efficacy theory as a potentially valuable theory for the study of self-talk that has yet to be fully embraced by researchers interested in understanding self-talk. Hatzigeorgiadis, Zourbanos, Goltsios, and Theodorakis (2008) examine the effects of motivational self-talk on self-efficacy and performance in young tennis players. The experiment was completed in five sessions. In five different sessions, participants performed a forehand drive task. The findings in a follow-up

comparisons showed that self-efficacy and performance of the experimental group increased significantly than of the control group. The findings further showed that increases in self-efficacy positively relates to increases in performance. In another study by Haznadar (2012) to examine the relationship between perceptions of motivational climate, self-talk and self-efficacy, motivational climate was found to predict self-efficacy as partially mediated by self-talk. Bandura extended self (personal) efficacy to include collective efficacy in view of the fact that team sport requires sustained collective effort of each team member to achieve a common goal, hence its (collective efficacy) inclusion in this study. Researchers (Beauchamp, 2007; Feltz, Short & Sullivan, 2008; Hodge & Carron, 1992) have also argued that collective efficacy is important for sport teams because of cognitive outcomes dependency on how team members independently and collectively interact and communicate. In a dart throwing experimental study by Son, Jackson, Grove, and Feltz (2011), students were assigned to three different pre performance self-talk conditions. Participants rated their personal confidence as well as their team's (i.e. collective efficacy) capabilities, before carrying out the task. Findings showed self-efficacy, collective efficacy, and performance indicators to be great for individuals who practiced self-talk focusing on the group's capabilities, as opposed to individual-focused. Finally, team cohesion and collective efficacy, although are group constructs, are assessed through individual perceptions. It is proposed that the perceived collective efficacy and cohesion (thus, the way in which an athlete interacts, communicates, and relates with teammates) of the team as perceived by each team member will be likely antecedents of each team member's self-talk.

**The importance of this research question**

This research has both theoretical and practical potential. Theoretically, the findings of this study would contribute to the nomological network of associations as these pertain to the constructs of collective efficacy, team cohesion, and self-talk within sports. From a practical point of view, this study could further inform researchers in the field of applied sport psychology and sport psychology practitioners of the importance of self-talk as an outcome variable in a highly cohesed and efficacious teams; thus, the effect of these psychological constructs on thoughts and behavior. Furthermore, identifying the factors that influence self-talks could assist sport psychology consultants and researchers to intervene and change these factors to foster proper self-talk and elude counterproductive self-talk. It could further provide explanations by which cohesion and collective efficacy and other team factors (yet to be studied) contribute to the social-environmental factors antecedents of self-talk.

**The present study**

Based on previous researches and theories, the study's main aim was to examine the relationship between collective-efficacy, team cohesion and athletes use of self-talk. It's hypothesized that perception of collective efficacy and cohesion (thus, the way athletes interact, communicate, and relate with teammates) will predict team member's self-talk. In line with previous studies, a significant positive relationship is hypothesized between cohesion, collective efficacy and self-talks.

## METHOD

### Participants

A total of 226 athlete participated in the study. Participants were male (N= 174) and female (N= 54) athletes from different team sports namely football (N= 7), basketball (N= 4) and volleyball (N= 2) participated in the study. The age of the players ranged from 12 to 39 years ( $M = 17.3$ ). The participants had played for a minimum of 6.7 years, ( $M = 1.0$ ) with their present team.

### Measures

#### *Self-talk*

Athletes' self-talk during trainings or competition was assessed using the Automatic Self-Talk Questionnaire for Sport (ASTQS) developed by Zourbanos, Hatzigeorgiadis, Chroni, Theodorakis & Papaioannou (2009). The ASTQS is made up of 40 items, which are measured on a 5-point (0 = never, 4 = very often) scale with higher scores indicating how often athletes experience the thoughts that are listed during training or competition. Among the 40 items, 21 items assesses negative thoughts with four dimension whiles 19 items assesses positive thoughts under also four dimensions. Positive self-talk consist of confidence (e.g., I believe in myself), anxiety control (e.g., Keep calm) psych up (e.g., Do your best) and instructional (e.g., concentrate on what you have to do right now). Negative dimension of the ASTQS consist of worry (e.g., I/We will lose), disengagement (e.g., I want to quit), somatic fatigue (e.g., I feel tired), and irrelevant thought (e.g., I am hungry). The scale has shown acceptable level of internal consistency with Cronbach alpha .72 and .69 for positive and negative self-talk respectively.

### ***Cohesion***

Cohesiveness of the team as reflected through the perceptions of individual team members was assessed with the Youth Sport Environment Questionnaire (YSEQ) developed by Eys, Loughead, Bray, and Carron (2009). The YSEQ contains 16 items that assess task (e.g., As a team, we are united) and social (e.g., I spend time with my teammates) cohesion. Responses are given on a 9-point scale anchored at two extremes by “*strongly agree*” and “*strongly disagree*”. All scales have been supported to show acceptable level of internal reliability coefficients with Cronbach alpha above .90.

### ***Collective efficacy***

Collective efficacy was measured using the Collective Efficacy for Sport Questionnaire (CESQ) (Sullivan, Short, & Feltz, 2001). The CESQ is made up of 20 items, which are measured on a 9-point scale with higher scores indicating greater efficacy. The 20 items measure five different elements of collective efficacy. The five elements that are measured are ability (e.g., “outplay the opposing team”) effort (e.g., “play to its capabilities), persistence (e.g., “perform under pressure”), preparation (e.g., “be ready”), and unity (e.g., “be united”). Instructions given on the questionnaires inform the athletes to rate their team’s confidence in relation to its abilities. Each item begins with the stem “rate your team’s confidence in relation to its ability to ...”. Answers range from “not at all confident” to “extremely confident”. The scale has been supported by confirmatory factor analysis, and has been shown to be reliable and demonstrate concurrent validity with respect to other group dynamics in sport (Short et al., 2001).

## **Procedure**

Upon receipt of approval by the University ethics committee, local sport clubs were contacted to participate. Teams that expressed interests in participating in the study were briefed of its main aims and objectives and were informed of the anonymous and confidential, as well as voluntary nature of the study. Informed consent was obtained from all participants prior to the administration of the questionnaires. Upon brief instructions, athletes completed the questionnaires at the training grounds. The questionnaires took an average of 20 minutes to complete.

## **Data Analysis**

Cronbach's alphas were calculated to test the reliability of the scales. A two way (2x2) MANOVA were calculated to test for differences in self-talk as a function of sex and competitive level. The relationships between all variables were tested through bivariate correlations. Finally the degree to which the dimensions of cohesion and collective efficacy predict self-talk was examined using regression analysis.

## RESULTS

### Cronbach's alpha and descriptive statistics

The mean, standard deviation and Cronbach's alpha reliability coefficient for each of the subscales of cohesion, collective efficacy and self-talk measure are reported in Table 1. All Cronbach's alpha's were satisfactory, thus supporting the internal consistency reliability of the scales. Regarding self-talk, participants scored moderate to high for positive self-talk and moderately low for negative self-talk. With regards to cohesion, participants scored both moderately high for the task and social aspects and again scored high for all subscales of collective efficacy, thus; ability, effort, persistence, preparation and unity.

Table 1. Descriptive Statistics

Scales	Alpha	M	SD
Cohesion			
Task	.89	7.32	1.37
Social	.86	7.00	1.50
Collective efficacy			
Ability	.88	8.03	1.75
Effort	.82	8.11	1.63
Persistence	.83	8.08	1.63
Preparation	.86	8.06	1.72
Unity	.84	8.17	1.63
Self-Talk			
Positive			
Psych-up	.79	3.35	.70
Anxiety control	.66	2.92	.81
Confidence	.83	3.24	.72
Instruction	.82	3.26	.72
Negative			
Worry	.80	1.23	.77
Disengagement	.77	.71	.78
Somatic fatigue	.79	1.15	.78
Irrelevant thought	.67	1.21	.90

## Correlations

Examination of the correlations showed that positive self-talk subscales were highly correlated among them, and negatively low to moderately, related to the negative self-talk subscales, which were also highly correlated among them. The two cohesion subscales (task and social) were moderately correlated among them, task cohesion was moderately to highly correlated and social cohesion was lowly correlated with the subscales of collective efficacy which were also highly correlated among them. Subscales of self-talk were low to moderately correlated with cohesion and collective efficacy and subscales of cohesion and collective efficacy were moderately to highly correlated.

## Analysis of Variance

A two-way (2x2) MANOVA was calculated to test for differences in the dimensions of self-talk as a function between sex and competitive level. The analysis revealed a significant multivariate effect for sex,  $F(8, 216) = 3.75, p < .01, \eta^2 = .12$ , and a significant multivariate effect for competitive level  $F(8, 216) = 3.34, p < .01, \eta^2 = .11$ . With regard to sex, examination of the univariate effects showed a significant effect for worry,  $F(1, 223) = 8.21, p < .01, \eta^2 = .03$ , and an effect that approached significance for disengagement,  $F(8, 216) = 2.94, p < .09, \eta^2 = .01$ . Examination of the means showed that females scored higher on worry ( $M = 1.41, SD = .64$ ) than males ( $M = 1.17, SD = .80$ ). Examination of the means further showed that males scored higher on disengagement ( $M = .72, SD = .81$ ) than females.

Table 2. Bivariate Correlations Among Dimensions/Subscales of Cohesion, Collective Efficacy and Self-Talk

Subscales	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.Task														
2.Social	.56**													
3.Ability	.63**	.30**												
4.Effort	.72**	.39**	.83**											
5.Persistence	.65**	.39**	.76**	.81**										
6.Preparation	.69**	.36**	.81**	.88**	.84**									
7.Unity	.74**	.43**	.75**	.81**	.82**	.84**								
8.Worry	-.27**	-.27**	-.29**	-.30**	-.24**	-.31**	-.24**							
9.Disengagement	-.24**	-.18**	-.10	-.18**	-.10	-.19**	-.20**	.61**						
10.Fatigue	-.22**	-.25**	-.23**	-.27**	-.19**	-.28**	-.24**	.67**	.59**					
11.Irrelevant thought	-.15*	-.06	-.12	-.16*	-.12	-.18**	-.17**	.51**	.52**	.57**				
12.Psych-up	.14*	.12	.13*	.20**	.16*	.18**	.14*	-.39**	-.42**	-.29**	-.19**			
13.Anxiety control	.18**	.21**	.15*	.20**	.16*	.19**	.21**	-.29**	-.29**	-.19**	-.141*	.593**		
14.Confidence	.22**	.25**	.22**	.24**	.20**	.24**	.26**	-.47**	-.43**	-.33**	-.15*	.75**	.71**	
15.Instruction	.22**	.17**	.22**	.27**	.24**	.27**	.24**	-.41**	-.38**	-.29**	-.13*	.78**	.62**	.82**

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Regression analysis**

Multiple regression was used to predict athletes self-talk from cohesion and collective efficacy. Average scores of cohesion and collective efficacy were used in the analysis. For positive self-talk the analysis showed that cohesion and collective efficacy predicted 7.8% of the variance,  $F(2, 223) = 9.44, P < .01$ . Collective efficacy had a significant unique contribution to the prediction ( $beta = .16, t=1.95, p= .05$ ), whereas the contribution of cohesion was marginally non-significant ( $beta = .15, t=1.74, p= .08$ ). For negative self-talk, the analysis showed that cohesion and collective efficacy predicted 9.3% of the variance,  $F(2, 223) = 11.46, p < .01$ . Cohesion had a significant unique contribution to the prediction ( $beta = -.18, t = -2.17, p < .05$ ), whereas the contribution of collective efficacy was marginally non-significant ( $beta = -.16, t = -1.89, p= .06$ ). However, in the final model, task cohesion was statistically significant, with a higher beta value of ( $t = -2.64, beta = -.21, p < .01$ ) than social cohesion ( $t = -1.44, beta = -.11, p = .15$ ).

## DISCUSSION

From the previous literatures on the antecedents of self-talk, suggested constructs and theories in further studies involving self-talk antecedents have been proposed. This highlights the importance and significance of exploring the factors that shape and influence athletes self-talk. Identifying such factors that influence self-talks could assist sport psychology consultants and researchers to intervene and change these factors to foster proper self-talk and elude counterproductive self-talk. It could further provide explanations by which cohesion and collective efficacy and other team factors (yet to be studied) contribute to the social-environmental factors antecedents of self-talk. This study is a build-up on previous literature of the factors that influence self-talk. In addition it also extends the socio-environmental factors of self-talk as suggested by Zourbanos et al, (2006, 2007, 2010, 2011) to include team factors. In view of the limited research on the antecedents of self-talk, that encouraged Hardy et al (2009) to postulate personal and situational factors in their framework, Zourbanos et al (2011) further suggested social and environmental factors as another independent antecedent of self-talk that has to be looked at. The inclusion of the two main team factors (team cohesion and collective efficacy) in this study is in anticipation of their contribution to athletes self-talk in team sports as hypothesized. This therefore extend the work of Zourbanos et al (2006, 2007, 2010, 2011) that seem to only recognize the role of significant others especially the coach to include team factors in influencing athletes self-talk. Again, in a critical review of the self-talk literature by Hardy (2006), Hardy (2006) proposed theories of importance for the future study of the self-talk construct. Among the proposed theories is Bandura's (1997) self-efficacy theory. Bandura extended self (personal) efficacy to include collective efficacy in view of the fact that team sport requires sustained collective effort of each team member to achieve a common goal, hence their (team cohesion and collective efficacy) inclusion in this study.

The purpose of this study was to investigate the relationship between cohesion, collective efficacy and self-talk; and the degree to which cohesion and collective efficacy could predict athletes' self-talk. Guided by the antecedents of self-talk (Zourbanos et al, 2006, 2007, 2010, 2011) within sport and other relevant researches, the findings of this study supported previous studies and the notion that cohesion and collective efficacy are inter-related to each other in a cyclic manner (Bandura, 1986, 1997; Kozub & McDonnell, 2000; Zaccaro et al.,1995). The strong associations between team cohesion and collective efficacy as indicated in this study coincide with findings from similar studies in the sport settings (e.g., Heuzé et al., 2007; Paskevich et al., 1999; Spink, 1990). The study by Heuzé et al's (2007) with elite female handball teams shows collective efficacy as an antecedent of task cohesion and further suggested the promotion of athletes' beliefs about their team efficacy. Similar findings were established by Spink (1990), with high efficacious elite volleyball teams reporting higher levels of both Individual Attraction to the Group – Task and Group Integration – Social (ATG-T and GI-S) than their recreational volleyball teams. Again, when Paskevich et al., (1999) investigated the cohesion–collective-efficacy relationship in university and club volleyball teams, they found positive relationships between Individual attraction to the group-social and group integration-social.

However, this study is one of its kinds if not the first to link such association to athletes self-talk. From the regression analysis, team cohesion and collective efficacy significantly predicted both positive and negative self-talk. Moreover, a close inspection of the main effects of the regression analysis suggests that collective efficacy is a strong predictor of positive self-talk than cohesion. Furthermore, cohesion had a significant unique contribution to the prediction of negative self-talk than collective efficacy with task-cohesion having a better prediction than social cohesion. These results supported our hypotheses, showing that collective efficacy and

team cohesion are stronger predictors of positive self-talk, and negative self-talk respectively with task cohesion having a better prediction of negative self-talk than social cohesion.

This study provides preliminary evidence that cohesion and collective efficacy are among important sources of athletes self-talk that future research should further examine. The findings also provide support for Hardy's (2006) proposition of the inclusion of Bandura's (1997) self-efficacy theory for the better understanding of the self-talk phenomenon. Bandura (1986) extended self-efficacy theory to include collective efficacy and suggested that collective efficacy is more than just the sum of individual efficacy levels within the team. The finding of this study implies that, the more cohesed and efficacious a team is the less the use of negative self-talk and the more use of positive self-talk respectively. Thus, in a team perceived by athletes to be efficacious and united, athletes are very likely to implore self-talk in order to sustain the unison and efficacy of the team.

A further analysis of the means of the dimension of self-talk as a function of sex indicates that, females experience more worry than males whereas males report higher tendencies to disengage than females. This indicates that sport psychology consultants could better prepare their interventions taking gender into consideration. It may be important to consider the specific contributions these dimensions make in size and type when designing applied research such as intervention studies. From a practical perspective, the results suggest that athletes' perceptions of their team's efficacy and cohesion, in particular task-cohesion have important implications for influencing athletes' self-talk. It's therefore important that a strong cohesion is established in team sport by either coach's and/or sport psychologist and that athletes identify cohesion as a vital tool for team success. Therefore, enhancing the effectiveness of interaction process in, but also out of, the sport field may have a useful contribution in shaping athletes' self-talk.

### **Applications and future directions**

In view of the findings of this study, there is the need for sport teams to be efficacious and cohesed so as for each member athlete to implore effective self-talk during competitions to help sustain the unity of the team. Having taken the step to associate the antecedents of self-talk with team factors, it's worth suggesting a direction for future research. Future research could explore either the same or other team factors (such as team roles, team norms, team interaction, team goals and team communication) in relation to self-talk and/or other psychological skills and also outcome variables such as team performance. Another line of research could be the effects of self-talk impact on important team outcomes factors such as cohesion and collective efficacy. This will help discern whether self-talk contributes to the development and maintenance of team cohesion and collective efficacy. Researchers could further examine the mediating role of self-talk in the relationship between cohesion and collective efficacy and/or with other team factors. The dimensions of self-talk as mediator variables have theoretical and practical significance. From a theoretical point of view, mediator variable such as self-talk is important because it contributes to the self-talk research base as better theory predicts more variance in outcome behaviour. Again, self-talk as a mediator variable can continue to serve as a tool for sport psychology intervention studies that aim to maximize the relationship between team factors and performance behaviour.

### **Limitations**

This study, if not the first is one of its kinds to explore the antecedents of self-talk from team factors. This study further add new information on the antecedents of self-talk by expansion of what Zourbanos et al (Zourbanos et al, 2006, 2007, 2010, 2011) labeled as socio-environmental factors of self-talk antecedents. However, in the course of the research certain limitations were noted. First, participants were from only three team sports namely basketball, football, and

volleyball. Participants represent a narrow population of athletes participating in team sports. Distribution of participants was not well balanced (football = 7 teams, basketball = 4 teams, volleyball = 2 teams) thereby inhibiting further statistical analysis. The sample also comprised of athletes from only some part of Greece who participated at the local and national levels. The above limitations to some extent might limit the interpretations and conclusions in addition to the fact that the variables in the study measure perceptions and experiences at a particular time.

### **Conclusion**

The present study attempted to build upon the existing body of literature of the antecedents of self-talk from team factors perspective. In sum, this study examined the relations between perceptions of team cohesion and collective efficacy and athletes' self-talk in team sport. Guided by the antecedents of self-talk within sport and other relevant fields, overall, the results indicated that both team cohesion and collective efficacy are related to both positive and negative dimensions of athletes self-talk. However, more research is required to support and expand the findings of this study and the literature of the antecedents of self-talk. Overall, this study shows a better understanding of the role team cohesion and collective efficacy play in contributing to each individual athlete use of self-talk in team sport. It is hoped that the results from the current study may help educate researchers, sport psychology consultants, athletes, and coaches on the need to strengthen the unity and efficacy of a team.

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APPENDIX



Υποδείξτε με βάση την παρακάτω κλίμακα την αυτοπεποίθηση της ομάδας σας σχετικά με τις ικανότητές της.

Κλίμακα απαντήσεων										
1 = καθόλου αυτοπεποίθηση					10 = πολύ μεγάλη αυτοπεποίθηση					

Πιστεύω ότι η ομάδα μου έχει την ικανότητα...										
1. να επιβάλλεται στην αντίπαλη ομάδα	1	2	3	4	5	6	7	8	9	10
2. να λύνει διαφωνίες και προβλήματα	1	2	3	4	5	6	7	8	9	10
3. να αποδίδει καλά υπό πίεση	1	2	3	4	5	6	7	8	9	10
4. να είναι σε ετοιμότητα	1	2	3	4	5	6	7	8	9	10
5. να δείχνει ότι είναι καλύτερη από τις άλλες ομάδες	1	2	3	4	5	6	7	8	9	10
6. να είναι ενωμένη	1	2	3	4	5	6	7	8	9	10
7. να επιμένει όταν εμφανίζονται εμπόδια	1	2	3	4	5	6	7	8	9	10
8. να δουλεύει σκληρά	1	2	3	4	5	6	7	8	9	10
9. να 'μένει' στο παιχνίδι όταν φαίνεται ότι τα πράγματα δεν πάνε καλά	1	2	3	4	5	6	7	8	9	10
10. να αποδίδει σύμφωνα με τις δυνατότητές της	1	2	3	4	5	6	7	8	9	10
11. να αποδίδει καλά ακόμα και όταν χωρίς τον καλύτερο παίκτη	1	2	3	4	5	6	7	8	9	10
12. να προετοιμάζεται ψυχολογικά για τον αγώνα	1	2	3	4	5	6	7	8	9	10
13. να διατηρεί συνολικά μια θετική στάση	1	2	3	4	5	6	7	8	9	10
14. να είναι καλύτερη από τον αντίπαλο	1	2	3	4	5	6	7	8	9	10
15. να αποδίδει καλύτερα από τον αντίπαλο	1	2	3	4	5	6	7	8	9	10
16. να δείχνει ενθουσιασμό	1	2	3	4	5	6	7	8	9	10
17. να μη χάνει την αυτοσυγκέντρωση της	1	2	3	4	5	6	7	8	9	10
18. να προετοιμάζεται καλά για τον αγώνα	1	2	3	4	5	6	7	8	9	10
19. να ακολουθεί μια αποτελεσματική τακτική	1	2	3	4	5	6	7	8	9	10
20. να έχει αποτελεσματική επικοινωνία	1	2	3	4	5	6	7	8	9	10

Παρακάτω υπάρχει μια λίστα από διάφορες σκέψεις που κάνουν οι αθλητές κατά την διάρκεια της προπόνησης και του αγώνα. Σας παρακαλώ να διαβάσετε κάθε σκέψη και να προσδιορίσετε **πόσο συχνά** οι σκέψεις αυτές πέρασαν από το μυαλό σας **τον τελευταίο μήνα κατά τη διάρκεια των πιο πρόσφατων προπονήσεων ή αγώνων.**

	ΠΟΤΕ	σπάνια	μερικές φορές	συχνά	πολύ συχνά
1. Θα χάσουμε	0	1	2	3	4
2. Θέλω να σταματήσω	0	1	2	3	4
3. Διψάω	0	1	2	3	4
4. Δεν αισθάνομαι καλά το σώμα μου	0	1	2	3	4
5. Πάλι λάθος έκανα	0	1	2	3	4
6. Θέλω να φύγω από εδώ	0	1	2	3	4
7. Σκέφτομαι τι θα κάνω το βράδυ	0	1	2	3	4
8. Είμαι κουρασμένος/ η	0	1	2	3	4
9. Δεν είμαι τόσο καλός όσο οι άλλοι	0	1	2	3	4
10. Δε μπορώ να συνεχίσω άλλο	0	1	2	3	4
11. Πεινάω	0	1	2	3	4
12. Είμαι χάλια σήμερα	0	1	2	3	4
13. Δε θα πετύχουμε το στόχο μας	0	1	2	3	4
14. Βαρέθηκα	0	1	2	3	4
15. Θέλω να κάνω ένα μπάνιο	0	1	2	3	4
16. Δε με βοηθάει το σώμα μου σήμερα	0	1	2	3	4
17. Δε μπορώ να συγκεντρωθώ	0	1	2	3	4
18. Σκέφτομαι να σταματήσω να προσπαθώ	0	1	2	3	4
19. Τρέμουν τα πόδια/ χέρια μου από την κούραση	0	1	2	3	4
20. Δε θα τα καταφέρουμε	0	1	2	3	4
21. Τι θα πουν αυτοί (π.χ. προπονητής) που με βλέπουν για την κακή μου απόδοση	0	1	2	3	4
1. Πάμε γερά	0	1	2	3	4
2. Χαλάρωσε	0	1	2	3	4
3. Πιστεύω στον εαυτό μου	0	1	2	3	4
4. Συγκεντρώσου στο στόχο σου	0	1	2	3	4
5. Δυνατά	0	1	2	3	4
6. Μην εκνευρίζεσαι	0	1	2	3	4
7. Είμαι πολύ καλά προετοιμασμένος/ η	0	1	2	3	4
8. Συγκεντρώσου τι πρέπει να κάνεις τώρα	0	1	2	3	4
9. Δώσε το 100% των δυνάμεων σου	0	1	2	3	4
10. Ηρέμησε	0	1	2	3	4
11. Νιώθω δυνατός/ η	0	1	2	3	4
12. Συγκεντρώσου στο παιχνίδι σου	0	1	2	3	4
13. Βάλε τα δυνατά σου	0	1	2	3	4
14. Χωρίς άγχος	0	1	2	3	4
15. Θα τα καταφέρω	0	1	2	3	4
16. Συγκεντρώσου στην τακτική	0	1	2	3	4
17. Γερά	0	1	2	3	4
18. Πιστεύω στις δυνάμεις μου	0	1	2	3	4
19. Συγκεντρώσου	0	1	2	3	4