

Predicting Young Athletes' Motivational Indices as a Function of their Perceptions of the Coach- and Peer-related Climate

Vazou, S; Ntoumanis, Nikolaos; Duda, Joan

DOI:

[10.1016/j.psychsport.2005.08.007](https://doi.org/10.1016/j.psychsport.2005.08.007)

Document Version

Peer reviewed version

Citation for published version (Harvard):

Vazou, S, Ntoumanis, N & Duda, J 2006, 'Predicting Young Athletes' Motivational Indices as a Function of their Perceptions of the Coach- and Peer-related Climate', *Psychology of Sport and Exercise*, vol. 7, no. 2, pp. 215-233. <https://doi.org/10.1016/j.psychsport.2005.08.007>

[Link to publication on Research at Birmingham portal](#)

Publisher Rights Statement:

NOTICE: this is the author's version of a work that was accepted for publication in *Psychology of Sport and Exercise*. Changes resulting from the publishing process, such as peer review, editing, corrections, structural formatting, and other quality control mechanisms may not be reflected in this document. Changes may have been made to this work since it was submitted for publication. A definitive version was subsequently published in *Psychology of Sport and Exercise*, [vol. 7, issue 2, 2006] DOI: <http://dx.doi.org/10.1016/j.psychsport.2005.08.007>

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

Running head: PREDICTING YOUNG ATHLETES' MOTIVATION

Predicting Young Athletes' Motivational Indices as a Function of their Perceptions
of the Coach- and Peer-created Climate

Spiridoula Vazou, Nikos Ntoumanis*, & Joan L. Duda

School of Sport & Exercise Sciences, University of Birmingham, U.K.

*Address correspondence to: Nikos Ntoumanis
School of Sport & Exercise Sciences
University of Birmingham
Edgbaston
Birmingham,
B15 2TT
UK

Telephone (+44) 121 4147981

Fax (+44) 121 4144121

E-mail N.Ntoumanis@bham.ac.uk

Submitted: 07/16/2004

Re-submitted: 03/23/2005

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Predicting Young Athletes' Motivational Indices as a Function of their Perceptions
of the Coach- and Peer-created Climate

Submitted: 07/16/2004
Re-submitted: 03/23/2005

Abstract

Introduction. Research on youth sport motivation has mainly focused on the adult-created motivational climate (i.e., by parents, the coach, or PE teacher), while the peer-induced climate has not received much attention. This is unfortunate since both adults and peers are relevant to the sport experience of young athletes.

Objectives. The purpose of this study was to examine the additive and interactive influence of perceptions of the coach- and peer-created motivational climates (MC) on cognitive (physical self-worth), affective (enjoyment, trait anxiety) and behavioral (exerted effort as rated by the coach) responses of young athletes. Age and gender differences in athletes' views regarding these psychological environments were also examined.

Methods. Participants were 493 young athletes, age 12 to 17 years (M age = 14.08; SD = 1.29), from various individual and team sports.

Results. Hierarchical regression analyses, controlling for age and gender, showed that a perceived task-involving peer MC was the only predictor of physical self-worth. A perceived ego-involving coach climate emerged as the only predictor of trait anxiety. Enjoyment was predicted positively by both coach and peer task-involving MCs, whereas reported effort was predicted only by the coach task-involving MC. A 2-way MANOVA revealed that perceptions of ego-involving coach and peer MCs were higher among males, whereas females reported higher perceptions of task-involving coach and peer MCs, whereas no age differences were identified. A significant age-gender interaction effect on the peer ego-involving MC emerged.

Conclusions. The findings provide evidence for the importance of peer-created MC in youth sport and suggest that both coach and peer influence should be considered in future research on young athletes' self perceptions and motivation-related responses in sport.

Key words: motivational climate, physical self-worth, enjoyment, anxiety, effort, youth sport

1 Youth sport involves the participation of children and adolescents in activities organized
2 and/or supervised by adults. However, it is important that the potential influence of peers is not
3 neglected when we consider determinants of the quality of young athletes' sport engagement.
4 Pointing to the salience of peer influence, the peak years of sport involvement for young athletes
5 coincide with the developmentally-dependent tendency for youngsters to rely on peer
6 informational sources in assessing personal competence (Horn & Weiss, 1991). Moreover, the
7 participation motivation research clearly indicates that affiliation with teammates and the
8 development of positive social relations with peers are major motives underlying children's and
9 adolescents' interest in sport and the quality of their experiences while engaged (Weiss &
10 Petlichkoff, 1989).

11 It is surprising, therefore, that only recently has greater research recognition been given
12 to peers as essential contributors, along with adults (e.g., parents, the coach and the physical
13 education [PE] teacher) to the overall social psychological environment manifested in youth
14 sport. Such recognition has resulted in an increased scholarly interest in peer relationships within
15 physical activity contexts (Brustad, Babkes & Smith, 2001; Brustad & Partidge, 2002;
16 Ntoumanis & Biddle, 1999; Smith, 2003). Topics such as the development of social competence
17 (and its link to perceived athletic competence), peer acceptance, and friendship quality are some
18 of the areas that have attracted attention in the contemporary youth sport psychology literature
19 (Brustad & Partidge, 2002; Smith, 2003). Despite the recent work on peer influence in youth
20 sport, there is a scarcity of research on peer-held criteria for success and failure and the way
21 these criteria are communicated and affect children's achievement motivation in sport.

22 A viable theoretical framework that can help foster understanding of the social
23 psychological determinants of children's motivation in sport is achievement goal theory.
24 According to this social-cognitive framework (Ames, 1992; Duda & Hall, 2001; Nicholls, 1989),

1 in order to understand the motivation of young athletes, it is necessary to study the function and
2 the meaning of their goal-directed actions. Such actions focus on the demonstration of
3 competence and the avoidance of showing incompetence (Nicholls, 1989). It is assumed that
4 individuals can evaluate their competence in two different ways, and these divergent conceptions
5 of ability are assumed to be intimately tied to two different achievement goal orientations. The
6 first goal orientation, namely task orientation, is evident when perceptions of competence are
7 self-referenced and primarily based upon personal improvement and exerting maximum effort.
8 The second goal orientation, namely ego orientation, is evident when competence is normatively
9 referenced and inferred by demonstrating superior ability and outperforming others (Nicholls,
10 1989). A plethora of studies has demonstrated that high task orientation, compared to high ego
11 orientation, relates to more positive outcomes in youth sport (for reviews, see Duda, 2001; Duda
12 & Hall, 2001; Duda & Ntoumanis, 2005).

13 In addition to dispositional achievement goals, social situational factors are assumed to
14 play a substantial role in the activation and direction of children's achievement behavior (Ames,
15 1992). The term motivational climate refers to perceptions of situational cues and expectations
16 that encourage the development of particular goal orientations, and at a given point in time,
17 induce a certain goal involvement state. It is assumed that variations in achievement behavior
18 can be explained by the interplay of individuals' achievement goals and the motivational climate
19 created by significant others (Ames, 1992; Treasure & Roberts, 1998).

20 Two types of motivational climate have been proposed by Ames (1992): A task-involving
21 (or mastery) motivational climate that encourages effort and rewards task mastery and individual
22 improvement, and an ego-involving (or performance) motivational climate that fosters social
23 comparison and emphasizes normative ability. More specifically, in a task-involving
24 motivational climate, the athletes are assumed to be more likely to derive satisfaction from

personal progress and perceive that significant others emphasize personal skill improvement and regard errors as part of learning. On the other hand, in an ego-involving motivational climate, the emphasis is on interpersonal comparison, the demonstration of normative ability, and competition with teammates. These two aspects of the climate always co-exist in the same context, that is, the climate is always task-involving to some extent and ego-involving to some extent. The perceived motivational climate has been mainly studied in reference to the social psychological environment created by adult. Unfortunately to date, there has been limited work centered on the potential of peers to transmit task-involving versus ego-involving cues. That is, the nature and implications of the peer-created motivational climate has not received much attention in the sport psychology literature, even though past research has demonstrated that both adults and peers make important contributions to the achievement-related experiences of young people (Harwood & Swain, 1999; Pintrich, Conley & Kempler, 2003). For example, Pintrich and colleagues have argued that students' achievement goals might be impacted by their interactions with peers who may have a "distinct approach" from the teacher toward engaging in the task. Within the sport domain, Harwood and Swain studied the distinct influence of coaches, parents and peers on achievement goals. They concluded that it is important to consider peers as significant social agents in sport and to assess the relative influence exerted by all aforementioned significant others on young athletes' motivation-related responses.

Carr and associates (Carr, Weigand, & Hussey, 1999; Carr, Weigand, & Jones, 2000) have examined the relative influence of peers, along with parents, teachers and sporting heroes, on children's achievement-related responses. This work indicates that both adult- and peer-created climates may influence children's goal orientations, intrinsic motivation and perceived physical competence. In these studies, it is important to note that the peer-created climate was assessed by rephrasing items from the PE Class Climate Scale (Biddle, Cury, Goudas, Sarrazin,

Famose, & Durand, 1995) and the Parental Initiated Motivational Climate Questionnaire-2 (White, 1996). However, we would argue that by simply rewording the items contained in adult-focused climate questionnaires, one might not tap the unique aspects of peer influence experienced by young athletes.

In order to better understand the nature and dimensions of the peer-created motivational climate in sport, Vazou, Ntoumanis, and Duda (in press) recently conducted a qualitative study with young athletes aged 12 to 16 years, who were participants in both individual and team sports. In-depth interviews offered considerable insight into how young athletes perceive and formulate a peer motivational climate. Eleven dimensions of the perceived peer-created climate were identified; i.e., improvement, equal treatment, relatedness support, cooperation, effort (assumed dimensions of a task-involving motivational climate), intra-team competition, intra-team conflict and normative ability (assumed dimensions of an ego-involving climate), autonomy support, mistakes and evaluation of competence (dimensions that have aspects of both task- and ego-involving climates).

More specifically, the improvement dimension was defined as encouraging and providing feedback to teammates to improve. The equal treatment dimension referred to whether everyone has an important role on the team. The Cooperation dimension captured working together in order to learn new skills, whilst effort measured the degree to which athletes emphasized to their teammates to try as hard as possible. Intra-team competition was defined as the promotion of inter-individual competition by the peer group. Intra-team conflict encapsulated negative and unsupportive behaviors exhibited by teammates, whereas the normative ability dimension denoted the perceived peer emphasis on displaying normative ability and preferring the most competent players. The relatedness and autonomy support dimensions that emerged in the study were consonant with constructs embedded in Self-determination Theory (Deci & Ryan, 2000),

but are also consistent with the grouping and authority structures (see Ames, 1992) assumed to be central facets of the perceived motivational climate. Relatedness support was defined as the fostering and facilitation of the feeling of belonging and being part of a group, as well as the creation of a friendly atmosphere on the team. Autonomy support referred to whether athletes felt that their teammates allowed them input in decision making and freedom in the way they played or whether they acted in a controlling manner. The mistakes dimension captured the positive and negative reactions from teammates when athletes made mistakes. Lastly, evaluation of competence referred to whether athletes were deemed to use normative or self-reference criteria to evaluate their teammates' competence. Most of the dimensions (e.g., effort, improvement) that emerged in the Vazou et al. (in press) study have been previously identified as dimensions of an adult-created motivational climate in sport. Nevertheless, new facets of the psychological environment surrounding youth sport athletes were revealed that had not previously been tapped by existing coach- or parent-focused motivational climate questionnaires (e.g., intra-team conflict, relatedness support).

Items were generated to capture the above dimensions emanating from the qualitative analysis. This items comprised the initial version of the Peer Motivational Climate in Youth Sport Questionnaire; PeerMCYSQ) which was psychometrically tested in a series of three studies by Vazou and Ntoumanis (2004). Support was gleaned for the hypothesized hierarchical structure of the PeerMCYSQ; i.e., there was a task-involving higher order peer climate factor comprised of the sub-dimensions of Improvement, Effort and Relatedness Support, and an ego-involving higher order peer climate factor that consisted of the Intra-team Competition/Ability and Intra-team Conflict lower order sub-dimensions. The PeerMCYSQ includes sub-scales that represent an empirically-supported, parsimonious set of most of the 11 peer climate dimensions that emerged from Vazou et al.'s (in press) qualitative work. That is, the items that comprise the

five PeerMCYSQ factors, besides the same-named dimensions of the qualitative study, include also some items from related but different dimensions of the qualitative analysis that did not emerge as separate factors in the quantitative analysis. For example, the Improvement factor includes also items from the Cooperation factor and Relatedness Support includes items from the Equal treatment factor. In addition, Effort and Intra-team Conflict incorporate items from the Mistakes factor that reflect positive and negative reactions to mistakes respectively. The only dimensions from the qualitative work that are not included in the questionnaire are Autonomy Support and the Evaluation of Competence. Although, some items tapping these factors were initially extracted in the factor analyses, these were eventually removed because they were problematic.

It is important to note that the PeerMCYSQ taps the broader perceived motivational climate that includes aspects of social affiliation, embedded within task- and ego-involving structures. That is, the Relatedness Support and Intra-team Conflict measure supportive/more task-involving and unsupportive/more ego-involving behaviors respectively. The Improvement subscale captures the degree to which peers on one's team work together and offer help when needed (a more task-involving feature of the climate), and the Intra-team Competition/Ability sub-dimension assesses whether one's peers on the team emphasize social validation and acceptance through the demonstration of normative ability (a more ego-involving aspect of the climate).

Recently researchers have argued that social goals, such as social affiliation and acceptance, are important in sport and should be investigated within achievement motivation research (e.g., Allen, 2003; Stuntz & Weiss, 2003). For example, athletes might actively seek to be part of a popular group or to validate themselves through peer recognition (Allen, 2003). An independent social climate factor, along with the task- and ego- involving factors, was also

1 examined in the measurement development by Vazou and Ntoumanis (2004) but it did not show
2 adequate fit. However, this issue should be further examined in future research.

3 The newly formed peer motivational climate we believe could provide an essential
4 contribution to the overall motivational climate in a team because, as we have already
5 mentioned, it includes some unique (e.g., social) aspects of peer influence that are omitted in
6 existing motivational climate measurements, and moreover, there is evidence that both adults and
7 peers are important contributors to young athletes' motivation (Harwood & Swain, 1999;
8 Pintrich et al., 2003). Thus, in the present study, we determined the interdependencies between
9 perceptions of the peer-induced motivational climate (as assessed via the PeerMCYSQ),
10 perceptions of the coach-induced motivational climate, and their potential interaction with
11 respect to young athletes' self perceptions and responses. We examined the relationship of the
12 perceived peer- and coach-created climate to the targeted motivational outcomes in terms of the
13 over-riding climate dimensions (i.e., task- and ego-involving features) and also underlying sub-
14 dimensions or climate structures. Specifically, in terms of young athletes' self perceptions and
15 responses, we examined their reported enjoyment of and anxiety experienced in sport and
16 physical self worth and their coach's/PE teacher's rating of the effort they exhibit while
17 participating on their team. In the following paragraphs we review the relevant literature on the
18 relation of the motivational climate to the motivational outcomes that we will examine.

19 Research in the contexts of physical education and sport has indicated that a perceived
20 adult task-involving climate is linked to more adaptive cognitive, affective and behavioral
21 responses than a perceived ego-involving climate (e.g., for a review see Biddle, 2001; Duda,
22 2001; Ntoumanis & Biddle, 1999). Enjoyment (or "having fun"), which has been identified as a
23 key reason for participation in youth sport (Brustad et al., 2001; Weiss & Petlichkoff, 1989), has
24 been positively associated with perceptions of a task-involving coach motivational climate. For

example, Seifriz, Duda, and Chi (1992) found that perceptions of a task-involving climate were positively related to enjoyment and greater interest in sport among adolescent-age male basketball players. Similar links between a perceived task-involving climate and enjoyment were found in investigations by Newton and Duda (1999) in sport and Kavussanu and Roberts (1996) in physical activity. Furthermore, perceptions of a task-involving climate have been associated with other positive motivational outcomes, such as teachers' ratings of student effort (Ferrer-Caja & Weiss, 2000), reported performance improvement and performance satisfaction (Balaguer, Duda, Atienza, & Mayo, 2002), and the belief that effort is integral to success (Seifriz et al., 1992; Treasure & Roberts, 1998).

From a theoretical and empirical standpoint, we would expect a task-involving climate to correspond to greater enjoyment. A task-involving environment is more likely to promote more personally controllable criteria for subjective success and perceptions of control are fundamental to self determination and intrinsic interest (Deci & Ryan, 1985, 2000). Moreover, dispositional task goals and perceptions of a task-involving climate have been linked to greater intrinsic motivation (see Duda, 2001; Duda & Hall, 2000, for reviews). It is also not surprising that exhibited effort has been associated with a perceived task-involving climate. In such environments, there is an emphasis on cooperative learning, individual improvement, and accomplishment via hard work as opposed to the demonstration of normatively superior ability (which can be done via achieving success with little effort).

Interdependence between achievement goals and perceptions of self worth has been revealed in the sport psychology literature (Duda, 2001). Self-esteem or self-worth is defined as "the level of global regard that one has for the self as a person..." (Harter, 1993, p.88). Physical domain-specific self-worth represents the personal satisfaction and confidence regarding the physical self (Fox & Corbin, 1989) and is an important component of overall self-worth.

Perceptions of self worth have been examined in relation to the coach-created environment manifested in sport. In a study by Smoll, Smith, Barnett, and Everett (1993), boys (age 10-12 years) with low self-esteem who played for coaches trained to apply positive coaching practices (e.g., reinforce effort and success defined in terms of personal performance) exhibited significant increases in overall self-esteem. In research by Walker, Roberts, and Harnisch (1998) and Reinboth and Duda (2004), young athletes who perceived the coach-created climate as more task-involving reported higher levels of self-esteem and physical self-worth. Perceptions of an ego-involving climate were associated with lower self-esteem and physical self-worth. It makes conceptual sense that a perceived task-involving climate would relate to more positive perceptions of physical self-worth as, in such environments, competence judgments are self-referenced and individuals are less likely to be worried about being evaluated (Duda & Hall, 2000). In contrast, in an ego-involving climate, a positive physical self-worth is more to be at risk because it is more likely to be contingent upon achieving normative success and superiority (Duda & Hall, 2000; Reinboth & Duda, 2004).

The emphasis on normative criteria for the construal of competence and subjective success characterizing an ego-involving climate should set the stage for heightened anxiety responses (Duda, 2001). For example, Pensgaard and Roberts (2000) found that elite athletes' perceptions that the coach was a source of distress were negatively associated with a perceived coach-created task-involving climate and positively associated with a perceived ego-involving climate. Research by Papaioannou and Kouli (1999) and Yoo (2003) revealed students who perceived a stronger task-involving and a weaker ego-involving climate to report lower state and trait anxiety.

In sum, the major purpose of the present study was to examine the potential additive and interactive effects of the perceived coach- and peer- created motivational climate on cognitive

(physical self-worth), affective (enjoyment, trait anxiety) and behavioral (exerted effort as rated by coach/PE teacher) motivation-related variables in the youth sport setting. Based on previous research and theoretical tenets, it was hypothesized that perceptions of task-involving coach and peer climates would be positively related to physical self-worth, enjoyment and effort, whereas, perceptions of ego-involving coach and peer climates would be positively related to trait anxiety. Due to the exploratory nature of this question, no hypotheses were made regarding the differential salience of the perceived coach- and peer-created climates in the prediction of these outcomes. Possible interactions between coach and peer climate dimensions were also tested. Moreover, since the PeerMCYSQ (Vazou & Ntoumanis, in press) is a recently developed assessment tool, its predictive validity and its relation to motivational indices are also tested in this study.

Lastly, another purpose of this study was to examine gender and age differences in athletes' perceptions of the coach- and peer-induced climates. It has been suggested that development-dependent and gender differences exist in perceptions of adult-created motivational climates (e.g., Carr, et al., 2000; White, Kavussanu, & Guest, 1998). Typically, females and younger athletes perceive stronger task-involving climate cues than their male and older counterparts. Therefore, it was hypothesized that females and younger athletes would perceive stronger task-involving and weaker ego-involving coach and peer motivational climates compared to males and older athletes.

Method

Participants

The sample ($N = 493$) consisted of 124 females and 369 males from the Midlands region in England, with ages ranging from 12 to 17 years ($M = 14.08$; $SD = 1.29$). Data from the same participants were collected for a different paper which examined the psychometric properties of a

new peer climate questionnaire (Vazou & Ntoumanis, 2004). The participants were involved in both individual and team sports, specifically rugby, soccer, basketball, hockey, netball and swimming. The participants were recruited from school ($n = 33$), club ($n = 7$) and county ($n = 1$) teams. Sport participation history ranged from 2 months to 14 years ($M = 4.89$, $SD = 2.53$). The participants were predominately white (87.4%), but the sample also included Asian (5.3%), Black (3%), and mixed race (3.4%) youngsters.

Measures

Peer-created Motivational Climate. The 21-item PeerMCYSQ (Vazou & Ntoumanis, 2004) was used to measure athletes' perceptions of the peer-created motivational climate on their team. The PeerMCYSQ consists of a task-involving and an ego-involving higher order dimension, each of which comprise of a number of lower order factors. Participants responded to the stem "On this team, most athletes...", and responses were indicated on a 7-point scale ranging from 1 = "strongly disagree" to 7 = "strongly agree". Examples of items constituting the task-involving climate factor are "Help each other improve" (Improvement), "Make their teammates feel accepted" (Relatedness Support), and "Encourage their teammates to try their hardest" (Effort). Examples of items constituting the ego-involving climate factor are "Encourage each other to outplay their teammates" (Intra-team Competition/Ability) and "Criticize their teammates when they make mistakes" (Intra-team Conflict). Evidence for the content, and construct validity of the PeerMCYSQ, as well as its internal consistency and test-retest reliability, have been provided by Vazou and Ntoumanis (2004). In the Vazou and Ntoumanis (2004) work, the hypothesized hierarchical factor structure for the PeerMCYSQ was tested using confirmatory factor analyses (CFA) with two independent samples ($n1 = 606$, $n2 =$ same sample with this study) of young athletes and was found to be adequate: [$\chi^2(179) = 274$, p

1 < .001, Robust NNFI = .94, CFI = .95, SRMR = .036, RMSEA = .048]. Furthermore, the
 2 hierarchical structure was confirmed at the individual and team level with multilevel
 3 confirmatory factor analysis with the current sample: [$\chi^2(358) = 428, p < .01$, NNFI = 1.00, CFI
 4 = 1.00, SRMR = .032, RMSEA = .017]. Vazou and Ntoumanis (in press) also examined the
 5 temporal stability of the PeerMCYSQ using intra-class correlations for each of the five peer
 6 climate factors over a four-week period. Acceptable levels of stability were revealed for all
 7 factors.

8 *Coach-created Motivational Climate.* The 33-item Perceived Motivational Climate in
 9 Sport Questionnaire-2 (PMCSQ-2; Newton, Duda & Yin, 2000) was used to measure athletes'
 10 perceptions of the coach-emphasized motivational climate operating on their team. The PMCSQ-
 11 2 consists of two higher order task-involving and ego-involving factors, each of which comprise
 12 of three lower order sub-dimensions (Task-involving: Effort/Improvement, Cooperative
 13 Learning, Important Role; Ego-involving: Unequal Recognition, Punishment for Mistakes, Intra-
 14 team Rivalry). In order to clearly differentiate between peer and coach climates, the stem for
 15 each PMCSQ-2 item was modified to "On this team, the coach...". Furthermore, some of the
 16 items were slightly reworded in order to make it more explicit that the questions referred to the
 17 influence of the coach (e.g., the item from the Cooperative Learning subscale "players help each
 18 other learn" was modified to read "emphasizes that athletes should help each other learn").
 19 Examples of items constituting the remaining task-involving climate sub-scales are "wants
 20 athletes to try new skills" (Effort/Improvement) and "believes that each player contributes to the
 21 team in some important way" (Important Role). Examples of items comprising the ego-involving
 22 climate sub-scales are "gives most of his or her attention to the 'stars'" (Unequal Recognition),
 23 "gets mad when a player makes a mistake" (Punishment for Mistakes) and "praises athletes only

when they outplay team-mates” (Intra-team Rivalry). Responses were indicated on a 5-point scale ranging from 1 = “strongly disagree” to 5 = “strongly agree”. In the present study involving youth sport athletes, the hypothesized hierarchical factor structure for the PMCSQ-2 was tested using CFA and was found to be adequate: [$\chi^2(480) = 736.51, p < .001$, Robust NNFI = .93, Robust CFI = .94, SRMR = .052].

Enjoyment. Participants’ level of enjoyment of their sport was measured with the 5-item Interest-Enjoyment subscale of the Intrinsic Motivation Inventory (McAuley, Duncan & Tammen, 1989). Responses were provided on a 7-point scale ranging from 1 = “strongly disagree” to 7 = “strongly agree”. An example of an item contained in this subscale is “I enjoy my sport very much”.

Trait anxiety. The 21-item Sport Anxiety Scale (Smith, Smoll, & Schutz, 1990) was used to measure the multi-dimensional sport trait anxiety of the participants. The scale includes three subscales: Somatic Anxiety (e.g., “My body feels tense”), Worries or Cognitive Anxiety (e.g., “I am concerned about performing poorly”), and Concentration Disruption (e.g., “During competition, I find myself thinking about unrelated things”). Responses were provided on a 4-point scale anchored from 1 = “not at all” to 4 = “very much so”. A total score for sport trait anxiety was calculated by averaging the mean scores of each subscale.

Physical Self-Worth. The 6-item Physical Self-Worth scale of the Children Physical Self-Perception Profile (Whitehead, 1995) was used to assess the participants’ perceived physical self-worth. This measure employs a structured alternative format whereby young athletes are first asked to indicate which of two statements best describes them (e.g., “Some kids are proud of themselves physically *but* Other kids don’t have much to be proud of physically”), and then to

decide whether the chosen statement is “sort of” or “really true” for them. Scoring ranges from 1 (low) to 4 (high physical self-worth).

Effort Rating. Coaches and PE teachers coaching the school teams were asked to rate each of their athlete's exhibited effort on the team using an adapted version of the Teacher Rating of Academic Achievement Motivation Questionnaire (TRAAM; Stinnett, Oeheler-Stinnett, & Stout, 1991). The effort subscale consisted of four items referring to athletes' persistence and maintenance of effort when confronted with difficult tasks (e.g., “on the team, the athlete puts effort to improve in every training session”). The coach/PE teacher rated each athlete on each item using a 5-point scale ranging from 1 = “Strongly disagree” to 5 = “Strongly agree”.

Procedure

The study had the approval of the Ethics Subcommittee of a British university. Coach, parental and athlete consent forms were obtained before the completion of the questionnaires. The questionnaires were administered by the first researcher and two research assistants before a training session and took approximately 15-20 minutes to complete. The athletes were encouraged to answer honestly and ask questions if they were confused and were reassured that their responses would be kept confidential.

Results

Internal Reliability and Descriptive Statistics

The internal reliability as well as the descriptive statistics (means, standard deviations and range) for each measure are presented in Table 1. Internal reliability, using Cronbach's alpha coefficient, was acceptable ($\alpha > .70$) for all measures with the exception of the Intra-team Rivalry subscale of the PMCSQ-2, the Intra-team Competition/Ability subscale of the PeerMCYSQ, and

the enjoyment subscale of the IMI whose reliability coefficients were marginally acceptable ($\alpha = .67$; $\alpha = .69$; $\alpha = .69$, respectively). The mean scores show that the athletes perceived that the motivational climates emphasized by both the coach/PE teacher and the peers were more task- than ego-involving. Moreover, athletes reported moderate to high levels of physical self-worth, and coaches/PE teachers rated their athletes' effort as high. Furthermore, the athletes reported that they enjoyed their sport a lot and experienced moderate levels of sport trait anxiety.

Pearson's correlations were employed to determine the relationships between the variables of interest (see Table 2). The correlations between the peer and coach motivational climates were small to moderate. The task-involving climates were positively correlated with each other and were negatively correlated with the ego-involving climates. Moreover, physical self-worth, enjoyment and effort were positively correlated with each other and with peer task-involving climate and were negatively correlated with trait anxiety. Further, enjoyment and effort were positively related with coach task-involving climate, and were negatively associated with coach and peer ego-involving climates. Trait anxiety was positively related to coach and ego-involving climates and negatively linked to perceived coach and peer task-involving climate. A conceptually similar pattern of relationships was found when the individual climate subscales were used¹.

Hierarchical Multiple Regression Analyses

In order to determine whether the coach motivational climate, the peer motivational climate, or both were significant predictors of physical self-worth, enjoyment, anxiety and effort, a series of hierarchical multiple regression analyses were conducted. In all analyses, gender and age were entered in step 1 to control for their effects³. The coach climate scales were entered in step 2 and the peer climate measures in step 3. We entered first the coach-created motivational climate

1 because it is an established situational variable; we wanted to examine whether the peer climate
2 can add to the prediction of the dependent variables after controlling for the coach climate. We
3 then performed another set of hierarchical regression analyses where the peer climate was
4 entered in Step 2 and the coach climate in Step 3. This was in order to examine whether, having
5 accounted for peer climate, the coach climate could add significantly to the prediction of the
6 dependent variables. Note that in both sets of regression analyses the beta coefficients for the
7 coach and peer climates were identical irrespective of the order of variable entry. The differences
8 between the two sets were observed in relation to the R^2 and F values for steps 2 and 3.

9 As shown in Table 3, a perceived peer task-involving motivational climate emerged as
10 the stronger predictor of physical self-worth when entered after the coach climate, and it was the
11 only significant predictor when entered before the coach climate. Perceptions of a coach ego-
12 involving climate emerged as the only significant predictor of sport trait anxiety when entered
13 before the peer climate, but both coach and peer climates accounted for a significant proportion
14 of the variance when peer climate was entered before the coach climate in the regression. A
15 perceived peer task-involving climate had the stronger coefficient predicting enjoyment,
16 however, perceptions of a coach task-involving climate also accounted for a significant
17 proportion of the variance, regardless of the order of variable entry in the regressions. Further, a
18 coach task-involving climate was the only significant predictor of athletes' exerted effort. Lastly,
19 gender also emerged as a significant predictor with males scoring higher on physical self-worth
20 and females scoring higher on sport trait anxiety.

21 Possible interactions between the coach and peer-created climates in predicting the
22 dependent variables were examined using a procedure outlined by Aiken and West (1991). More
23 specifically, each independent variable (coach task- and ego-involving climates as well as peer
24 task- and ego-involving climates) was centered. In separate regression analyses, each dependent

variable was regressed on the main effects of the four independent variables (step 1), the six possible combinations of 2-way interactions (step 2), and the four possible 3-way interactions (step 3). The results showed that in all regression analyses steps 2 and 3 were non-significant.

Another set of hierarchical regression analyses was conducted in order to determine which of the coach and peer motivational climate subscales predicted the dependent variables. Congruent with the results pertaining to the higher order factors, enjoyment was predicted by the improvement and effort facets of peer task-involving climate ($\beta = .19, p < .01$ and $\beta = .15, p < .01$ respectively) as well as the important role dimension of the coach task-involving climate ($\beta = .18, p < .01$). The coach ego-involving climate dimension of punishment for mistakes ($\beta = .20, p < .01$) was the only significant predictor of trait anxiety. Effort was not predicted by any subscales of the coach and peer task-involving motivational climates, but was negatively predicted by intra-team conflict, a facet of peer ego-involving climate ($\beta = -.15, p < .01$). Physical self-worth was not significantly predicted by any sub-scale of either peer or coach motivational climate².

Gender and Age Differences

A two-way MANOVA was conducted to examine gender and age differences in the perceptions of the motivational climates created by the coach and the peers. In order to examine potential age differences, athletes were divided into two groups. The first group included athletes with ages 12 and 13 years ($M = 12.83, SD = .41$) and the second group included ages ranging from 14 to 17 years ($M = 15.01, SD = .87$). This age division has been used by other researchers in the past (e.g., Carr, et al., 1999). Significant multivariate main effects emerged for gender (Pillai's Trace = .05, $F(4, 482) = 6.63, p < .001$, partial $\eta^2 = .05$), but not for age (Pillai's Trace = .01, $F(4, 482) = 0.85, p > .05$, partial $\eta^2 = .01$). A significant age x gender interaction effect (Pillai's Trace

= .23, $F(4, 482) = 2.86$, $p < .05$, partial $\eta^2 = .02$) was also revealed. No cut-off values exist for partial η^2 , but as far as η^2 is concerned, a value of 0.03 and below is considered a small effect size, a value of 0.06 and above is considered a moderate effect size and a value above 0.14 is considered a large effect size (Cohen, 1988). Thus, most effect sizes are probably small or moderate. Follow-up univariate analyses showed that the significant gender x age interaction emerged with regard to the peer ego-involving climate factor [$F(1, 485) = 7.37$, $p < .01$]. The interaction showed that younger males and females did not differ significantly on the peer ego-involving climate, whereas older males reported significantly higher perceptions of peer ego-involving climate compared to females. With regard to gender, follow-up univariate analyses showed that there were significant differences on both coach and peer task- and ego-involving factors. However, the results pertaining to the latter factor are not very meaningful and should be interpreted with caution because of the significant gender x age interaction. Perceptions of ego-involving coach and peer climates were higher among males, whereas females perceived greater task-involving coach and peer climates to be in operation. The means for both gender and age groups on perceptions of the coach and peer climates are presented in Table 4.

Moreover, a 2-way MANOVA was conducted to examine age and gender differences on the lower order factors of coach and peer climates. A significant multivariate main effect emerged for gender (Pillai's Trace = .10, $F(11, 474) = 4.60$, $p < .001$, partial $\eta^2 = .10$) and age (Pillai's Trace = .07; $F(11, 474) = 3.24$; $p < .001$, partial $\eta^2 = .07$), as well as a significant age x gender interaction (Pillai's Trace = .05; $F(11, 474) = 2.16$; $p < .05$, partial $\eta^2 = .05$). The interaction emerged with regard to the Intra-team Competition/Ability (peer ego-involving climate) factor, with younger females and older males reporting higher perceptions of intra-team Competition/Ability compared to younger males and older females, respectively. With regard to

gender, follow-up univariate analyses showed that there were significant differences on all sub-scales of coach climate and on most sub-scales of peer climate (with the exception of the Improvement and Intra-team Competition/Ability sub-scales). With relation to age, a significant main effect emerged. Follow-up univariate analyses indicated that younger athletes (12-13 years) scored significantly higher on Relatedness Support (peer climate), Intra-team Competition/Ability (peer climate), and Improvement/Effort (coach climate), whereas older athletes (14-17 years) scored significantly higher on Intra-team Conflict (peer climate) and Punishment of Mistakes (coach climate). All effect sizes were moderate to high².

Discussion

According to achievement goal theory (Ames, 1992; Duda & Hall, 2001), perceptions of different motivational climates created by significant others are associated with a number of cognitive, affective and behavioral patterns. The main purpose of the study was to examine the ability of the peer-induced motivational climate, along with the coach-induced motivational climate, to predict important cognitive, affective and behavioral outcomes in youth sport. Congruent with previous research, results indicated that athletes who perceived higher levels of a task-involving coach or peer climate reported higher levels of physical self-worth, enjoyment and effort, whereas perceptions of ego-involving motivational cues were associated with higher levels of competitive trait anxiety (e.g., for a review see Biddle, 2001; Duda, 2001; Ntoumanis & Biddle, 1999).

More specifically, an overall peer task-involving climate was the only significant predictor of physical self-worth. However, an analysis of individual subscales showed that none of the peer climate factors made a significant independent prediction. Harter (1988) has argued that social support from one's peer group is associated with higher self-worth. Physical self-worth represents one's satisfaction and confidence with the physical self (Fox & Corbin, 1989)

1 and, for many individuals it is a critical component of their overall self-worth. Our finding
2 pertaining to the overall peer task-involving climate factor is consistent with previous
3 developmental and sports psychology research on peer relationships. For example, Smith (1999)
4 found that greater peer social acceptance and positive peer interactions were related to high
5 levels of physical self-worth. Furthermore, Eisenberg (1997) highlighted the importance of peer
6 influence by showing that the correlation between peer approval and self-esteem enhancement
7 increases developmentally. Past research in sport based on achievement goal theory has shown
8 that perceptions of task-involving cues emphasized by the coach relate to high levels of self-
9 esteem and physical self-worth in young athletes (Reinboth & Duda, 2004; Walker et al., 1998).
10 A viable explanation for these findings is that in a task-involving climate individuals' physical
11 self-worth is not contingent on meeting extrinsic and relatively uncontrollable criteria for success
12 (Nicholls, 1989). Expanding on previous research in sport, our results suggest that higher
13 physical self-worth is more likely when one's peers transmit high task-involving motivational
14 cues (e.g., emphasis on team work and individual improvement). Further research is needed to
15 establish the relative influence of the peer group and the coach on young athletes' levels of
16 physical self-worth.

17 The present findings also indicate that greater enjoyment is evident when the peer and the
18 coach climate are task-involving. The positive association of athletes' enjoyment with a coach
19 task-involving climate is consonant with a number of previous research findings (Newton &
20 Duda, 1999; Seifriz et al., 1992). As far as the peer climate is concerned, our results are
21 conceptually similar to those reported by Kunesch, Hasbrook, and Lewthwaite (1992).
22 Specifically, Kunesch et al. found that girls reported greater enjoyment of their sport when they
23 felt accepted and did not receive negative criticism by their peers. Moreover, Weiss and Smith
24 (2002) found that high quality peer interactions, such as companionship, pleasant play and

1 conflict resolution, predicted higher tennis enjoyment. Our analysis of the individual climate
2 subscales showed that the improvement and effort facets of the peer task-involving climate as
3 well as the important role dimension of the coach task-involving climate were significant
4 predictors of enjoyment. Therefore, it seems that environments which emphasize individual
5 criteria for success and involve all athletes can increase the latter's intrinsic interest (Ames,
6 1992).

7 The results also revealed that a coach ego-involving motivational climate was the only
8 significant predictor of athletes' competitive trait anxiety in sport. This is not surprising since the
9 coach has the highest authority on the team and therefore, his/her decisions and behaviors are
10 more likely to induce anxiety in young athletes. A further analysis examining all peer climate
11 subscales showed that a greater tendency to experience anxiety across different sport situations
12 was reported when athletes perceived that their coach penalized them for making mistakes. The
13 link between coach ego climate and athletes' trait anxiety is consistent with previous research in
14 sport and PE settings (Kavussanu & Roberts, 1996; Papaioannou & Kouli, 1999; Seifriz et al.,
15 1992; Yoo, 2003). Anxiety is likely to be experienced when the focus (personal or situational) is
16 on the adequacy of one's ability and on gaining public recognition (Ames, 1992; Nicholls 1989).
17 Hence, in an environment where athletes are evaluated in public and are punished for making
18 mistakes, they are more likely to experience anxiety.

19 The present results also show that coach ratings of athletes' effort were significantly
20 predicted by a perceived coach task-involving higher order motivational climate factor.
21 Furthermore, an analysis of the individual climate subscales showed that the effort ratings were
22 also predicted (negatively) by intra-team conflict, which is a lower order factor of peer ego-
23 involving climate. Our findings are consistent with achievement goal theory (e.g., Ames, 1992)
24 and previous related research (e.g., Kavussanu & Roberts, 1996). That is, the young athletes put

1 forth effort when they perceived that their coaches or PE teachers promoted learning and
2 evaluated success using self-referenced criteria. It is not readily apparent why peer climate did
3 not predict athletes' effort; further research should replicate this study using self-reports or peer
4 ratings of effort. The negative prediction of effort by intra-team conflict, which is a lower order
5 factor of the perceived peer ego-involving climate, shows that unsupportive behaviors by peers
6 (e.g., making fun of their teammates when they make mistakes) are likely to reduce athletes'
7 behavioral investment in their sport.

8 Possible interaction effects were examined between perceptions of coach and peer
9 motivational climates predicting the same set of motivational indices. This analysis aimed to
10 learn more about the nature of the relationship between the two climate factors, that is, whether
11 besides additive effects, the two factors also have interactive effects. However, no significant
12 interaction effects were found. A possible explanation for this could be that in the current study
13 there was no within-team incompatibility between coach and peer motivational climates, which
14 were both perceived as relatively high task-involving. That is, within each team both coach and
15 peer climates were rated as being more task-involving than ego-involving. Possible interactions
16 might have had emerged if, for example, on the same team athletes perceived the climate as high
17 coach task-involving and high peer ego-involving. This could possible happen on a team where
18 the athletes do not support each other and promote intra-team comparison and competition,
19 whereas the coach tries to promote cooperative learning and emphasizes task-involving criteria
20 for competence evaluation.

21 All in all, the findings of this study provide evidence for the relevance of peer-created
22 motivational climate in youth sport, along with the coach-created motivational climate. More
23 specifically, the peer-induced motivational climate was the only significant predictor of physical
24 self-worth, and a stronger predictor of enjoyment than the coach-induced motivational climate.

1 In contrast, the coach-induced motivational climate was the only significant predictor of trait-
2 anxiety and coach ratings of athletes' effort. These results indicate that assessing only the coach
3 motivational climate is not sufficient when examining young athletes' motivation, because peers
4 are also important sources of motivational influence. The existing literature on perceived
5 motivational climates in sport has focused almost exclusively on the influence of adults ignoring
6 the potential impact of peers. As a consequence, these studies might have missed out social
7 situational factors influencing the experiences and motivational responses of young athletes.
8 Moreover, our results showed that peer and coach climates are two correlated ($r = .49$ and $.45$ for
9 the task-involving and ego-involving higher order factors) but independent constructs.
10 Considering the very limited work that has been conducted in this area so far, future longitudinal
11 research is essential in order to examine the relative independence of and the interplay over time
12 between the coach and peer climates.

13 Both the coach and the peer motivational climate measures employed in this study have a
14 hierarchical structure with a task- and an ego-involving higher order factors. That is, both
15 questionnaires have similar conceptual foundations by assessing perceptions of the same two
16 major climate dimensions. However, the lower order dimensions of the PeerMCYSQ and the
17 PMCSQ-2 are not identical. Besides some common factors used by both questionnaires (i.e.,
18 effort, improvement, intra-team competition/ability), the PeerMCYSQ also taps aspects of social
19 affiliation, (i.e., relatedness support and intra-team conflict), while the PMCSQ-2 considers
20 aspects of authority such as punishment for mistakes. Obviously, these differences can lead to
21 interpretational difficulties when assessing the relative influence of the two climates. Duda and
22 Whitehead (1998) have suggested that a common core of items should be developed to measure
23 the relative influence of significant others in order to avoid such interpretational difficulties.
24 However, one could argue that it is also important to tap aspects of the motivational climate that

1 are unique to specific significant others in order to develop a more comprehensive understanding
2 of the motivational structures operating in youth sport teams. Our approach in this paper was not
3 to pit coach climate against peer climate (in such a case, a common core of items would have
4 been needed), but rather to look at their additive and interactive effects.

5 Another purpose of this study was to examine age and gender differences in the
6 perceptions of coach and peer motivational climates. Consistent with previous work on adult-
7 created motivational climates (e.g., Kavussanu & Roberts, 1996; White et al., 1998), young
8 female athletes perceived both the coach and the peer motivational climates operating on their
9 teams to be more task-involving and less ego-involving than their males counterparts did.
10 However, as far as the peer ego-involving climate is concerned, the results were qualified by a
11 significant gender x age interaction. This interaction indicated that gender differences on the
12 perceptions of ego-involving climate should be examined in relation to the age of the athletes.
13 That is, among older athletes (14-17 years old), males reported higher perceptions of peer ego-
14 involving climate than females. However, among younger athletes (12-13 years old) both males
15 and females perceived the peer ego-involving climate in a similar way. Age differences in the
16 perceptions of the coach and peer motivational climates were also examined in this study. No
17 significant differences were revealed with regard to the higher order factors, however,
18 differences were identified on the sub-dimensions of the coach and peer motivational climates.
19 The results showed that the older athletes perceived more ego-involving motivational cues,
20 whereas the younger ones had mixed perceptions of the dominant situational motivational cues.
21 These findings are congruent with the achievement goal theory (Nicholls, 1989; Duda & Hall,
22 2001) which contends that during adolescence athletes experience greater cognitive maturation
23 and are able to perceive in the environment more ego-involving cues.

1 One might question the significance of our findings in view of the small to moderate
2 effect sizes found in the MANOVA's. However, the main purpose of our study was to examine
3 the predictive validity of the peer and coach motivational climates and not to look at gender and
4 age differences in the perceptions of those climates. In fact, the regression effect sizes (*R* square
5 values), were sizeable by social science standards (Cohen, 1988).

6 Future research might consider looking at the motivational consequences of being on a
7 team where the prevailing coach and peer motivational climates are contradictory (e.g., the coach
8 might emphasize individual improvement but the peers might promote inter-individual
9 comparison). On a newly formed team it is probable that the coach climate is the dominant one.
10 However, with the passage of time, peer influence starts to develop which can convey
11 motivational cues which are compatible or incompatible to the coach ones. For example, due to
12 media influences, peers might glorify the demonstration of normative ability, and this might
13 influence children to develop a strong ego-involving peer climate, despite the efforts of the coach
14 to promote task-involving cues. Parents are also significant others who can influence the
15 motivation of young athletes (e.g., White et al., 1998). Therefore, future research should examine
16 the interplay between the climates created by the three significant social agents (parents, coach,
17 and peers) with respect to important motivational indices in youth sport.

18 Moreover, future work might examine whether variations in the perceptions of the peer-
19 created climate exist within and between teams, as well as the factors that can account for these
20 variations at both the individual and group level (e.g., age, gender, dispositional achievement
21 goals, team size). The motivational climate has a hierarchical structure (e.g., athletes are nested
22 within teams, or students are nested within PE classes, classes within schools, etc.; see
23 Papaioannou, Marsh, & Theodorakis, 2004) and thus, it is logical to assume that athletes are
24 more similar to other athletes on the same team (i.e., share more similar perceptions of the

1 climate) than they are to athletes on other teams. Treating athletes as if they are independent of
2 their team possibly ignores the interdependency inherent in the data and can introduce potentially
3 important biases into the statistical analysis (Heck, 2001). Hence, a multilevel approach that
4 examines both within- and between-team variations in perceptions of the peer climate should be
5 adopted by future research studies.

6

References

- Aiken, L.S., & West, S.G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Allen, J.B. (2003). Social motivation in youth sport. *Journal of Sport and Exercise Psychology*, 25, 551-567.
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84, 261-271.
- Balaguer, I., Duda, J.L., Atienza, F.L., & Mayo, C. (2002). Situational and dispositional goals as predictors of perceptions of individual and team improvement, satisfaction and coach ratings among elite female handball teams. *Psychology of Sport and Exercise*, 3, 293-308.
- Biddle, S., Cury, F., Goudas, M., Sarrazin, P., Famose, J.P., & Durand, M. (1995). Development of scales to measure perceived physical education class climate: A cross-national project. *British Journal of Educational Psychology*, 65, 341-358.
- Brustad, R.J., Babkes, M.L., & Smith, A.L. (2001). Youth in sport: Psychological considerations. In R.N. Singer, H.A. Hausenblas, & C.M. Janelle (Eds.), *Handbook of Sport Psychology* (pp. 604-635). New York: John Wiley.
- Brustad, R.J., & Partidge, J.A. (2002). Parental and peer influence on children's psychological development through sport. In F.L. Smoll & R.E. Smith (Eds.), *Children and youth in sport: A bio-psychosocial perspective* (pp. 187-209). Iowa: Kendall/Hunt.
- Carr, S., Weigand, D.A., & Hussey, W. (1999). The relative influence of parents, teachers, and peers on children and adolescents' achievement and intrinsic motivation and perceived competence in physical education. *Journal of Sport Pedagogy*, 5, 28-51.

- 1 Carr, S., Weigand, D.A., & Jones, J. (2000). The relative influence of parents, peers and sporting
2 heroes on goal orientations of children and adolescents in sport. *Journal of Sport Pedagogy*,
3 6, 34-55.
- 4 Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ:
5 Lawrence Erlbaum.
- 6 Deci, E., & Ryan, R. (1985). *Intrinsic motivation and self-determination in human behavior*.
7 New York: Plenum.
- 8 Deci, E., & Ryan, R. (2000). The “what” and “why” of goal pursuits: Human needs and the self-
9 determination of behavior. *Psychological Inquiry*, 11, 227-268.
- 10 Duda, J.L. (2001). Achievement goal research in sport: Pushing the boundaries and
11 understanding some misunderstandings. In G.C. Roberts, (Ed.), *Advances in Motivation in*
12 *Sport and Exercise*, Champaign, IL: Human Kinetics.
- 13 Duda, J.L., & Hall, H. (2001). Achievement goal theory in sport: Recent extensions and future
14 directions. In R.N. Singer, H.A. Hausenblas, & C.M., Janelle (Eds.), *Handbook of Sport*
15 *Psychology* (pp. 417-443). New York: John Wiley.
- 16 Duda, J.L., & Ntoumanis, N. (2005). After-school sport for children: Implications of a task-
17 involving motivational climate. In J.L. Mahoney, J. Eccles, & R. Larson (Eds.), *After school*
18 *activities: Contexts of development* (pp. 311-330). Mahwah, NJ: Erlbaum.
- 19 Duda, J.L., & Whitehead, J. (1998). Measurement of goal perspectives in the physical domain. In
20 J.L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 21-48).
21 Morgantown, WV: Fitness Information Technology.
- 22 Eisenberg, N. (1997). *Handbook of child psychology* (vol. 3, 5th edition). New York: Wiley.
- 23 Ferrer-Caja, E., & Weiss, M.R. (2000). Predictors of intrinsic motivation among adolescent
24 students in physical education. *Research Quarterly for Exercise and Sport*, 71, 267-279.

- 1 Fox, K.R., & Corbin, C.B. (1989). The physical self-perception profile: Development and
2 preliminary validation. *Journal of Sport and Exercise Psychology*, 11, 408-430.
- 3 Harter, S. (1988). Causes, correlates and the functional role of global self-worth: A life-span
4 perspective. In J. Kolligan and R. Sternberg (Eds.), *Perceptions of competence and*
5 *incompetence across the life-span* (pp. 67-98). New Haven, CT: Yale University.
- 6 Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In
7 R.F. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard*, (pp. 87-116). New York:
8 Plenum.
- 9 Harwood, C. & Swain, A.B.J. (2001). The development and activation of achievement goals in
10 tennis: I. Understanding the underlying factors. *The Sport Psychologist*, 15, 319-341.
- 11 Heck, R.H. (2001). Multilevel modeling with SEM. In G.A. Marcoulides, & R.E. Schumacker
12 (Eds.), *New developments and techniques in structural equation modeling* (pp. 89-127).
13 Mahwah, NJ: Lawrence Erlbaum.
- 14 Horn, T.S., & Weiss, M.R. (1991). A developmental analysis of children's self-ability judgments
15 in the physical domain. *Pediatric Exercise Science*, 3, 310-326.
- 16 Kavussanu, M., & Roberts, G.C. (1996). Motivation in physical activity contexts: The
17 relationship of perceived motivational climate to intrinsic motivation and self-efficacy.
18 *Journal of Sport and Exercise Psychology*, 18, 264-280.
- 19 Kunesch, M.A., Hasbrook, C.A., & Lewthwaite, R. (1992). Physical activity socialization: Peer
20 interactions and affective responses among a sample of sixth grade girls. *Sociology of Sport*
21 *Journal*, 9, 385-396.
- 22 McAuley, E., Duncan, T., & Tammen, V.V. (1989). Psychometric properties of the intrinsic
23 motivation inventory in a competitive sport setting: A confirmatory factor analysis. *Research*
24 *Quarterly for Exercise and Sport*, 60, 48-58.

- 1 Newton, M., & Duda, J.L. (1999). The interaction of motivational climate, dispositional goal
2 orientations, and perceived ability in predicting indices of motivation. *International Journal*
3 *of Sport Psychology*, 30, 63-82.
- 4 Newton, M., Duda, J.L., & Yin, Z. (2000). Examination of the psychometric properties of the
5 Perceived Motivational Climate in Sport Questionnaire-2 in a sample of female athletes.
6 *Journal of Sports Sciences*, 18, 275-290.
- 7 Nicholls, J.G. (1989). *The competitive ethos and democratic education*. Cambridge, MA:
8 Harvard University Press.
- 9 Ntoumanis, N., & Biddle, S. (1999). A review of motivational climate in physical activity.
10 *Journal of Sports Sciences*, 17, 643-665.
- 11 Papaioannou, A., & Kouli, O. (1999). The effect of task structure, perceived motivational climate
12 and goal orientations on students' task involvement and anxiety. *Journal of Applied*
13 *Psychology*, 11, 51-71.
- 14 Papaioannou, A., Marsh, H.W., & Theodorakis, Y. (2004). A multilevel approach to
15 motivational climate in physical education and sport settings: An individual or a group level
16 construct? *Journal of Sport and Exercise Psychology*, 26, 90-118.
- 17 Pensgaard, A.M., & Roberts, G.C. (2000). The relationship between motivational climate,
18 perceived ability and sources of distress among elite athletes. *Journal of Sports Sciences*, 18,
19 191-200.
- 20 Pintrich, P.R., Conley, A.M., & Kempler, T.M. (2003). Current issues in achievement goal
21 theory and research. *International Journal of Educational Research*, 39, 319-337.
- 22 Reinboth, M., & Duda, J.L. (2004). Relationship of the perceived motivational climate and
23 perceptions of ability to psychological and physical well-being in team sports. *The Sport*
24 *Psychologist*, 18, 237-251.

- 1 Seifriz, J.J., Duda, J.L., & Chi, L. (1992). The relationship of perceived motivational climate to
2 intrinsic motivation and beliefs about success in basketball. *Journal of Sport and Exercise*
3 *Psychology, 14*, 375-391.
- 4 Smith, A.L. (1999). Perceptions of peer relationships and physical activity participation in early
5 adolescence. *Journal of Sport and Exercise Psychology, 21*, 329-350.
- 6 Smith, A.L. (2003). Peer relationships in physical activity contexts: a road less traveled in youth
7 sport and exercise psychology research. *Psychology of Sport and Exercise, 4*, 25-39.
- 8 Smith, R.E., Smoll, F.L., & Schutz, R.W. (1990). Measurement and correlates of sport-specific
9 cognitive and somatic trait anxiety: The sport anxiety scale. *Anxiety Research, 2*, 263-280.
- 10 Smoll, F.L., Smith, R.E., Barnett, N.P., & Everett, J.J. (1993). Enhancement of children's self-
11 esteem through social support training for youth sport coaches. *Journal of Applied*
12 *Psychology, 78*, 602-610.
- 13 Stinnett, T.A., Oheler-Stinnett, J., & Stoul, L.J. (1991). Development of the teacher rating of
14 academic achievement motivation: TRAAM. *School Psychology Review, 20*, 609-622.
- 15 Stuntz, C.P., & Weiss, M.R. (2003). Influence of social goal orientations and peers on
16 unsportsmanlike play. *Research Quarterly for Exercise and Sport, 74*, 421-435.
- 17 Treasure, D.C., & Roberts, G.C. (1998). Relationship between female adolescents' achievement
18 goal orientations, perceptions of the motivational climate, belief about success and sources of
19 satisfaction in basketball. *International Journal of Sport Psychology, 29*, 211-230.
- 20 Vazou, S., & Ntoumanis, N. (2004). *Peer motivational climate in youth sport: Measurement*
21 *development and validation*. Paper submitted for publication.
- 22 Vazou, S., Ntoumanis, N., & Duda, J.L. (in press). Peer motivational climate in youth sport: A
23 qualitative inquiry. *Psychology of Sport and Exercise*.

- 1 Walker, B.W., Roberts, G.C., & Harnisch, D. (1998). Predicting self-esteem in a national sample
2 of disadvantaged youths. *Journal of Sport and Exercise Psychology*, *S20*.
- 3 Weiss, M.R., & Petlichkoff, L.M. (1989). Children's motivation for participation in and
4 withdrawal from sport: Identifying the missing links. *Pediatric Exercise Sciences*, *1*, 195-
5 211.
- 6 Weiss, M.R., & Smith, A.L. (2002). Friendship quality in youth sport: Relationship to age,
7 gender, and motivation variables. *Journal of Sport and Exercise Psychology*, *24*, 420-437.
- 8 White, S.A. (1996). Goal orientation and perceptions of the motivational climate initiated by
9 parents. *Pediatric Exercise Science*, *8*, 122-129.
- 10 White, S.A., Kavussanu, M., & Guest, S.M. (1998). Goal orientations and perceptions of the
11 motivational climate created by significant others. *European Journal of Physical Education*,
12 *3*, 212-228.
- 13 Whitehead, J.R. (1995). A study of children's physical self-perceptions using an adapted
14 physical self-perception profile questionnaire. *Pediatric Exercise Science*, *7*, 132-151.
- 15 Yoo, J. (2003). Motivational climate and perceived competence in anxiety and tennis
16 performance. *Perceptual and Motor Skills*, *96*, 403-413.
- 17

Footnotes

¹ The correlations between the individual climate subscales are available from the first author upon request.

² The MANOVA's pertaining to the age and gender differences on the lower order factors of coach and peer climates, as well as the regressions examining the predictive ability of each coach and peer motivational climate subscale, are available from the first author upon request.

³ At the request of a reviewer, we conducted another set of regression analyses to test the age/gender by climate interactions on the dependent variables under investigation. In each regression analysis, the dependent variable was regressed on age, gender and all possible coach and peer climate factors (step 1) as well as on all possible age/gender by climate interactions (step 2). None of the interactions emerged as significant.

1 Table 1

2 *Internal Consistencies and Descriptive Statistics for Each Measure*

Measure	α	M	SD	Scale Range
Peer Task-Involving Climate	.78	5.37	0.85	1-7
Peer Ego- Climate	.76	3.87	1.04	1-7
Improvement ¹	.70	5.19	1.07	1-7
Relatedness Support ¹	.73	5.24	1.16	1-7
Effort ¹	.70	5.64	0.85	1-7
Intra-Team Conflict ²	.73	3.18	1.32	1-7
Intra-Team Competition/Ability ²	.69	4.59	1.10	1-7
Coach Task Climate	.84	4.01	0.58	1-5
Coach Ego Climate	.75	2.45	0.72	1-5
Effort/Improvement ¹	.77	4.12	0.55	1-5
Cooperative Learning ¹	.70	4.02	0.66	1-5
Important Role ¹	.83	3.90	0.78	1-5
Intra-team Rivalry ²	.67	2.69	0.89	1-5
Unequal Recognition ²	.86	2.55	0.89	1-5
Punishment for Mistakes ²	.77	2.20	0.78	1-5
Physical self-worth	.72	2.76	0.53	1-4
Enjoyment	.69	5.66	0.99	1-7
Effort	.72	3.92	0.53	1-5
Trait-anxiety	.76	2.06	0.55	1-4

3 *Note:* ¹= Facet of a task-involving climate; ²=Facet of an ego-involving climate; $N= 493$

1 Table 2

2 *Pearson's Correlations Between All Variables*

Factor	1	2	3	4	5	6	7
1. Peer Task-Involving Climate							
2. Peer Ego-Involving Climate	-.41**						
3. Coach Task-Involving Climate	.49**	-.27**					
4. Coach Ego-Involving Climate	-.20**	.45**	-.43**				
5. Physical self-worth	.18**	-.03	.09	-.01			
6. Enjoyment	.39**	-.16**	.31**	-.14**	.13**		
7. Trait-anxiety	-.03	.15**	-.06	.21**	-.23**	-.13**	
8. Effort	.16**	-.13**	.19**	-.12**	.22**	.21**	-.14**

3

4 *Note:* ** $p < .01$

5

1 Table 3 (continues on next page)

2 *Predicting Physical Self-Worth, Enjoyment, Anxiety and Effort from Coach and Peer Motivational Climates*

Step	Variable	β	R^2	R^2 change	F change	F
Physical self-worth						
1	Gender	-.26***	.04	.04	9.75***	9.05***
	Age	.03				
2	Coach Task climate	.04	.05 (.08)	.02 (.00)	3.91* (.29)	6.76*** (10.68***)
	Coach Ego climate	-.00				
3	Peer Task climate	.20***	.09 (.09)	.03 (.05)	7.65*** (11.43***)	7.23*** (7.23***)
	Peer Ego climate	.01				
Enjoyment						
1	Gender	-.13**	.00	.00	0.07	.07
	Age	.05				
2	Coach Task climate	.17**	.10 (.16)	.10 (.02)	26.35*** (6.60***)	13.72*** (22.50***)
	Coach Ego climate	-.02				
3	Peer Task climate	.32***	.18 (.18)	.08 (.16)	23.33*** (44.52***)	17.65*** (17.65***)
	Peer Ego climate	-.01				

Anxiety						
1	Gender	.21****	.02	.02	3.97*	3.97**
	Age	-.02				
2	Coach Task climate	.01	.08 (.05)	.07 (.04)	17.67*** (10.98***)	10.96*** (5.99***)
	Coach Ego climate	.24****				
3	Peer Task climate	.01	.09 (.09)	.01 (.03)	1.50 (7.90***)	7.82*** (7.82***)
	Peer Ego climate	.09				
Effort						
1	Gender	-.16**	.01	.01	1.75	1.80
	Age	.11*				
2	Coach Task climate	.14*	.06 (.05)	.05 (.02)	11.58*** (5.00*)	6.71*** (5.79***)
	Coach Ego climate	-.05				
3	Peer Task climate	.08	.07 (.07)	.01 (.04)	3.25* (9.77***)	5.60*** (5.60***)
	Peer Ego climate	-.08				

1 *Note:* * $p < .05$, ** $p < .01$, *** $p < .001$; Gender: 0 = males, 1 = females; Age: 0 = 12-13,

2 1 = 14-17; Values in brackets show the results of regression analyses in which peer motivational climate was entered in Step 2 and coach

3 motivational climate in Step 3.

1 Table 4

2 *Gender and Age Differences in Perceptions of Coach and Peer Motivational Climates*

Variable	Males (<i>n</i> = 369)		Females (<i>n</i> = 124)		<i>F</i>	<i>Partial η²</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Peer Task Climate	5.28	0.84	5.62	0.86	9.06**	.02
Peer Ego Climate	3.99	1.03	3.52	0.99	4.50*	.01
Coach Task Climate	3.95	0.59	4.21	0.52	12.88***	.03
Coach Ego Climate	2.56	0.69	2.13	0.69	19.94***	.04
	Younger (<i>n</i> = 211)		Older (<i>n</i> = 279)			
Peer Task Climate	5.38	0.76	5.35	0.92	1.34	.00
Peer Ego Climate	3.79	0.96	3.93	1.10	0.01	.00
Coach Task Climate	4.05	0.57	3.99	0.60	2.92	.01
Coach Ego Climate	2.50	0.68	2.41	0.75	0.72	.00
Peer Ego Climate-males	3.79	0.94	4.24	1.08		
Peer Ego Climate-females	3.88	1.17	3.47	0.96	7.37**	.02

3

4 *Note:* * $p < .05$, ** $p < .01$, *** $p < .001$