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The relationships between achievement goals, motivational climate and self-talk in physical education

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Abstract

The aim of the present study was to explore the relationships between achievement goal orientation, perceived motivational climate and students' self-talk content in Physical Education (PE) setting. Two studies were conducted. The purpose of the first study was the translation and adaptation of the questionnaires into Serbian language. The sample of this study consisted of 154 students (M = 12.66 years, SD = .48 years). The second study aimed to explore the relationships between students' goal orientation, perceived motivational climate and self-talk. The sample of this study consisted of 617 students (M = 13.36 years, SD = .73 years). The participants were selected from four elementary schools in Belgrade, Serbia. Three instruments were used: the Automatic Self-Talk Questionnaire for PE (ASTQ – PE, Zourbanos, Papaioannou, Argyropoulou, & Hatzigeorgiadis, 2014), Task and Ego Orientation in Physical Education Questionnaire (TEOPEQ, Duda & Nicholls, 1992; Walling & Duda, 1995) and Students' Perceptions of Their Physical Education (PE) Teachers' Emphasis on Goals Questionnaire (PTEGQ; Papaioannou, Milosis, Kosmidou & Tsigilis, 2007). In general the results supported previous findings showing both perceived motivational climate and individual goal orientations predicted the use of positive and negative self-talk in PE settings.

Contents

Introduction

It has been recognized that physical education (PE), as a part of elementary education program, has the mission to promote physical activity and reinforce physically active lifestyle among children (e.g. Weigand & Burton, 2002; Duda, 1996; Biddle & Chatzisarantis, 1999; Digelidis, Papaioannou, Laparidis, & Christodoulidis, 2003). Considering that school based PE has the access to a large number of children, Sallis and colleagues (1992) argued that physical education has the most promise for having an impact in public health. In addition, positive affective experiences in PE and physical activity habits established during young age tend to track into young adulthood and later life (Telama, Yang, Viikari, Valimaki, Wanne & Raitakari, 2005). However, evidence suggests that interest and participation in PE gradually decline with age (Digelidis & Papaioannou, 1999; Van Wersch, Trew, & Turner, 1992; Koka & Hein, 2003; Hassandra, Goudas, & Chroni, 2003). Thus, many researchers agreed that enhancing children's motivation for participation in PE should be an important objective in contemporary PE system (e.g. Theodosiou & Papaioannou, 2006).

In this respect, it has been acknowledged that students' thought content during PE have important influence on their emotional and behavioral outcomes. Such ideas stem from research conducted by early cognitive theorists (e.g. Ellis, 1976; Meichenbaum, 1977; Butler, 1981) who recognized the importance of individuals' thought content for their emotions and behavior. In other words, it has been argued that there is a link between what people say to themselves and how they feel and behave. In particular, in PE context we could assume that students' cognitions affect their behaviour, attitudes and motivation with respect to PE lessons.

Individuals' cognitive content has been referred to by a various terms such as inner speech, internal dialog, self-statements, self-directed speech, verbal cues, etc., (e.g. Burnett,

1996; Hatzigeorgiadis et al., 2011). However, self-talk is the term that has prevailed in sport and physical activity literature for the description of individuals' cognitive content, and is the one that will be used throughout this thesis (e.g. Burnett, 1996; Hatzigeorgiadis, Zourbanos, Galanis & Theodorakis, 2011). Self-talk has been defined as an internal dialogue in which individuals interpret feelings and perceptions, regulate and change evaluations and cognitions and give themselves instructions and reinforcement (Hackfort & Schwenkmezger, 1993).

Generally, there are two main streams of research in the self-talk literature. The first one explores self-talk as a psychological skill or mental strategy used to enhance performance. The second investigates self-talk in the form of automatic thoughts, with the main goal to explore factors that influence athletes' self-talk content, namely self-talk antecedents (e.g. Zourbanos, et al., 2014). There is a strong evidence that self-talk represents effective performance enhancing strategy in sport and PE context (e.g. Hatzigeorgiadis et al.2011; Kolovelonis, Goudas, & Dermitzaki, 2011), while Zourbanos (2013) suggested that the use of self-talk in PE can have multiple purposes, such as enhancement of students' performance, increment of their affection to physical activity, as well as gain of self-confidence and self-esteem. However, self-talk as a content of thought remained insufficiently explored, while a number of researchers agreed that further investigation in this field should become priority (e.g. Conroy & Metzler, 2004; Zourbanos, Theodorakis, & Hatzigeorgiadis, 2006). In this regard Hardy, Oliver and Tod (2009) proposed a model that identifies potential antecedents of self-talk, among which one of the most important personal antecedents refers to students' goal orientation, and among situational antecedents - perceived motivational climate created by significant others (e.g., coach, PE teacher, parents).

Dichotomous model within achievement goal theory (AGT), introduced by Nicholls (1984), specifies two kinds of goals that direct achievement-related behaviours - task and ego. In particular, when task goal orientation prevails, individual tends to evaluate performance according to self-referenced criteria, focus on mastery of the task, learning of the skills, personal improvement, while success is attributed to increment of effort (e.g Ntoumanis & Biddle, 1999). On the other hand, when an individual adopts an ego goal orientation, performance is evaluated in comparison to the performance of others, while the ability itself is seen as capacity (e.g. Weigand & Burton, 2002). In overall, task goal orientation has been shown to be an important predictor of sport and exercise involvement, while ego goal orientation has not (Duda & Hall, 2001; Papaioannou, Bebetsos, Theodorakis, Christodoulidis & Kouli, 2006).

Furthermore, it has been suggested that differences in goal perspectives can be ascribed to different personal and situational factors (e.g. Duda & Nicholls, 1992), while one the most important situational factors in sport and PE setting constitute coaches and PE teachers (e.g. Papaioannou, 1994; Duda, 1996). Their behaviour influences individual's motivation and motivational goal orientations (e.g. Papaioannou, Marsh & Theodorakis, 2004), and create a particular practice environment (Heuzé, Sarrazin, Masiero, Raimbault & Thomas, 2006) namely motivational climate, the term that was introduced by Ames (1992a, 1992b). In particular, two dimensions of motivational climate can be differed - mastery, which promotes task or mastery goal orientation, and - performance, which supports ego or performance goal orientation. Research has been concordant that perceived mastery or task-involving climate is associated with adaptive achievement patterns and more positive cognitive and emotional responses in youth physical activity contexts (e.g. Duda & Balaguer, 2007; Duda, 2001; Ntoumanis & Biddle, 1999).

Nevertheless, in accordance with assumptions within the framework of AGT, researchers who investigated the antecedents of self-talk in sport setting found that task goal orientation has more positive outcomes for the athletes' thought patterns, whereas ego orientation depended more on perceived competence or situational factors (Hatzigeorgiadis & Biddle, 1999, 2000, 2002; Harwood, Cumming & Fletcher, 2004). In the context of PE, Zourbanos et al., (2014) reported similar findings, indicating that task orientated students use more positive self-talk than students who displayed higher ego goal orientation. The authors also emphasized that no similar research was conducted in PE setting, and that further investigation on the influence of goal orientation on students' self-talk in PE context is required.

With regard to the influence of motivational climate on students' self-talk, studies in educational psychology have shown that the use of positive self-talk positively correlates with the perceived frequency of positive statements made by teachers (Burnett, 1996). Furthermore, it was found that self-talk mediates between statements made by significant others and children's self-esteem (Burnett & McCrindle, 1999) and between the perceived frequency of teachers' positive statements and children's academic self-concept (Burnett, 1999). Similarly, in sport context was found that supportive coaching behaviour has beneficial effects upon athletes' thinking, whereas coaches' negative behaviour led to athletes' negative thoughts (Zourbanos et al., 2006). These findings were supported by Zourbanos and colleagues who generally confirmed that coaches' behaviour has significant impact on the athletes' cognitive content (e.g. Zourbanos, Hatzigeorgiadis & Theodorakis, 2007; Zourbanos, Hatzigeorgiadis, Goudas, Papaioannou, Chroni & Theodorakis, 2011). Although these results seem to suggest the significant influence of teachers' and coaches' behavior on children's thoughts, there are no similar studies exhibited in PE settings.

To summarize, goal orientation as a personal factor, and perceived motivational climate as a situational factor, were shown to have important influence on individuals' thought content. In addition, individuals' thought content, i.e. self-talk, has been shown to have significant influence on their emotional and behavioral outcomes. In spite of that, a number of researchers is in agreement that this field still remains unexplored, arguing that further investigation in this direction should become priority (e.g., Conroy & Metzler, 2004, Zourbanos et al., 2006). Accordingly, the aim of this study was to expand upon previous investigations and provide new insights into to the influence of goal-orientations and perceived teachers' motivational climate on students' self-talk in PE setting.

Self-talk

People are commonly in a sense of talking to themselves, either consciously or unconsciously, in an overt or covert manner (Chroni, Perkos and Theodorakis (2007). Importance of these self-directed statements has been recognized by early cognitive theorists (Ellis, 1976; Meichenbaum, 1977; Butler, 1981) who emphasized the link between what people say to themselves and how they feel and behave. However, there still seem to be a confusion among researchers in attempt to define and identify this phenomenon. The literature includes various synonymous terms such as inner speech, internal dialog, self-statements, self-directed speech, self-verbalizations, verbal cues, stimulus cueing, thought content instructions, and self-talk. (e.g. Burnett, 1996; Hatzigeorgiadis et al., 2011). Throughout this thesis will be used the term self-talk, considering that this term most commonly prevails in sport research.

There have been several attempts among sport psychologists to define the concept of self-talk. Hackfort and Schwenkmezger (1993) provided somewhat broader definition, describing self-talk as an "internal dialogue in which the individuals interpret feelings and perceptions, regulate and change evaluations and cognitions and give themselves instructions and reinforcement". Theodorakis, Weinberg, Natsis, Douma and Kazakas (2000) defined self-talk as "what people say to themselves either out loud or as a small voice in their head". However, Hardy (2006) suggested that existing definitions of self-talk do not capture the whole meaning of this notion, arguing that definition of self-talk needs to introduce this phenomenon more comprehensively. Thus Hardy (2006) proposed so-called "working definition", or a guideline of self-talk, which describes it 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. Finally, Zourbanos, Hatzigeorgiadis, Tsiakaras, Chroni, and Theodorakis (2010) added to the above definition another element, that self-talk has shown to be "malleable to perceptions and interpretations of stimuli from the social environment" highlighting the important role of the social environment.

Early cognitive theorists proposed that the content of self-talk has important impact on individual's emotional and behavioral outcomes (e.g. Beck, 1970; Ellis, 1976; Meichenbaum, 1977). They argued that thoughts have an influence on depression, tolerance in pain on surgery patients, and stress reduction (Meichenbaum, 1977; Weinrach et al., 2001). It has also been suggested that self-talk lies at the core of anxiety and that automatic and intrusive thoughts can preoccupy a person during anxious states and "occur repetitively and rapidly and seem completely plausible at the time of their occurrence" (Beck & Emery, 1985; Conroy & Metzler, 2004). Indeed, this represented the foundation for the development of cognitive-behavioral therapies which were based on treatments that aim to change individuals' thoughts, interpretations, and behavior (e.g. Meichenbaum, 1977). Given that such treatment approaches, based on self-instructions, were successfully applied in various contexts (Hatzigeorgiadis et al., 2011), they finally found its use in the field of sport psychology. Today self-talk is considered as one of the most pervasive cognitive strategies used to control and organize athletes' thoughts (Conroy & Metzler, 2004; Theodorakis, Hatzigeorgiadis & Chroni, 2008; Hatzigeorgiadis, Zourbanos, Mpoumpaki, & Theodorakis, 2009). Numerous findings in sport have supported the effectiveness of self-talk as a mental strategy that facilitates learning and improves task performance (Hatzigeorgiadis et al., 2009).

Nevertheless, we can differ between two main streams of research in the self-talk literature in sport and physical education setting. The first one, which usually involves field

studies, focuses on self-talk in the form of automatic thoughts, with the main goal to explore content, frequency, occurrence and factors that influence individuals' self-talk (e.g., Zourbanos et al., 2010). The second stream, which mainly includes experimental research, investigates self-talk as a psychological skill, or a cognitive strategy, utilized to enhance performance (e.g. Hatzigeorgiadis et al., 2011). However, a number of researchers noted an existing imbalance between the two streams of studies (e.g., Zourbanos et al., 2006, Hatzigeorgiadis & Biddle, 2008). In particular, it has been argued that self-talk, as an effective mental strategy, attracted large attention among researchers, while self-talk as a content of thought remained insufficiently explored (e.g. Hatzigeorgiadis & Biddle, 2008). Such uneven approach in literature creates an impression that the importance of self-talk as a content of thought and factors that affect its content are unduly diminished. Recognizing the importance of individuals' thoughts as a crucial factor that influences one's affective states and behavioral outcomes, this study aimed to expand upon the first stream of research, and at the same time amplify findings concerned with public health and children's involvement in physically active lifestyle. In particular, the aim of this study was to examine the content of students' self-talk in relation to two other constructs that act as antecedents of self-talk, namely goal orientation and perceived motivational climate in PE settings.

Positive and negative self-talk

Acknowledging the importance of self-talk, Hardy (2006) argued that understanding its nature is fundamental aspect to forming a clear grasp of the potential applied implications of self-talk interventions. In general, it has been recognized that self-talk has numerous dimensions, among which majority of researchers primarily focused on its valence dimension. This

dimension distinguishes between positive and negative self-talk. Positive self-talk refers to statements which include praise and encouragement, while negative self-talk involves statements in a form of criticism and self-preoccupation (Moran, 1996). Based on these preliminary reports, Zourbanos, Hatzigeorgiadis, Chroni, Theodorakis and Papaioannou (2009) developed a scale for the assessment of the content of self-talk (Automatic Self-Talk Questionnaire for Sports – ASTQS), in which they identified eight different categories of self-talk - four positive, three negative, and one neutral. Positive self-talk was subdivided on: psych-up, confidence, instruction, and anxiety control. Negative self-talk involved worry, disengagement, and somatic fatigue, while neutral self-talk referred to irrelevant thoughts. The identification of numerous sub-categories highlighted the complex nature of self-talk and provided additional help for athletes, coaches and sports psychologist to better understand, and precisely identify the athletes' thoughts with regard to their performance.

Weinberg (1988) argued that positive self-talk can help athletes to stay appropriately focused on the present, and prevent them from dwelling on past mistakes or overthinking future events during performance. On the other hand, negative self-talk was proposed to have detrimental effects on the athletes' performance because it is considered to be inappropriate, irrational, counterproductive, or anxiety-producing (Theodorakis et al., 2000). However, some authors noted that positive self-talk received stronger support from laboratory based studies, while field studies provided varied and equivocal results in this regard (Hardy, 1996; Hatzigeorgiadis, Theodorakis & Zourbanos, 2004), indicating that there was no relationship between direction of self-talk and quality of performance (e.g., Dagrou, Gauvin, & Halliwell, 1991; Van Raalte, Cornelius, Brewer, & Hatten, 2000). Similarly, Tod, Hardy and Oliver (2011) noted in their systematic review that some findings suggest that negative self-talk may not have

detrimental effects on motor skill performance. In this regard, Van Raalte, Brewer, Rivera and Petipas, (1994). proposed that some athletes may interpret their negative self-talk as having motivational qualities, although Hatzigeorgiadis et al. (2004) underlined that these studies evaluated self-talk as content of thoughts and not as a performance enhancing strategy. In particular, Van Raalte et al. (1994) in an observational study did not confirm a link between positive self-talk and better performance. The authors suggested that this could be ascribed to the possibility that some athletes used positive self-talk internally, and therefore, it could have not be observed by the raters. Further, they found that some athletes who used negative self-talk won their matches. However, results of their study still indicated that for the majority of athletes negative self-talk indeed was associated with worse performances. Van Raalte and colleagues also identified three broad functions of positive self-talk: self-motivation, calming, and strategy use, while negative self-talk was related to frustration, fear of failure, and negatively expressed self-instruction.

While field studies, which examined self-talk as a content of thought, have not entirely supported the benefits of positive self-talk (e.g. Van Raalte, Gornelius, Brewer, & Hatten, 2000), results in experimental research, in which self-talk was examined as performance enhancing strategy, consistently supported the effectiveness of positive self-talk and provided evidence for the detrimental effects of negative self-talk (Hatzigeorgiadis & Biddle, 2008). In particular, positive self-talk has been found to have positive effects on performance in golf (Johnson-O'Connor & Kirschenbaum, 1982), endurance (Weinberg, Smith, Jackson, & Gould, 1984), basketball (Hamilton & Fremour, 1985), skiing (Rushall, Hall, Roux, Sasseville, & Rushall, 1988), and dart throwing (Dagrou, Gauvin, & Halliwell, 1992; Van Raalte, Brewer, Lewis, Linder, Wildman, & Kozimor, 1995). In overall, proponents of positive self-talk suggested that

it can reduce anxiety, increase effort, and enhance self-confidence (Finn, 1985; Weinberg, 1988). Further, self-talk is differentiated according to its function, as instructional and motivational. Instructional self-talk involves statements that relate to attentional focus, technical information, and tactical choices, while motivational self-talk refers to statements that relate to confidence building, effort input, and positive moods (Zinsser, Bunker, & Williams, 2001). Some authors even propose that positive, instructional, and motivational self-talk represent effective ways to communicate with oneself during skill execution aiming to enhance performance (e.g. Landin & Hebert, 1999; Tod et al., 2011), unlike negative self-talk, which was perceived as debilitative for performance (e.g. Peters & Williams, 2003).

Self-talk in physical education

In overall, research evidence in sport and PE suggests that appropriate or carefully chosen self-talk can have positive impact on athletes' and students' performance (e.g. Tod et al., 2011; Hatzigeorgiadis et al., 2004; Hatzigeorgiadis et al., 2009; Kolovelonis et al., 2011). Although it should be noted that majority of these findings were based on investigation in sport setting, while only few of the studies examined the use of self-talk in PE context. Nevertheless, self-talk is considered as one of the most widely used cognitive techniques (Chroni et al., 2007) which can serve multiple functions, such as focus attention, regulate effort, enhance confidence, control cognitive and emotional reactions, facilitate learning skills, task performance, and trigger automatic execution (Theodorakis, Hatzigeorgiadis & Chroni, 2008, Theodorakis et al., 2000).

Consistently with the above findings, the two most recent literature reviews conducted by Tod et al. (2011) and Hatzigeorgiadis et al. (2011) supported the effectiveness of self-talk interventions. In particular, Tod and colleagues reported beneficial effects of the self-talk

interventions for the three main categories of self-talk - positive, instructional, and motivational. In line with their research, Hatzigeorgiadis et al. (2011) confirmed the effectiveness of self-talk as performance enhancing strategy in sport and further encouraged the use of self-talk as a strategy to facilitate learning and enhance performance.

Taking into account that majority of studies about self-talk refer to sport performance, Zourbanos (2013) argued that self-talk research in PE is very limited. Anderson, Vogel, and Albrecht (1999) reported that instructional self-talk had positive effect on third-grade students' overhand throw performance, arguing that self-talk can be a powerful tool for learning because it enables learners to interact with the content and become active agents of their own learning. Furthermore, Kolovelonis et al., (2011) revealed that students in experimental groups improved their performance regardless the type of self-talk used, instructional or motivational, compared to the control group. Kolovelonis, Goudas and Dermitzaki (2012) found that students who used self-talk while practicing a new skill, dart throwing, performed better than students who did not use it. Zourbanos et al. (2013a) who examined the effects of an instructional self-talk intervention on elementary school students, found that the use of instructional self-talk had a positive effect on motor performance in a soccer task, thus showing that such interventions can be effective from the ages of elementary school students. Finally, Zourbanos, Hatzigeorgiadis, Bardas, and Theodorakis (2013b) showed that both instructional and motivational self-talk improved performance among students, however instructional self-talk was more beneficial at the early stages of learning the novel task, while motivational self-talk was more beneficial for the learned task. In overall, findings in PE setting seem to support the use of self-talk as a valuable tool which could facilitate skill acquisition and enhance task performance among students. In addition, Zourbanos (2013) emphasized that the aim of self-talk in PE is not only to

enhance performance but also to get students to love physical activity and to gain more self-confidence and higher self-esteem.

Antecedents of self-talk

Considering the importance of individuals self-talk on their emotional and behavioral outcomes, and factors that shape and influence its content, namely self-talk antecedents, a rising number of researchers noted that this field still remains unexplored, arguing that further investigation in this direction should become priority (Conroy & Metzler, 2004; Hardy et al., 2009; Harwood et al., 2004; Van Raalte et al., 2000; Zourbanos et al., 2006).

Hereby we discuss about the antecedents of self-talk within the framework of Hardy et al.'s (2009) conceptual model of self-talk. Hardy et al. (2009) proposed a conceptual model for the advancement of self-talk research, which postulates that there are two main types of antecedents of self-talk - personal and situational. Personal antecedents involve individuals' cognitive processing, belief in self-talk, and global personality traits – such as self-concept, trait anxiety, motivation-based personality disposition, and achievement goal orientation. Situational antecedents encompass task difficulty, match circumstances, the influence of significant others, and competitive setting. Although they made a clear division between the two categories, the authors also suggested that both individual and situational antecedents are likely to interact as influential factors of athletes' self-talk, which in turn has an impact on cognitive, motivational, behavioral and affective mechanisms and subsequently their performance.

Generally, research on personal antecedents of self-talk stem from educational psychology, where it was first suggested that test anxiety might be positively related to cognitive interference (Wine, 1971). A number of studies, which tested this relationship, confirmed that those individuals who had higher test anxiety experienced more negative and interfering

thoughts, which prevented them from focusing on the task (e.g. Sarason & Stoops, 1978; Zats and Chassin, 1983; Deffenbacher & Hazaleus, 1985). However, very limited number of studies investigated these relationships in sport and PE setting. One of the recent studies, conducted by Hatzigeorgiadis and Biddle (2008), assessed the relationships between pre-competition anxiety, goal-performance discrepancies, and athletes' negative self-talk during performance. Their results clearly demonstrated that both cognitive and somatic pre-competition anxiety positively correlated with negative self-talk athletes experienced during competition. Similar results were obtained by Hatzigeorgiadis and Biddle (2000), who reported that cognitive anxiety moderately correlated with performance worries during performance. Conroy and Metzler (2004) also confirmed those findings, showing in their study that trait sport anxiety could predict a tendency of university recreational athletes' to experience negative self-talk.

Goal orientation and self-talk

With regard to other personal factors, Hatzigeorgiadis and Biddle (1999) were one of the first to propose that goal orientation and perceived competence might be one of the antecedents of cognitive interference in sport setting. Establishing their hypothesis on the basis of dichotomous model of goal orientation theory (Nicholls 1984), the authors found that task orientation has more positive outcomes on the individual's thought patterns, whereas ego orientation depended more on perceived competence or situational factors. Their results were further confirmed by Hatzigeorgiadis and Biddle (2002) and Hatzigeorgiadis and Biddle (2000) who reported similar findings, suggesting that individuals with a high ego and low task orientation suffered significantly more thoughts of escape in comparison to those with a high task and low ego orientation. This was particularly emphasized when the game outcome was unfavorable, then when the game outcome was favorable. Nevertheless, Zourbanos et al. (2014)

noted that these studies prevalently measured negative thoughts, relying on the Thought Occurrence Questionnaire for Sport (TOQS, Hatzigeorgiadis & Biddle, 2000). Given the complexity and multidimensionality of self-talk, it has been suggested that measurement of the whole construct of self-talk would further facilitate our understanding of the athletes thoughts in relation to their goal orientation and performance. In this respect, Harwood et al. (2004) investigated associations between athletes' goal orientations and reported psychological skill use, capturing the measures of positive self-talk. They found that athletes with a higher-task/moderate-ego goal profile reported greater use of all psychological skills, including positive self-talk, then athletes with lower-task/higher-ego and moderate-task/lower-ego goal orientation dispositions. However, their study investigated self-talk in a form of psychological skill and not as a content of thought. In overall, these findings indicated that task orientation resulted in more positive outcomes for individuals' self-talk, while ego orientation was connected with more negative thought patterns.

Taking into consideration that all of the findings on the personal antecedents of self-talk within the field of sport and exercise psychology were related only to sport setting, Zourbanos et al., (2014) applied their research in PE setting. In particular, the authors conducted three studies with the aim to examine the relationships between achievement goals, perceived competence and students' self-talk dimensions in PE setting. Expanding upon previous studies, which were mainly based on Nicholls' dichotomous model of goal orientation theory, the authors adopted two dominant goal models, the dichotomous model (Nicholls 1984) and the 2 x 2 model (Elliot, 1999) of AGT. Results of the first study indicated a moderate relationship between task goals and students' positive self-talk, and negative relationship with students' negative and irrelevant self-talk dimensions. In addition, low positive relationship was found between ego goal

orientation and positive self-talk dimensions and non-significant relationships between ego goals and negative self-talk dimensions. Results of the second study showed that mastery and performance approach were positively related to students' positive self-talk and negatively related to students' negative self-talk. Finally, the third study revealed positive relationship between task orientation and positive self-talk and negative relationship with negative self-talk, while ego orientation was neither related to positive self-talk nor to negative self-talk in the high perceived competence group. However, in low perceived competence group, ego orientation was positively related to negative self-talk. For the 2 x 2 model, results revealed that in high perceived competence group there was no relationship between mastery and performance goals, both approach and avoidance, with neither positive self-talk nor negative self-talk. Nevertheless, in low perceived competence group both mastery and performance approach were positively related to positive self-talk, while both mastery and performance avoidance goals were neither related to positive nor to negative self-talk. In summary, these findings suggest that student's goal orientations and perceived competence may have an impact on students' self-talk, indicating that task and mastery approach goals were linked to the most adaptive patterns for students' positive self-talk. In this respect, the authors encouraged both teachers and parents to promote task-involving and mastery approach goals among children.

Motivational climate and self-talk

With regard to the studies on situational antecedents of self-talk, researchers in different areas of psychological research devoted the most of their attention to the influence of social environment on individuals' thought content.

In educational settings, research has focused on the relationships between children's self-talk and the significant others' statements, including parents, teachers, siblings and peers. In particular, Burnett (1996) revealed that positive self-talk positively correlated with the perceived frequency of positive statements made by significant others. Burnett and McCrindle (1999) found that positive and negative self-talk acts as a mediator between positive and negative statements made by significant others and children's self-esteem. Burnett (1999) reported that positive self-talk mediated between the perceived frequency of teachers' positive statements and children's academic self-concept. In other words, children who perceived more positive statements referred to them by the teacher (i.e. praise and feedback) experienced more positive self-talk and higher academic self-concept than children who perceived that their teacher referred to them in less positive manner. These results in overall emphasize the magnitude of the influence of teachers' behavior on children's cognitive functioning.

Subsequently, interests for the same subject have been raised among sport psychologists as well, who understood the potential importance of the external factors for the athletes' thought content. Thus, Van Raalte et al. (2000) explored the impact of match circumstances on self-talk among competitive adult tennis players, reporting that match circumstances did predict the use of self-talk during performance. Zourbanos et al. (2006) investigated the relationship between coaches' behaviour and its potential influence on athletes' thoughts, finding that coaches' behavior and verbal expressions play important role in shaping athletes' self-talk. In other words, supportive coaching behaviour was found to have beneficial effects upon athletes' thinking, whereas coaches' negative behaviour led to athletes' negative thoughts. These findings were supported by Zourbanos et al. (2007), Zourbanos et al., (2010), and Zourbanos et al. (2011) who generally confirmed that coaches' behaviour has significant impact on the athletes'

cognitive content. In addition, Zourbanos et al. (2010) found that positive coaching behaviour was positively related to athletes' thoughts related to confidence and psych up, while negative coaching behaviour was related to athletes' worrying thoughts. Zourbanos et al. (2011) reported that esteem support was positively related to positive self-talk dimensions, involving psych up and confidence, and negatively related to negative self-talk dimensions, involving worry and fatigue. Besides, emotional support was positively related to the anxiety control dimension of self-talk, and negatively with disengaging thoughts, while informational support was positively related to the instruction dimension of self-talk, and negatively to irrelevant thoughts. These findings clearly indicate that coaching behavior may have an impact athletes' self-talk, and that positive and negative coaching behaviour has different effects on different self-talk dimensions.

In overall, above mentioned findings seem to suggest significant influence of goal orientation as a personal factor (e.g., Zourbanos et al., 2014), and significant others as a situational factor (e.g., Zourbanos et al., 2006), on individuals' thought content. Considering the important function of individuals thoughts with respect to their performance, a number of researchers argued that further investigation on the antecedents of self-talk is necessary. In addition, to our knowledge there is only one study which investigated the relationships between goal orientations and students self-talk in PE setting (Zourbanos et al., 2014), while there are no studies which investigated relationships between perceived teachers' behaviour and students self-talk in PE context. Considering the importance of personal goal orientations and perceived motivational climate created by the PE teaches for students' motivational and behavioral patterns in PE lessons, and an evident lack of research to this subject in PE setting, the aim of this study was to expand upon previous investigations in this regard and provide new insights into to the

influence of goal-orientations and perceived teachers' motivational climate on students' self-talk in PE context.

Achievement goal theory

There are two leading approaches in achievement goal theory that have attracted the most attention in sport psychology research. The first one was proposed by Nicholls (1984), and the second, which involves three models of goal orientation, was proposed by Elliot and colleagues (Elliot, 1994, 1997; Elliot & Harackiewicz, 1996; Elliot, 1999; Elliot, Murayama & Perkun, 2011).

Achievement goal theory (AGT), introduced by Nicholls (1981), specifies the types of goals that direct achievement-related behaviors (Maehr & Zusho, 2009). Generally, the theory is based upon the individual conceptions of ability (Treasure & Roberts, 1995). Assuming that more than one conception of ability exist, AGT proposes that an individual's cognitive and affective patterns are determined by the conception of ability adopted (Treasure & Roberts, 1995). According to Nicholls (1989) we can differ two conceptions of ability which manifest in achievement context, depending upon personal perceptions and beliefs about the achievement of success at the activity in which individual is engaged. These two conceptions of ability relate to two different goal orientations, which act as goals of action – namely task and ego goal orientation. When task goal orientation prevails, individual tends to evaluate performance according to self-referenced criteria, with the focus on mastery of the task, learning of the skills, exerting the effort and personal improvement (Ntoumanis & Biddle, 1999; Morgan & Carpenter, 2002). For those individuals, greater mastery of a task indicates greater perceived competence, while success is attributed to increment of effort. They tend to adopt more adaptive motivational

patterns, seek challenging tasks, persist in the face of difficulty, and display higher satisfaction, enjoyment, pride, and a sense of accomplishment (Solomon, 1996; Weigand & Burton, 2002). At the same time, perceptions of effort equal the ability (Morgan & Carpenter, 2002). However, when an individual adopts an ego goal orientation, performance is evaluated in comparison to the performance of others, and so is the perception of success and failure (Nicholls, 1989). Self-perception of ability is demonstrated when the others are outperformed, while the ability itself is seen as capacity, characterized as a fixed attribute. (Weigand & Burton, 2002; Morgan & Carpenter, 2002; Solomon, 1996). Such individuals are more inclined to display maladaptive behaviours such as an unwillingness to exert effort when task demands are high, and a tendency to avoid challenge, while outperforming the others brings a sense of achievement.

The theory offered an important framework for the investigation of people's motivation in PE settings (Papaioannou, Zourbanos, Krommidas & Ampatzoglou, 2012). Number of research in PE and sport setting is in agreement that achievement goal orientation is important predictor of physical activity involvement, while most of them agree that task orientation is more desirable than ego orientation (e.g. Duda, 1996; Treasure & Roberts, 1995). In particular, task goal orientation has shown to be an important predictor of sport and exercise involvement, while ego orientation was not (Duda & Hall, 2001; Papaioannou, et al., 2006). Moreover, task orientation was consistently associated with adaptive cognitive-affective motivational patterns, such as intrinsic motivation (Papaioannou et al., 2006) and has been shown to contribute to enjoyment in the lessons, positive attitude, and intentions about exercise (Papaioannou, et al., 2004). Thus, Duda (2001) summarized that task orientation is positively associated with intrinsic motivation, perceptions of control, self-determined forms of motivation, exercise intentions,

engagement in physical activity and physical self-concept, whereas ego orientation was associated with low levels of self-determined behaviors.

Although majority of findings are in favor of task orientation, some researches indicated that ego orientation does not always lead to negative cognitive-motivational outcomes when combined with a corresponding level of task orientation (Steinberg, 1996; Steinberg and Maurer, 1999). In addition, they argue that ego-goal orientation fosters self-esteem which makes significant gains for individuals when they are given the opportunity to determine their level of success by comparing their abilities with others (Steinberg, 1996; Steinberg and Maurer, 1999). Duda (1996) explained that students who learn a new task must eventually make comparisons with others in order to determine whether or not they are successful. Further, Hodge and Petlichkoff (2000) have shown that performers who had both, the desire to demonstrate superior abilities over others and to progress and develop through personal mastery are more motivated to engage in tasks that maximize achievement.

Yet, besides these findings, majority of researchers are still in support of task goal orientation. Task orientation leads to more adaptive motivational and behavioral patterns, correspond with more intrinsic motives for involvement in the activity, such as skill development, enhancing one's level of fitness, persistence in practice, belief that effort causes success. On the other hand, ego orientation is linked to extrinsic participation motives, such as social recognition and increasing one's social status, belief that ability causes success (e.g. White & Duda, 1994; Papaioannou & Theodorakis, 1994; Papaioannou, 1995; Biddle, Wang, Kavussanu & Spray, 2003).

Some years later, initial dichotomous model of AGT, was expanded by Elliot and colleagues (Elliot 1994, 1997; Elliot & Harackiewicz,1996), who firstly addressed the distinction

between approach and avoidance motivation in achievement setting, explaining that in approach motivation, behaviour is directed by a positive or desirable event or possibility, while in avoidance motivation, behaviour is directed by a negative or undesirable event or possibility (Elliot, 1999). They proposed an expanded model of a traditional achievement goal framework, defining three possible goal orientations – a mastery goal, which focuses on developing competence, or mastery of the task; a performance-approach goal, which focuses on normative comparison; and a performance-avoidance goal, which reflects avoidance of displaying incompetence (Elliot & Harackiewicz, 1996). Elliot (1999) explained that both mastery and performance approach goals focus on positive possibilities, while performance-avoidance goal focuses on avoiding negative possibility, adding that mastery and performance goals differ in terms of how competence is defined. Further, Elliot (1999) offered 2x2 model of achievement goals, also splitting mastery goals on performance and avoidance. While mastery approach goal still implies on one's focus of mastery of the task, personal improvement, developing skills and abilities, mastery avoidance goal focuses on striving to avoid losing one's skills and abilities, forgetting what was learned, or misunderstanding of the material. Recently, Elliot et al. (2011) presented the newest, 3x2 achievement goal model, which represents the expanded version of 2x2 model. Stemming from the idea that mastery-based goals contain two different standards for evaluation: task-based competence and self-based competence, the authors have split the mastery goals and thus defined 6 goal constructs: task-approach, task-avoidance, self-approach, self-avoidance, other-approach, and other-avoidance. Although the results of their study have shown that 3x2 model is applicable in practice, the development of this model is still in its infancy, and further research is needed to test its applied utility.

Nevertheless, as it was initially proposed that Elliot's models of achievement orientation represent the extension of the Nicholls' dichotomous model in AGT, some authors argued that some crucial differences exist between Nicholls' and Elliot's conceptualizations of achievement goals. Papaioannou et al. (2012) noted that Elliot and colleagues dissociated the definition of achievement goals and task accomplishments from the concept of success, which represent one of the major goals in life, focusing the most of their attention to the antecedents and consequences of approach and avoidance goals. In contrary, at the core of Nicholls' approach has been the meaning of success, while Papaioannou et al. (2012) argued that the highest levels of motivation occur when task accomplishment conveys a meaning that is related to individual's major long-term outcome in life, which is defined as success. Furthermore, Nicholls was particularly interested in the consequences of achievement behaviors in social context, including social influence on one's achievement goals, while Elliot and Marayama (2008) reduced the capacity of their measures to capture social-cognitive variables, which are associated with definitions of success. Basically, Elliot and colleagues adopted a person centered approach in the conceptualization of achievement goals, suggesting that their primary motive lies in one's needs (Papaioannou et al., 2012).

Another difference that has been noted by Papaioannou et al. (2012) between Nicholls' and Elliot's conceptualization of achievement goals lies in their conception of competence. On one hand, Nicholls posited that high ego oriented individuals display adaptive or maladaptive motivational patterns, depending on their perceived competence with regard to the task. He considered ego (or performance) involving goals as prevalently detrimental, and predicted that ego oriented individuals would display maladaptive behaviour when faced with performance difficulties or when perceiving low competence. On the other hand, Elliot and colleagues

suggested that performance goals can be adaptive as long as they are connected with approach and not with avoidance tendencies. In addition, they implied that only people with high perceived competence can adopt approach goals that exhibit adaptive motivational patterns, while individuals with low perceived ability will adopt avoidance goals, which lead to maladaptive motivational patterns.

It became apparent that the differences in conceptualizations of achievement goals between the theorists have led to inconsistent findings due to measurement issues. Papaioannou et al. (2012) argued that Elliot's measurements (Elliot & Murayama, 2008) do not contain items which connect values and achievement goals to keep "aim separate from reason". However, Papaioannou et al. (2012) stressed that reasons can provide a meaningful information about one's selection of a particular achievement goal, or a decision to select subjective or normative criteria of evaluation, and thus allow us to predict the person's emotions, self-regulation processes and behaviours in social environment. Further, when the reasons are excluded from the measurement of achievement goals, dispositional differences in goal orientations can hardly be evaluated. According to Nicholls, individuals that are engaged in the task, have very specific, personally meaningful reasons for which they might value the task as important, and thus increase their engagement and efforts to accomplish the task. However, when separating the aim from the reason, Elliot and Murayama (2008) created conditions in which tasks do not convey authentic meaning to participants (who are engaging in the task), and do not associate goals with subjective feelings of success. The instrument Elliot and Murayama (2008) created does not assess dispositional differences in goal orientations, and cannot capture the whole range of differences between mastery and performance goals, as they are described in dichotomous model. Finally, it has been argued that the standards to evaluate mastery are not specific in the

wording of mastery approach items (Papaioannou et al, 2012). Mastery goals are not easily measurable, while the wording of the items is too general (e.g. "My goal is to learn as much as possible" in Elliot and Murayama 2008). On the other hand, items which focus on performance goals are very specific, and goal attainment is easily measurable.

Taking into account Papaioannou et al.'s. (2012) suggestions, it could be argued that Elliot and colleagues' models of achievement goals do not represent authentic extensions of Nicholls' dichotomous model of achievement orientation. Thus, considering the purposes of this study, this research will be based on the dichotomous model of AGT, proposed by Nicholls (1989).

Motivational climate

Differences in goal perspectives can be ascribed to different personal and situational factors (e.g. Duda & Nicholls, 1992). In sport and PE setting, situational factors primarily refer to social environment created by significant others, such as teachers (e.g. Papaioannou, 1994), coaches, parents (e.g. Duda, 1996), and peers (e.g. Vazou, Ntoumanis & Duda, 2006). Their behaviour influences individual's motivaion and motivational goal orientations (e.g. Papaioannou et al., 2004), and creates a particular practice environment (Heuzé et al., 2006) namely motivational climate, the term that was introduced by Ames (1992a, 1992b). Vazou et al. (2006) defined the term motivational climate as "perceptions of situational cues and expectations that encourage the development of particular goal orientations, and at a given point in time, induce a certain goal involvement state". Nevertheless, Dweck and Leggett (1988) were the first who argued that an athlete's dispositional goal tendencies would depend of the characteristics of the climate, and that this interaction influences individuals' cognitive, affective, and behavioral

responses in achievement settings. However, what is relevant for the research in terms of motivational climate and its cognitive and affective components of motivation, is the individual's subjective perception of the social environment and not its objective features (Ames, 1992b). Research on motivational climate is largely based on achievement goal theory (Papaioannou, et al., 2007). Accordingly, we can differ two dimensions of motivational climate, mastery (or task involving) and performance (or ego involving) climate (Ames, 1992a).

Mastery climate promotes task or mastery goal orientation, while performance environment supports ego or performance goal orientation. Research has been concordant that perceived mastery or task-involving climate is associated with adaptive achievement patterns and more positive cognitive and emotional responses in youth physical activity contexts (Duda & Balaguer, 2007; Duda, 2001; Ntoumanis & Biddle, 1999). This means that perceptions of task-involving environment have been shown to increase enjoyment, satisfaction, positive affect, perceived competence, self-efficacy, task goal orientation, and effort (e.g. Ntoumanis & Biddle, 1999; Kavussanu & Roberts, 1996;), positive attitude towards athletics (Morgan & Carpenter, 2002) and intrinsic motivation in physical education setting (e.g. Ntoumanis & Biddle, 1999; Papaioannou, 1995).

On the other hand, perceived performance or ego-involving climate is connected to more maladaptive achievement patterns and more negative cognitive and emotional responses in youth physical activity settings (Duda & Balaguer, 2007; Duda, 2001; Ntoumanis & Biddle, 1999). In other words, perceptions of the ego-involving environment have been related to an ego goal orientation and a focus on ability, interpersonal comparison, higher anxiety and performance-related worry (e.g. Papaioannou & Kouli, 1999; Ntoumanis & Biddle, 1999; Vazou et al., 2006), decreases in motivation, dropping out of sport (e.g, Sarrazin, Vallerand, Guillet, Pelletier, &

Cury, 2002), learned helplessness (Dweck & Leggett, 1988), while success is usually attributed to ability (Papaioannou, 1995.).

In accordance with Nicholls' model within AGT, majority of research shows that mastery or task involving climate, is more favorable in sport and PE setting then performance or ego involving climate. Since one of the purposes of this study refers to the influences of perceived motivational climate created by teachers on students' self-talk in PE setting, we will highlight some of the studies which investigated students' perceptions of the teacher-created motivational climate in PE lessons.

Number of studies confirms that physical educator has the critical role in influencing students motivation and goal orientation. For instance, Todorovich and Curtner-Smith (2002), who examined the influence of manipulated motivational climate in physical education lessons on students' goal orientations, confirmed that perceived motivational climate created by the teacher influences students' goal orientations, although the authors noted that the changes were not extreme. However, these results are congruent with the findings of Todorovich and Curtner-Smith (2003) and Morgan and Carpenter (2002) who suggested that pupils' goal orientations are responsive to the manipulations of the motivational climate, indicating that goal orientations are subject to change. Besides, students' dispositional goal orientations were also strengthen - ego orientations of students taught within an ego-involving climate and task orientations of students taught within a task involving climate. However, Todorovich and Curtner-Smith (2003) showed that the treatments (i.e. manipulated motivational climate) had no impact on the alternative goal orientations, which is opposed to Weigand and Burton's (2002) findings.

Nevertheless, Weigand and Burton (2002) demonstrated in their study that students who were subordinated to the mastery climate in PE lessons experienced decrease in their levels of

ego goal orientation after the intervention. Besides, their results have shown that students in experimental group, who were exposed to stronger mastery climate experienced significantly higher levels of task orientation, perceived competence, and displayed higher satisfaction and less boredom, from pre- to post-intervention measurement, and in comparison to the control group. The authors provided additional explanation that increased levels of perceived competence occur when the demonstration of ability is based on personal improvement and effort, which is in accordance with Nicholls' suggestions within AGT. These findings are of significant importance given that perceived athletic competence, as well as task orientation and intrinsic motivation in PE appear to be determinants of participation in sport and exercise in adolescence (Papaioannou et al., 2006). According to Papaioannou et al. (2006), high perceived competence leads to higher positive expectations of success, and achievement behaviors such as persistence, choice of challenging tasks and effort.

Morgan and Carpenter (2002) recorded similar findings, which were in support to the mastery climate. First, their results revealed significant differences within the mastery intervention group, between the student' pre- and post-intervention task orientation. Accordingly, these students displayed significant increment in their task orientation during the mastery intervention program, showed a greater preference for more challenging tasks after the mastery program, and displayed a significant increase in the satisfaction and positive attitude towards athletics. In contrast, there were no differences found in the traditional teaching group (control group) between the students' pre- and post-program motivational responses. The authors concluded that teaching method can influence the level of satisfaction and enjoyment experienced by the students.

In support to the previous studies, Papaioannou et al., (2007) found positive association between mastery goals and perceptions of mastery climate with intrinsic motivation, identified regulation, and satisfaction. Their results underpinned the predictions that perceived teacher's emphasis on mastery climate as well as pupils' mastery goals contributed to their intrinsic motivation and satisfaction in physical education, while there was no relationship found between mastery goals and perceptions to external regulation or amotivation. On the other hand, performance goals and perceptions of performance climate were positively related to extrinsic motivation and amotivation, and were not related to intrinsic motivation and identified regulation.

Important innovation in terms of statistical research was made by Papaioannou et al., (2004) who were the first to suggest multilevel statistical analyses in the motivational climate measurements, explaining that multilevel approach is more appropriate than corresponding single-level statistical analyses when the data have a multilevel structure. The authors argued that besides that motivational goal orientation of the individual participant is an individual-level variable, motivational climate would need to be assessed at the level of the group, typically the classroom or team level. Accordingly, Papaioannou et al. (2004) evaluated the effects of classroom motivational climate (task-involving and ego-involving) and individual goal orientations (task and ego) on students' intrinsic motivation, attitudes, physical self-concept, and exercise intentions, while applying multilevel, multivariate, longitudinal design. Nevertheless, their results revealed that class-average task-involving climate perceptions promote intrinsic motivation in PE among students, and that task orientation and individual perceptions of task-involving climate facilitated effort and enjoyment in the lesson, positive attitudes toward exercise and exercise intentions. On the other hand, perceived class-average ego-involving

climate and ego orientation had positive effects only on physical self-concept, with no effect on intrinsic motivation. In addition, perceived ego-involving climate had negative effects on task orientation, and on exercise attitudes and intentions. Although these findings clearly support promotion of task orientation and task-involving climate in physical activity context, the authors also highlighted that a combination of high task- and high ego-involving climate had positive effects on both task orientation and enjoyment, while the effects of an ego-involving climate were negative when the task-involving climate was low.

Overall, all of the studies above suggest that task or mastery climate promoted by a teacher, is more favorable than ego or performance climate for students' involvement in PE lessons. Papaioannou et al. (2007) explained that performance goals may have immediate effects on students to instigate them to exhibit ability, while the effects of mastery climate are not so immediate, and it takes time for students to adopt mastery goals. Therefore the authors emphasized that teachers need to be patient when try to promote mastery goals in order to provide positive teaching effects in the long run, and try to make sure that students find tasks meaningful. In addition, Papaioannou at al. (2006) indicated that the promotion of task orientation should be a priority of the educational system.

Hypotheses

To summarize, the aforementioned studies gave us an insight about the importance of self-talk for the individual's affective and behavioral outcomes, which subsequently influence one's performance. It has also been noted that factors that shape and influence the content of self-talk, namely self-talk antecedents, have been insufficiently examined, while a number of authors argued that this topic requires further investigation in sport (Conroy & Metzler, 2004;

Hardy et al., 2009; Harwood et al., 2004; Van Raalte et al., 2000; Zourbanos et al., 2006) and PE setting (Zourbanos et al., 2014). In accordance with research evidence which suggest that goal orientation (e.g. Zourbanos et al., 2014; Hatzigeorgiadis & Biddle, 1999, 2002) and perceived motivational climate (e.g. Burnett, 1996; Burnett & McCrindle, 1999) may have an influence on students' self-talk content, this study aimed to expand upon previous investigation and further examine relationships among these three constructs.

Based on assumptions of AGT and previous studies which investigated the relationship between goal orientation and students' self-talk (Zourbanos et al., 2014) it was hypothesized that:(a) task orientation would be positively related to students' positive self-talk dimensions and negatively to students' negative self-talk dimensions; (b) there will be a low positive relationship found between ego goals and positive self-talk. Furthermore, based on studies which investigated the effects of teachers' behavior on students' self-talk (e.g. Burnett, 1996; Burnett & McCrindle, 1999), and studies examining the effects of coaches' behaviour on athletes' self-talk (e.g. Zourbanos et al. 2006, 2007) we assumed that perceived motivational climate created by the teacher influences students' self-talk. More specifically, relying on the research of Papaioannou et al. (2007) who found that a teacher's emphasis on mastery and social approval goals were positively related to intrinsic motivation and satisfaction in physical education, and findings of Zourbanos et al. (2014) who suggested that mastery goals are positively related to positive self-talk and negatively related to negative self-talk, we hypothesized that: (c) perceived teachers' emphasize on mastery goals will be positively related to positive self-talk and negatively to negative self-talk. Furthermore, in accordance with Elliot's (1999) and Papaioannou et al.'s (2012) findings, which suggested that performance approach goals lead to intrinsic motivation and higher perceived effort and performance, and results reported by Zourbanos et al. (2014)

which demonstrated a positive relationship between performance approach goals and positive self-talk, we hypothesized that: (d) perceived teachers emphasize on performance approach goals will be positively related to positive self-talk and negatively to negative self-talk; (e) perceived teachers emphasize on performance avoidance goals will be negatively related to positive self-talk and positively to negative self-talk. Finally, it was hypothesized that (f) perceived teachers' emphasize on social approval goals will be positively related to positive self-talk and negatively to negative self-talk. Given that hypothesis was tested in two different situations, when students imagine to play against high and low sport achievers, we expected to obtain similar results in both situations. However, based on Zourbanos et al.'s (2014) research, which suggest that students would find more challenging to play against high achievers, we also expected that students will have higher scores in both positive and negative self-talk dimensions when playing against high sport achievers.

Method

Participants

For the purposes of this study, two samples of students were recruited, from 4 elementary schools in Belgrade, Serbia. The first sample (study 1) consisted of 154 students ($n = 89$ boys; $n = 65$ girls; randomly selected from 7 different classes of 2 different schools) aged between 12 and 13 ($M = 12.66$; $SD = .48$). After the completion of the first study, the second sample (study 2) and consisted of 617 students ($n = 326$ boys, $n = 291$ girls; was randomly selected from 24 classes of 3 different schools) aged between 12 and 15 ($M = 13.36$; $SD = .73$). Permission regarding the student's participation in the study was obtained from head teachers and the school directors, who were asked to sign consent forms, in both surveys. Participants were also asked to provide their signature on the questionnaires as a confirmation that they are willing to participate

voluntary in the study, however they were assured that the questionnaires were anonymous and that the data would be used solely for research purposes. Finally, both students and teachers were informed about their rights to refuse participation. Both assessments took place in the second semester of the school year, from the middle of March to the middle of April. The questionnaires were distributed to students during PE classes, while their fulfillment took approximately 20 minutes. All the questionnaires were completed under the supervision of the author and with the presence of teachers.

Measures

Self-Talk in PE. An adapted version of the Automatic Self-Talk Questionnaire for PE — ASTQ-PE (Appendix A; Zourbanos et al., 2009; Zourbanos et al., 2014) was administered to assess students' self-talk. The instrument consists of 40 items assessing four positive (19 items) and four negative (21 items) self-talk dimensions. Positive self-talk consists of the dimensions of confidence (e.g., I believe in myself), anxiety control (e.g., Keep calm), psych up (e.g., Do your best), instruction (e.g., Concentrate on what you have to do right now). Negative self-talk consists of the dimensions of worry (e.g., I will lose), disengagement (e.g., I want to quit), somatic fatigue (e.g., I feel tired) and irrelevant thoughts (e.g., I am hungry). Participants were instructed to bring in their minds the most usual sport, game or activity that they play in the physical education lesson. Then they were asked to write down the game. After that they were told to imagine that they were playing against the most competent student in their age in this particular sport, game or activity. Furthermore, they were asked to recall their self-talk again but this time to imagine that they were playing against the least competent student in their age in this particular sport, game or activity. Finally, in both situations, they were told to indicate the frequency of thoughts that they usually experience or intentionally use while performing against

the best/worst students in this sport, game or activity on a 5-point scale (0 = never, 4 = very

often). Zourbanos et al. (2009, 2010, 2011, 2014) has supported the psychometric integrity of the

ASTQS. In this study, Cronbach's alpha coefficients for both situations (playing against high and

playing against low sport achievers) are displayed in Table 1.

Achievement goals in PE. Task and Ego Orientation in Physical Education Questionnaire

(TEOPEQ, Appendix B) is a 13 item questionnaire, that has been adapted for physical education

classes (Duda & Nicholls, 1992; Walling & Duda, 1995). Following the stem ''I feel most

successful in physical education when…''), students respond to the seven task-oriented items

(e.g. ''I learn something that is fun to do'') and six ego-oriented items (e.g. ''The others can't do

as well as me'') of the instrument. Students respond to a 5-point Likert scale (1 = Strongly

disagree, 5 = Strongly agree). This instrument has been shown to have very good psychometric

properties for PE classes in English and Greek language (e.g., Digelidis & Papaioannou, 1999;

Marsh et al., 2006, Zourbanos et. al, 2014), but also in Serbian language (Vesković, 2012b).

Cronbach's alpha coefficients in this study are displayed in Table 1.

Students' Perceptions of Their Physical Education (PE) Teachers' Emphasis on Goals

(PTEGQ, Appendix C; Papaioannou et al., 2007) is a 24-item questionnaire designed to measure

the students' perceptions of their teacher's emphasis on mastery goals, performance-approach

goals, performance avoidance goals, and social approval goals. The participants were asked to

indicate how much they agree or disagree with each of the items using a 5-point Likert scale (1 =

strongly disagree and 5 = *strongly agree*), following the stem "My physical education teacher"

assessing teacher's emphasis on: mastery (e.g. "He/she helps me in learning how to improve my

abilities in games and exercises"), performance approach (e.g. "He/she only praises students that

look more capable than others in physical education"), performance-avoidance (e.g. "He/she

makes me worry if they call me incapable in drills or games") and social approval (e.g. "He/she likes me to learn new skills and games and to earn others love"). The PTEGQ has been shown to have adequate psychometric properties and internal reliability for all scales (e.g., Papaioannou et al., 2007). Cronbach's alpha coefficients in this study are displayed in Table 1.

Procedure and analysis

Two questionnaires were translated from English to Serbian language, the adapted version of the Automatic Self-Talk Questionnaire for Sports (ASTQS; Zourbanos et al., 2009), and Students' Perceptions of Their Physical Education (PE) Teachers' Emphasis on Goals (PTEGQ; Papaioannou et al., 2007). While the Task and Ego Orientation in Physical Education Questionnaire (TEOPEQ; Duda & Nicholls, 1992; Walling & Duda,1995) has already been translated and validated into Serbian language (Vesković, 2012b). The translation of the questionnaires has been conducted by two bilingual translators, one master student of sport and exercise psychology and one psychologist. Back translation was conducted by two other bilingual translators, one sport and exercise psychologist and one professional English language translator (for more information, see Harkness, 2003). The original English version was then compared with the back-translated version, where errors and discrepancies were identified. The resulting questionnaire was completed by the first sample of participants, which was selected for the pilot test of the questionnaires. Reliability analyses provided evidence for the internal consistency of the ASTQS (Zourbanos et al. 2009), with Cronbach's alpha coefficients ranging from .68 to .91 while playing against the most competent student, and .79 to .94 while playing against the least competent student. Nevertheless, reliability analysis for the PTEGQ (Papaioannou et al., 2007) showed high internal consistency for three out of four subscales, with Cronbach's alpha coefficients ranging from .81 to .90, while performance approach scale

displayed low internal consistency, ($\alpha = .53$). In particular, three items in this scale had to be revised ("He encourages students to play better than the others", " He insists that we must fight to prove that we are more capable in skills and games than others", and "He wants us to appear more capable than others in all exercises"). After the questions were readapted, results showed high internal consistency of the scale (See Table 1).

Preliminary analysis were conducted to assess the relationships among students' goal orientation, perceived motivational climate and self-talk dimensions while playing against high and low sport achievers using the Pearson product-moment correlation coefficient. Subsequently, hierarchical multiple regression analyses were used to examine whether individual goal orientation, and perceived motivational climate can contribute in the prediction of students' self-talk.

Results

Means, standard deviations, and Cronbach's alpha coefficients were computed for all scales, and for ASTQS in two different situations - during play with high and during play with low sport achievers, showing high internal consistency. In particular, subscales of ASTQS ranged from α = .71 to α = .93, subscales of TEOPEQ α = .86 and α = .88, and PTEGQ from α = .75 to α = .83 (For more details see Table 1).

Table 1

Descriptive statistics and internal consistency for all variables.

	Playing with the most competent			Playing with the least competent		
	M	SD	α	M	SD	α
ASTQS						
Psych up	2.76	1.05	.77	2.46	1.36	.90
Confidence	2.85	1.11	.87	2.54	1.39	.93
Instruction	2.87	1.11	.86	2.52	1.42	.93
Anxiety control	2.64	1.12	.76	2.43	1.41	.90
Somatic fatigue	1.33	.97	.76	1.08	1.14	.88
Disengagement	1.12	1.08	.83	.96	1.15	.89
Worry	1.34	.99	.84	.98	1.08	.90
Irrelevant thoughts	1.74	1.12	.71	1.41	1.23	.80
Positive ST	2.78	1.02	.95	2.49	1.34	.98
Negative ST	1.38	.90	.93	1.09	1.07	.96
TEOPEQ						
Task	3.68	.97	.86	–	–	–
Ego	3.20	1.15	.88	–	–	–
PTEGQ						
Mastery	3.45	1.04	.83	–	–	–
Performance AP	2.77	1.02	.78	–	–	–
Performance AV	2.30	1.07	.81	–	–	–
Social approval	2.97	1.02	.75	–	–	–

Correlational analysis – Playing with the most competent

Furthermore, correlational analysis revealed a medium positive relationship between task goal orientation and students' positive self-talk dimensions ($p < .001$), and small to medium negative relationship between task goal orientation and students' negative self-talk dimensions ($p < .001$). Further, ego goal orientation had low positive relationship with all positive self-talk dimensions ($p < .01$) and with anxiety control ($p < .05$), low negative relationship with worry and somatic fatigue ($p < .05$), and low non-significant negative relationship with other negative self-talk dimensions. Perceived teacher's emphasis on mastery goals was shown to have low positive relationship with positive self-talk dimensions ($p < .001$) including anxiety control and confidence ($p < .01$), and low negative relationship with negative self-talk ($p < .01$), disengagement ($p < .001$), irrelevant thoughts ($p < .05$) and non-significant negative relationship with worry and somatic fatigue. Perceived teacher's emphasis on performance approach goals had low positive relationship with negative self-talk dimensions ($p < .001$) and with irrelevant thoughts ($p < .01$), and non-significant negative relationship with positive self-talk dimensions. Perceived teacher's emphasis on performance avoidance goals had low negative relationship with positive self-talk dimensions ($p < .01$) with anxiety control ($p < .05$), and low to medium positive relationship with negative self-talk dimensions ($p < .001$) with irrelevant thoughts ($p < .05$). Finally, perceived teacher's emphasis on social approval goals had low positive relationship with positive self-talk dimensions ($p < .05$), however non-significant relationship with anxiety control and confidence, and negative and non-significant relationship with negative self-talk dimensions (For more details see Table 2).

Correlational analysis – Playing with the least competent

Correlational analysis revealed low to medium positive relationship between task goal orientation and students' positive self-talk dimensions ($p < .001$) and low to medium negative relationship between task goal orientation and students' negative self-talk dimensions ($p < .001$). Ego goal orientation had positive but non-significant relationship with positive self-talk dimensions, and low negative relationship with worry and somatic fatigue ($p < .05$) and non-significant negative relationship with other negative self-talk dimensions. Perceived teacher's emphasis on mastery goals had low positive relationship with positive self-talk dimensions ($p < .01$), low negative relationship with disengagement ($p < .05$) and non-significant negative relationship with other negative self-talk dimensions. Perceived teacher's emphasis on performance approach goals had small to medium positive relationship with negative self-talk dimensions ($p < .001$) and very low and non-significant relationship with positive self-talk dimensions. Perceived teacher's emphasis on performance avoidance goals had very small and non-significant negative relationship with positive self-talk dimensions, and small to medium positive relationship with negative self-talk dimensions ($p < .001$). Finally, perceived teacher's emphasis on social approval goals had small positive relationship with positive self-talk dimensions ($p < .01$), and very small and non-significant positive relationship with negative self-talk dimensions (for more details see Table 2).

In overall, results indicate similar correlational patterns in the two situations, when students imagined to play against high and low sport achievers. However, the mean scores for all self-talk dimensions and correlations between majority of TEOPEQ and PTEGQ subscales and positive self-talk dimensions, were somewhat higher when students imagined to play against high sport achievers. In accordance with our expectations, these results suggest that students

found more challenging to play against the most competent opponent and therefore engaged in

more positive thoughts, while results did not indicate the same for negative self-talk dimensions.

Table 2
Pearson's Correlations for all subscales (play against high and low sport achievers)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. psych up	-	**.878*****	**.934*****	**.928*****	**.008**	**-.056**	**.013**	**.111****	**.973*****	**.021**	**.252*****	**.035**	**.131****	**.044**	**-.009**	**.134****
2. anxiety control	.781***	-	**.881*****	**.879*****	**.032**	**-.006**	**.057**	**.111****	**.939*****	**.053**	**.215*****	**.012**	**.107****	**.059**	**-.008**	**.112****
3. confidence	.859***	.761***	-	**.913*****	**-.013**	**-.061**	**-.001**	**.106****	**.970*****	**.007**	**.246*****	**.078**	**.121****	**.035**	**-.040**	**.109****
4. instruction	.849***	.780***	.863***	-	**.009**	**-.059**	**.013**	**.080***	**.968*****	**.014**	**.268*****	**.034**	**.134****	**.050**	**-.014**	**.110****
5. worry	-.139**	-.045	-.193***	-.109**	-	**.887*****	**.912*****	**.706*****	**.008**	**.961*****	**-.204*****	**-.093***	**-.044**	**.211*****	**.286*****	**.070**
6. disengagement	-.229***	-.133**	-.240***	-.235***	.783***	-	**.886*****	**.688*****	**-.049**	**.941*****	**-.223*****	**-.060**	**-.091***	**.222*****	**.268*****	**.031**
7. somatic fatigue	-.078	-.007	-.119**	-.055	.801***	.759***	-	**.725*****	**.019**	**.958*****	**-.210*****	**-.098***	**-.048**	**.204*****	**.253*****	**.059**
8. irrelevant thoughts	.065	.063	.030	.012	.533***	.571***	.626***	-	**.105****	**.826*****	**-.194*****	**-.024**	**-.027**	**.191*****	**.163*****	**.026**
9. positive ST	.938***	.896***	.938***	.941***	-.131**	-.225***	-.070	.045	-	**.023**	**.256*****	**.043**	**.129****	**.048**	**-.019**	**.121****
10. negative ST	-.110**	-.037	-.149***	-.113**	.888***	.894***	.908***	.794***	-.110**	-	**-.222*****	**-.080***	**-.053**	**.213*****	**.262*****	**.049**
11. task	.368***	.316***	.322***	.374***	-.212***	-.277***	-.159***	-.163***	.371***	-.235***	-	**.277*****	**.463*****	**-.039**	**-.127****	**.348*****
12. ego	.116**	.097*	.115**	.110**	-.082*	-.057	-.096*	-.020	.118**	-.072	.277***	-	**.033**	**.200*****	**.125****	**.081***
13. Mastery	.180***	.135**	.134**	.196***	-.066	-.157***	-.067	-.084*	.173***	-.111**	.463***	.033	-	**-.037**	**-.123****	**.621*****
14. Performance AP	-.006	-.013	-.032	-.033	.163***	.195***	.167***	.130**	-.023	.186***	-.039	.200***	-.037	-	**.645*****	**.225*****
15. Performance AV	-.121**	-.101*	-.137**	-.116**	.202***	.244***	.186***	.093*	-.128**	.207***	-.127**	.125**	-.123**	.645***	-	**.226*****
16. Social	.101*	.067	.057	.121**	-.009	-.053	-.005	-.071	.093*	-.045	.348***	.081*	.621***	.225***	.226***	-

Note: *$p < 0.05$; ** $p < 0.01$; ***$p < 0.001$, In normal characters are presented the correlations for the situation while playing against the best, with bold characters are presented the correlations for the situation while playing against the worst.

Hierarchical regression analyses

Finally, hierarchical regression analysis was subsequently conducted to reveal the degree to which students positive and negative self-talk could be predicted from perceived teacher's emphasis on goals – mastery, performance approach, performance avoidance and social approval (first step), and student's goal orientations – task and ego (second step), when playing against high and low sport achievers.

First, the regression model was used to assess the ability of two control variables - student's task and ego goal orientations, to predict the use of positive self-talk when playing against high sport achiever, after controlling for the influence of four variables - perceived teacher's emphasis on mastery, performance approach, performance avoidance and social approval goals. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Perceived mastery, performance approach, performance avoidance and social approval goals were entered at Step 1, explaining 4,7 % of the variance in the use of positive self-talk. After entry of the task and ego goals at Step 2 the total variance explained by the model as a whole was 15%, $F_{(6.605)} = 17.74$, $p < .001$. The two control measures explained an additional 10.3 % of the variance in use of positive self-talk, after controlling for perceived mastery, performance approach, performance avoidance and social approval goals, R squared change = .103, F change (2, 605) = 36.59, $p < .001$. In the final model, only the two control measures were statistically significant, with the task goal orientation recording a higher beta value (t = 7.95, $\beta = .36$, $p < .001$) than the perceived performance avoidance goals (t = -.2.41, $\beta = -.12$, $p < .05$).

Further, the same process was followed while using negative self-talk as dependent variable, when playing against high sport achievers. The first set of variables - perceived mastery, performance approach, performance avoidance and social approval goals, explained

5.9 % of the variance in the use of negative self-talk. After the second set was entered, task and ego goals, the total variance explained by the model as a whole was 9.8 %, F (6.604) = 10.99, p < .001. The two control measures explained an additional 4 % of the variance in use of negative self-talk, R squared change = .040, F change (2.604) = 13.31, p < .001. In the final model, the three control measures were statistically significant, with the task goal orientation recording the highest beta value (t = -4.34, β = -.20, p < .001), followed by performance avoidance (t = 2.35, β = .13, p < .05), and performance approach (t= 2.35, β= .12, p < .05).

The same analysis was performed to assess the use of positive self-talk in the situation when playing against low sport achievers. The first set of variables, perceived mastery, performance approach, performance avoidance and social approval goals, explained 2.5 % of the variance in the use of positive self-talk. After entry of the second set, task and ego goals, the total variance explained by the model as a whole was 7.2%, F (6.594) = 7.66, p < .001. The two control measures explained an additional 4.7 % of the variance in use of positive ST, R squared change = .047, F change (2.594) = 15.05, p < .001. In the final model, only task goal orientation was statistically significant (t = 5.45, β = .26, p < .001).

Finally, after applying the same analysis for negative self-talk use during play against low sport achievers, the first set of variables explained 7.2% of the variance in the use of negative self-talk. After entry of the second set, the total variance explained by the model as a whole was 11.9 %, F(6.596) = 13.40, p < .001. The two control measures explained an additional 4.7 % of the variance in use of negative self-talk, R squared change = .047, F change (2.596) = 15.80, p < .001. In the final model, the two control measures were statistically significant, with the task goal orientation recording higher beta value (t = -4.63, β = -.21, p < .001) than the perceived performance avoidance goals (t = 3.35, β = .18, p < .01).

Generally, both perceived motivational climate and individual goal orientations predicted the use of positive and negative self-talk among students in PE lessons. However, results seem to indicate that individual goal orientations contributed more in prediction in use of positive self-talk, while perceived motivational climate better predicted the use of negative self-talk, in both situations, when students imagined to play against the most and the least competent opponent.

Discussion

The purpose of the present investigation was to explore the relationships between students' goal orientations, perceived motivational climate created by PE teachers and students' self-talk while playing against high and low sport achievers during PE lessons. The hypothesized relationships were examined through correlational and hierarchical multiple regression analyses. To our knowledge, this is the first study which investigated relationships between perceived motivational climate and students self-talk as a content of thought in physical education lessons.

In general, results provided support for the first hypothesis, showing that task orientation had positive association with students' positive self-talk related to psych up, confidence, instructions and anxiety control, and negative association with negative self-talk related to worry, disengagement, somatic fatigue and irrelevant thoughts. Similar results were obtained in both situations, when students imagined that they play against the most competent and the least competent student in a given sport activity, although the relationship between task goal orientation and positive self-talk was somewhat stronger in situation when playing against the most competent student. It can be assumed, according to Zourbanos et al.'s (2014) suggestions, that students find more challenging to play against the most competent opponent and therefore score higher in positive self-talk dimensions. In overall, these results are in line

with previous findings in sport and PE setting, in which task goal orientation has been consistently linked with positive and negatively linked with negative self-talk dimensions, irrespective of perceptions of competence (Harwood et al., 2004; Hatzigeorgiadis & Biddle, 1999; 2000; Zourbanos et al., 2014). In this regard, it has been suggested that task oriented students who play with high sport achievers, experience positive thoughts irrespective of their perceived level of abilities because they feel that a challenging game offers them opportunities to improve and because they enjoy their involvement in it, which is for them the definition of success in physical education (Zourbanos et al., 2014). In addition, second analysis revealed that task goal orientation can contribute to a prediction in the use of self-talk among students during PE lessons. In particular, results indicated that task orientation positively predicted the use of positive self-talk, and negatively predicted use of negative self-talk. Results were similar in both situations, when students imagined to play against the most competent and the least competent student in a given sport activity, although the predictive effects of task orientation were somewhat stronger when students imagined to play against the most competent opponent. Generally, these results are in accordance with our expectations and predictions of Nicholls' dichotomous model in AGT, which proposes that individuals who are high in task orientation are characterized with greater cognitive stability, exhibit more adaptive motivational patterns, thoughts and behavior in achievement situations irrespective of their perceived competence, and generally display positive attitudes, higher intrinsic motivation and enjoyment in PE lessons (e.g. Duda, 2001; Hatzigeorgiadis, 2002; Solomon, 1996; Papaioannou et al., 2004; Zourbanos et al., 2014).

With regard to the second hypothesis, results confirmed that there was a low positive relationship between ego goal orientation and positive self-talk, in both situations, while playing against high and low sport achievers, except that the latter relationship was non-significant. In addition, there was also a low negative relationship found between ego goals

and negative self-talk, among which only worry and somatic fatigue had significant values. However, second analysis revealed that ego goal orientation did not have significant contribution in prediction in use of self-talk among students. Zourbanos et al. (2014) reported similar results, confirming that ego goal orientation had low positive relationship with positive thoughts. Biddle et al. (2003) argued that ego orientation is not necessarily related to negative outcomes, such as anxiety, feelings of pressure, worry and negative thinking. In this regard, Hatzigeorgiadis and Biddle (2002) indicated that both task and ego oriented individuals tend to experience the same levels of worrying thoughts in different competitive situations. Furthermore, Harwood et al. (2004) argued that ego goal orientation does not always lead to negative cognitive-motivational outcomes when combined with a corresponding level of task orientation. Such performers might have both, the desire to demonstrate superior abilities over others and to progress and develop through personal mastery, and even higher levels of motivation to engage in tasks that maximize achievement (Hodge & Petlichkoff, 2000). Furthermore, it was shown that ego-goal orientation fosters self-esteem which makes significant gains for individuals when they are given the opportunity to determine their level of success by comparing their abilities with others (Steinberg, 1996; Steinberg & Maurer, 1999). Additionally, Papaioannou et al. (2004) reported in their study slight positive relationship between individual task and ego goal orientations.

Although it seems that ego goal orientation does not have entirely negative effects on one's performance and self-talk, promotion of ego orientation is certainly not encouraged among researchers. Quite the opposite, majority of findings is still in agreement that high ego goal orientation leads to maladaptive motivational and behavioral patterns and that, unlike task orientation, interacts with perceptions of competence (Nicholls, 1989). Performance is usually evaluated in comparison to the performance of others, and self-perception of ability is

demonstrated when the others are outperformed. Being concerned with normative comparison with others, ego oriented individuals display higher levels of motivation when perceive that their competence is high (e.g. Wang, Chatzisarantis, Spray Biddle, 2002). However, when their competence is low, ego oriented individuals are more likely to exhibit maladaptive behaviour and experience thoughts of escape (Duda, 1989; Hatzigeorgiadis & Biddle,1999). This might explain why ego goal orientation had weaker relationships with self-talk dimensions, compared to task goal orientation. It may be assumed that among ego oriented students part of them perceived their athletic abilities as high and therefore adopted more positive self-talk when playing against the most competent student, while another part perceived their athletic abilities as low and thus adopted less positive self-talk which contributed to lower scores of ego orientation compared to task orientation in analysis. On the other hand, task oriented individuals adopted positive self-talk irrespective of their perceived athletic abilities, and thus contributed to higher positive relationships with positive self-talk dimensions, and stronger negative relationships with negative self-talk dimensions. In overall, research is in agreement that ego oriented individuals usually seek social recognition in sport and physical education settings, experience less enjoyment in these activities, and generally are not willing to participate in challenging tasks if they are being outperformed (e.g. Duda, 1989; Nicholls, 1989; Morgan & Carpenter, 2002; Papaioannou et al., 2004).

Further, in accordance with the third hypothesis, perceived teachers' emphasize on mastery goal orientation had low positive correlation with positive self-talk, and low negative correlation with negative self-talk, except that relationships with two negative self-talk dimensions, worry and somatic fatigue, were non-significant. Similar results were found in both situations, when students imagined to play against the most competent and the least competent opponent, except that the strength of relations were weaker in latter situation. This was in accordance with our expectations, given that the theory proposes that mastery goal

orientation and mastery climate, focus on developing competence through attaining mastery of the task, display adaptive learning patterns regardless of perceived competence, and were consistently linked to the most desirable motivational outcomes in sport and PE setting (e.g. Elliot & Dweck, 1988; Elliot, 1999; Papaioannou et al., 2007; Papaioannou et al., 2012). Besides, previous research shows that students' mastery goal orientation positively correlated with positive self-talk and negatively with negative self-talk dimensions (Zourbanos et al., 2014), which additionally strengthens our results. With respect to regression analysis, it should be noted that the whole construct of perceived motivational climate significantly predicted the use of self-talk among students in PE lessons, in both situations, while playing against high and low sport achievers. However, perceived teachers' emphasize on mastery goals did not have significant contribution in prediction of the use of self-talk among students.

Nevertheless, the fourth hypothesis was not supported. In particular, in accordance with previous findings which suggested that performance approach goal orientation leads to intrinsic motivation and increased effort (Elliot, 1999; Papaioannou et al., 2012) and positively correlate with positive self-talk (Zourbanos et al., 2014), we expected positive correlation between perceived teacher's emphasize on performance approach goals and positive self-talk, and negative correlation with negative self-talk. However, results demonstrated the opposite. Perceived teachers' emphasize on performance approach goals had positive relationship with negative self-talk dimensions, and negative but non-significant relationship with positive self-talk dimensions, in both situations, when playing against high and low sport achievers. In addition, second analysis revealed that performance approach positively predicted the use of negative self-talk, but only when students imagined to play against the most competent sport achievers. Although these results were not in accordance with our predictions, they were not entirely surprising given that previous studies have

already demonstrated equivocal findings with regard to performance approach goal orientation. In particular, Papaioannou et al. (2007, 2008) found that performance approach climates and goals corresponded positively to amotivation and had low negative relationship with intrinsic motivation and satisfaction among students in PE lessons. Further, it was also argued that performance goals interact with perceived competence, and therefore that individuals who adopt performance approach goal orientation but perceive their competence as low tend to exhibit maladaptive behavioral patterns (Elliot & Dweck, 1988). In addition, some studies found that mastery and performance climates were unrelated (Biddle et al., 1995; Papaioannou, 1994) or even negatively related (Walling et al.,1993; Kavussanu & Roberts, 1996). Given the adverse findings, and that there were no previous studies which examined relationships between perceived motivational climate in PE setting and students' self-talk, we believe that further investigation in this field is needed in order to make firm conclusions with regard to performance approach orientation and the use of self-talk in PE setting.

Furthermore, the fifth hypothesis was supported by our findings, showing that perceived emphasis on performance avoidance goals had positive relationship with negative self-talk dimensions, and very low negative relationship with positive self-talk dimensions, among which the results were non-significant when students imagined to play against low sport achievers. Regression analysis revealed that perceived emphasis on performance avoidance goals negatively predicted the use of positive self-talk, in situation when students imagined to play against high sport achievers, and positively predicted the use of negative self-talk in both situations, when playing against high and low sport achievers. Basically, these results supported our expectations given that studies generally suggest that performance avoidance goals represent the least desirable mode of achievement goals for students' motivation (Elliot & Church, 1997). Performance avoidance goals are construed as an

avoidance orientation, and reflect avoidance of displaying incompetence (Elliot, 1999; Elliot & Harackiewicz,1996). The theory proposes that mastery and performance approach goals focus on positive possibilities, while performance avoidance goals focus on avoiding negative possibility (Elliot, 1999). Nevertheless, Papaioannou et al. (2007) found that performance approach and performance avoidance oriented climates have strong positive association, suggesting that students cannot easily disassociate these two perceptions. In other words, perceived teacher's emphasis on performance approach goals will most likely increase the adoption of performance avoidance goals (Papaioannou et al., 2002) or even have causal effects on performance avoidance goals in subsequent years (Papaioannou, Ampatzoglou, Kalogiannis, & Sagovits, 2006). It seems that our results support Papaioannou et al.'s (2002, 2006, 2008) findings, suggesting that perceived teacher's emphasis on performance approach and avoidance goals had similar effects on students' self-talk in PE setting. However, as it was already mentioned, further investigation in this regard is needed.

Finally, sixth hypothesis was partially supported, given that results indicated low positive relationship between perceived emphasis on social approval goals and positive self-talk dimensions in both situations, while playing against the most competent and the least competent opponent. Generally, previous findings suggested that social approval goals corresponded positively to mastery goals and perceptions, and intrinsic motivation and satisfaction in physical activity and sport contexts (Papaioannou et al., 2002; 2007; 2008). These studies were based on the original achievement goals model (Maehr's & Nicholls, 1980) in which social approval was considered as a third achievement goal. According to this model, athletes pursuing either mastery or social approval goals tend to exhibit high levels of effort. Papaioannou et al. (2008) emphasized that for persons who are seeking social approval, demonstration of high effort will be considered virtuous by others. Furthermore, the authors consider that coaches should not discourage the pursuit of social approval goals

among athletes, however underlining that too much emphasis on social approval goals can be perceived as controlling behavior and it could decrease athletes' self-determination. Nevertheless, opposed to our expectations, there was no significant relationship found between perceived social approval goals and negative self-talk dimensions. In particular, results indicated low negative and non-significant relationship with negative self-talk when playing against the most competent opponent, and low positive and non-significant relationship with negative self-talk when playing against the least competent opponent. Perceived emphasis on social approval goals did not contribute to the prediction in use of self-talk among students.

Generally, our findings support previous studies suggesting that both students' goal orientations and perceived motivational climate may have an impact on students' self-talk in PE lessons. Considering that no previous research investigated relationships between perceived motivational climate created by PE teacher and students' self-talk, we relied on research findings in other domains, such as sport and education, which overall propose that motivational climate created by teachers' and coaches' had important impact on students' and athletes' cognitive content (Burnett 1996, 1999; Burnett & McCrindle 1999; Zourbanos et al., 2006, 2007, 2010, 2011). Firstly, our results indicated that task goal orientation had the strongest effect on students' positive and negative self-talk dimensions, followed by perceived teacher's emphasis on performance approach and avoidance goals. Further, task goal orientation, perceived mastery climate and to some lesser extent perceived emphasis on social approval goals led to the most desirable outcomes for students' cognitive content. On the other hand, perceived emphasis on performance approach and avoidance goals led to the least desirable outcomes and the use of negative self-talk. In support to our findings, a number of studies indicated that task and mastery goals are positively related with adaptive cognitive, affective and behavioral outcomes (e.g. Duda, 2001; Ntoumanis & Biddle; 1999),

and that social approval goals are positively related with intrinsic motivation and satisfaction in physical education (Papaioannou et al., 2007), which generally forms good basis for the use of positive self-talk. On the other hand, there are not many findings which support an adaptive role of ego goal orientation. With respect to motivational climate, Papaioannou (1997) emphasized the importance of perceived mastery climate for increasing and sustaining students motivation in PE settings, arguing that perceptions of a mastery climate relate to positive attitudes towards PE lessons, intentions to exercise and low anxiety. Comparing the two climates, Papaioannou (1997) explained that mastery climate affords choice and self-determined criteria for success, while performance climates are more controlling and thus may subsequently undermine students' motivation and increase anxiety. Furthermore, present finings indicated that individual goal orientation had stronger effect on student's positive self-talk, while perceived teachers' emphasis on achievement goals had more influence on students' negative self-talk. However, considering that the differences were not substantial and that achievement goals and motivational climate are likely to interact (e.g. Papaioanou et al., 2007; 2004; Todorovich & Curtner-Smith; Morgan & Carpenter, 2002), we believe that such findings do not alter the importance of any of the examined factors.

To summarize, in this paper we highlighted the importance of students' cognitive content and the differences and potential consequences of the adoption of either positive or negative self-talk. We demonstrated in our study how individual goal-orientation and perceived motivational climate act as antecedents of students' self-talk. Having all that in mind, herein we encourage teachers and parents to more carefully consider their influences on children's cognitive and emotional outcomes. In accordance with previous researches, we agree that promotion of task or mastery goal orientation, and to some extent encouragement of social approval goals, would be more beneficial for students, and in general society (Papaioannou et al. 2007, 2008, 2012; Zourbanos et al., 2014). Results clearly demonstrated

that task and mastery goals were linked to the most adaptive patterns for students' positive self-talk. Although the adoption of ego goals did not have negative effects on students' self-talk, we do not encourage teachers to put too much emphasize on ego goals. Such behaviour might create performance oriented climate which is generally characterized as highly evaluative, threatening and unsupportive, with an emphasize on ability and interpersonal comparison. This would subsequently lead to decreases in motivation and adoption of avoidance goals among students, and increases of anxiety, performance-related worry, and in overall negative cognitive and emotional responses (e.g. Duda & Balaguer, 2007; Duda, 2001; Ntoumanis & Biddle, 1999; Papaioannou & Kouli, 1999; Zourbanos et al., 2014). On the other hand, promotion of mastery climate, which encourages task or mastery goal orientation, will most likely increase students' enjoyment, satisfaction, positive affect, perceived competence, self-esteem, and intrinsic motivation in PE lessons (e.g. Ntoumanis & Biddle, 1999; Papaioannou et al., 2007) which will result in increased use of positive self-talk among students.

Limitations

Given the exploratory nature of the present investigation, there is a number of limitations that further research should address. Firstly, our results demonstrated existing relationships between the three constructs, however no causal links can be inferred from the present findings. We could only speculate that achievement goals and perceived motivational climate may influence students' self-talk, based on the theoretical grounds of motivation and on models of self-talk antecedents. Nevertheless, it is possible that the identified links reflect bidirectional relationships. Experimental investigation in this regard would provide us a deeper understanding on the relationships between achievement goals, perceived motivational climate and students' self-talk. Taking into consideration that studies on the antecedents of self-talk are rather scarce, the present findings provide valuable evidence regarding the relationships among achievement goals, perceived motivational climate and self-talk. Another limitation of the current investigation concerns the retrospective verbal self-reports. Cognitive processes cannot be accurately assessed through external measures since the use of self-reports provides us with 'metacognitive knowledge' only, which can help us understand perceptions, motives, and generally what someone is thinking (Guerrero 2005).

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APPENDIX A

AUTOMATIC SELF-TALK QUESTIONNAIRE FOR PE – ASTQ-PE

Now, please use the rating scale below to indicate, based on this particular sport, game or activity, thoughts you usually experience or intentionally use while playing against **the most competent student**. Your responses will be kept in **absolute confidence.** In other words, your individual answers will not be shown to anyone. Please read each statement carefully, and then choose the correct response for you by circling the appropriate number.

0 =never, 1 = rarely, 2 = sometimes, 3 = often, 4 = very often

I am going to lose	0	1	2	3	4
I want to stop	0	1	2	3	4
I am thirsty	0	1	2	3	4
My body is not in a good condition	0	1	2	3	4
I'm wrong again	0	1	2	3	4
I want to get out of here	0	1	2	3	4
What will I do later tonight	0	1	2	3	4
I am tired	0	1	2	3	4
I am not as good as the others	0	1	2	3	4
I can't keep going	0	1	2	3	4
I am hungry	0	1	2	3	4
Today I 'suck'	0	1	2	3	4
I am not going to reach my goal	0	1	2	3	4
I am fed-up	0	1	2	3	4
I want to take a shower	0	1	2	3	4
My body doesn't help me today	0	1	2	3	4
I cannot concentrate	0	1	2	3	4
I think I'll stop trying	0	1	2	3	4
My legs/arms are shaking from tiredness	0	1	2	3	4
I am not going to make it	0	1	2	3	4
What will others think (e.g., my physical educator) of my poor performance	0	1	2	3	4
Let's go	0	1	2	3	4
Relax	0	1	2	3	4
I believe in me	0	1	2	3	4
Concentrate on your goal	0	1	2	3	4
Power	0	1	2	3	4
Don't get upset	0	1	2	3	4
I am very well prepared	0	1	2	3	4
Focus on what you need to do now	0	1	2	3	4
Give 100%	0	1	2	3	4
Calm down	0	1	2	3	4

I feel strong	0	1	2	3	4
Concentrate on your game	0	1	2	3	4
Do your best	0	1	2	3	4
No stress	0	1	2	3	4
I can make it	0	1	2	3	4
Focus on your technique	0	1	2	3	4
Strong	0	1	2	3	4
I believe in my abilities	0	1	2	3	4
Concentrate	0	1	2	3	4

APPENDIX B

TASK AND EGO ORIENTATION IN PHYSICAL EDUCATION QUESTIONNAIRE - TEOPEQ

There are different reasons why students feel like successful in physical education. Please circle the appropriate number to indicate how much you agree or disagree with each statement below in terms of **when *you* feel successful when participating in physical education lesson.**

I feel most successful in physical education when…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I learn a new skill and it makes me practice more.	1	2	3	4	5
2. I'm the best.	1	2	3	4	5
3. I learn something that is fun to do	1	2	3	4	5
4. I'm the only one who can do the skill.	1	2	3	4	5
5. I learn a new skill by trying hard.	1	2	3	4	5
6. Others mess up and I don't.	1	2	3	4	5
7. I work really hard.	1	2	3	4	5
8. The others can't do as well as me.	1	2	3	4	5
9. Something I learn makes me want to go and practice more.	1	2	3	4	5
10. I am the best student in the physical education lesson.	1	2	3	4	5
11. A skill I learn really feels right.	1	2	3	4	5
12. I can do better than my schoolmates.	1	2	3	4	5
13. I do my very best.	1	2	3	4	5

APPENDIX C

**STUDENTS' PERCEPTIONS OF THEIR PHYSICAL EDUCATION
TEACHERS' EMPHASIS ON GOALS - PTEGQ**

This list describes what physical education teachers say or do to the students on their class. When giving your answers, think about what *your physical education teacher* normally says or does. What kind of atmosphere *your physical education teacher* generally creates	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My physical education teacher...					
He [or she]* often makes me worried if they say that I'm not capable in Physical Education	1	2	3	4	5
His principle for me is to learn skills and games for which my schoolmates will love me	1	2	3	4	5
He encourages students to play better than the others	1	2	3	4	5
He makes me afraid of the evaluation in Physical Education and protect myself from it	1	2	3	4	5
He is happy when, for what I learn in Physical Education the other people love me	1	2	3	4	5
He is absolutely satisfied only with students that everyone recognizes as more capable in P.E.	1	2	3	4	5
He often makes me worry about how others watch my athletic abilities	1	2	3	4	5
He is very satisfied when I try to learn a skill and so make other people love me	1	2	3	4	5
He insists that we must fight to prove that we are more capable in skills and games than others	1	2	3	4	5
He makes me avoid questions in the lesson which could possibly be the reason to be laughed at by other people	1	2	3	4	5
He believes it's important to do well a skill or game and so the other people to love me	1	2	3	4	5
He's very happy when I learn new skills and games	1	2	3	4	5
He often makes me worry if they call me incapable in drills or games	1	2	3	4	5

He pays particular attention to whether my skills are improving	1	2	3	4	5
He only praises students that look like more capable than others in Physical Education	1	2	3	4	5
He likes me to learn new skills and games and to earn others' love	1	2	3	4	5
He is absolutely satisfied when he sees that I improve all my physical abilities	1	2	3	4	5
His principle is that students should prove that they are more capable than others in all skills and games	1	2	3	4	5
He feels great when I learn a new skill and my classmates love me	1	2	3	4	5
He helps me in learning how to improve my abilities in games and exercises	1	2	3	4	5
He wants us to appear more capable than others in all exercises	1	2	3	4	5
He makes me to avoid exercises or games in which my abilities could be negatively commented	1	2	3	4	5
He insists that errors in skills and games help me to find my weaknesses and improve my abilities.	1	2	3	4	5
He makes sure that I understand how to perform a new skill before the class moves on to learning other skills	1	2	3	4	5