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PhD Thesis

INTERVENTION EFFECTS OF A COACH EDUCATION PROGRAM ON THE OBJECTIVE MOTIVATIONAL CLIMATE AND ON COACHES' MOTIVATION AND WELL-BEING

(Η επίδραση ενός προγράμματος εκπαίδευσης προπονητών στο αντικειμενικό κλίμα παρακίνησης και στην παρακίνηση και ευζωία των προπονητών)

by

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Dedication

This thesis is gratefully dedicated to my parents Stergios and Stavroula and my late grandparents Ioannis and Maria that have shaped me into who I am today. This thesis is equally dedicated to the most important persons in my life: my wife Elena, my daughter Stavroulina and my newborn son Nicolas. You are my driving force that makes me be the best I can be…

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1.	2018	**Tzioumakis, Y.,** Tessier, D., Smith, N., Fabra, P., Comoutos, N., Papaioannou, A., . . . & Duda, J. L. E*ffects of a theory-based coach education program on the objective motivational climate operating in grassroots football across four European countries.* Manuscript submitted for publication.	**Unpublished Paper** ***Original Research Paper (Submitted)***
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2.	2015	Smith, N., Tessier, D., **Tzioumakis**, **Y.,** Quested, E., Appleton, P., Sarrazin, P., . . . Duda, J. L. (2015). Development and validation of the multidimensional motivational climate observation system. *Journal of Sport and Exercise Psychology, 37*, 4-22. doi: 10.1123/jsep.2014-0059	***Original Research Paper***
3.	2016	Smith, N., Tessier, D., **Tzioumakis, Y.,** Fabra, P., Quested, E., Appleton, P., . . . Duda, J. (2016). The relationship between observed and perceived assessments of the coach-created motivational environment and links to athlete motivation. *Psychology of Sport and Exercise,*	***Original Research Paper***

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1.	2011	Tessier, D, **Tzioumakis, Y.,** Smith, N, Sarrazin, P, Digelidis, N, Papaioannou, A, Quested, E, & Duda J. L. (2011, July). Development of an observational instrument assessing the coach-created environment. *Paper presented at the 13th FEPSAC European Congress of Sport Psychology*, Madeira, Portugal.	**Conference proceedings**
2.	2011	**Tzioumakis, Y.,** Papaioannou, A., Digelidis, N. (2011, May). A preliminary validity examination of coach motivation scales. *19^{o} International Congress on Physical Education and Sport, Komotini, Greece*.	**Conference proceedings**
3.	2012	**Tzioumakis, Y.,** Papaioannou, A., Digelidis, N., Zourbanos, N., Krommidas, H., & Keramidas, P. (2012, July). Consistency of the environmental dimensions of an observational instrument assessing coach initiated motivational climate. *Paper presented at the 17th Annual Congress of the ECSS*, Bruges, Belgium.	**Conference proceedings**
4.	2013	Zourbanos N., Papaioannou A., **Tzioumakis, Y.**, Krommidas, C., Quested E., & Duda J.L. (2013, May). *Empowering Coaching*™. Theoretical background and pilot testing in Greece via the PAPA Project (Round Table). Paper presented at the 21st International Congress on Physical Education and Sport, Komotini, Greece.	**Conference proceedings**
5.	2013	Smith, N., **Tzioumakis, Y.,** Tessier, D., Appleton, P., Quested, E., & Duda. JL. (2013, June). Initial examination of the psychometric properties of the Multidimensional Motivational Climate Observation System. *Paper presented at the 18th Annual Congress of the ECSS, Barcelona, Spain.*	**Conference proceedings**
6.	2013	Smith, N., Tessier, D., **Tzioumakis, Y.,** Appleton, P., Quested, E., & Duda. JL. (2013, June). The relationship between the objectively rated coach-created motivational environment, and athletes' basic psychological needs and sport enjoyment. *Paper presented at the 18th Annual Congress of the ECSS, Barcelona, Spain.*	**Conference proceedings**
7.	2013	Smith, N., Tessier, D., **Tzioumakis, Y.,** Quested, E., Sarrazin, P., Papaioannou, A., Duda, J. L., & Digelidis, N. (2013, June). Comparing the objective motivational climate created by grassroots Football coaches in England, Greece and France. *5th International Conference on Self-Determination Theory, Rochester, N.Y., United States.*	**Conference proceedings**
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ABSTRACT

Drawing from an integrated conceptualization of the motivational climate (Duda, 2013) by using a joint consideration of two prominent theories of motivation, namely Achievement Goal Theory (AGT; Nicholls, 1989) and Self Determination Theory (SDT; Deci & Ryan, 1985; 2000) the purpose of the present thesis was threefold: Firstly, to assess the effectiveness of a European-based, theory-grounded coach education program on the objective motivational climate in grassroots football from a multinational sample (i.e., France, United Kingdom, Spain and Greece) using observational methodology. Secondly to examine, using sequential analytic techniques, the degree to which grassroots football coaches exhibit stable and distinct behavioral patterns over time across seven dimensions of the coaching environment and additionally, whether these patterns differ between experimental and control group coaches, and thirdly, via parallel multiple mediation analyses to examine the effects of *Empowering Coaching*™ program on coaches' motivational regulations and subjective well-being indices. Findings from the studies comprising the present thesis revealed that the *Empowering Coaching*™ program had a considerable positive impact on coaches' motivationally relevant behaviors and practices, on the behavioral patterns they exhibit, as well as on coaches' motivational regulations and satisfaction, commitment and positive affect from coaching. These promising results underpin the significance of theory and evidence-based coach education programs development and dissemination, in terms of their impact on psychological health, well-being, and adaptive functioning for both coaches and athletes.

Keywords: motivational climate, intervention, longitudinal, coach behavior, coach motivation and well-being

Chapter I

GENERAL INTRODUCTION

Research has consistently shown that coaches are the most influential figures in the sport context and are of pivotal importance in determining the quality of sport participation (Duda & Balaguer, 2007; Smoll & Smith, 2006). The vast majority of relevant literature has examined in details the coach-athlete dyad, and in particular coaches' overt behaviors and instructional styles in the training field and in matches. Results from relevant studies reveal that in both training and matches, what coaches say and how they say it, and what coaches do and how they do it, serves to fulfill or thwart athletes' basic needs. Experiences with coaches appear to either positively or negatively affect athletes' sustained engagement in sports, and in turn, have implications for athletes' health, welfare, and optimal functioning (Duda, 2001; Duda & Balaguer, 2007).

Coach-created environments can have either positive or negative effects on young athletes' performance, cognitions, or emotions (Duda et al., 2007). They influence athletes' psychosocial development, well-being, and continued engagement in sports. Sport enjoyment and athletes' evaluations of their coach have been shown to correlate more strongly with coaching behavior than with a team's win-loss record (Cumming, Smoll, Smith, & Grossbard, 2007). However, previous studies have found that some children involved in sport experience negative emotions and feelings, which may result in high attrition rates (Barnett, Smoll, & Smith, 1992; Fraser-Thomas & Cote, 2009; Gould, 1987). Therefore, it is the quality of the environment that coaches can offer that makes youth engagement on sports sustained and optimal (Duda, 2013). Thus, given the importance of coach behaviors and practices in youth

athletes' health and well-being, it deems necessary to invest in developing coach education programs aiming in creating adaptive sport environments for youth athletes.

Further, literature from sport and educational contexts has suggested that it is likely that coaches' (teachers') motivation and psychological well-being may be positively affected by programs and interventions aiming to improve athletes' (students') motivation and well-being (e.g., Cheon, Reeve, Yu, & Jang, 2014; Pelletier, Seguine-Levesque, & Legault, 2002). Taking into consideration that the implementers of such interventions play a vital role in sustaining the intervention effects, it is crucial that coaches should also be motivated and satisfied with the principles and contents of these interventions. Therefore, in order to make sure that these interventions have sustainable effects, we should also examine whether the implementers are intrinsically motivated to implement them.

Coach Education Programs and Interventions

In the past, several researchers frequently in collaboration with sporting bodies have developed and disseminated coach education programs aimed at youth psychosocial development and well-being (e.g., Mastery Approach to Coaching Sports; MACS; Smoll & Smith, 2010). A key limitation of such programs is that they were not supported by contemporary motivational frameworks, thus they did not examine the impact of major motivational determinants on psychological well-being. Specifically, literature on coach education or on interventions aiming to modify coach behaviors and in turn enhance the quality of youth engagement in sports, suggests they usually lacked strong theoretical basis, and failed to rigorously investigate the underlying motivational mechanisms. In addition, the intervention effects on outcomes were not evaluated through valid and reliable contextualized measures. Furthermore, the vast majority of formalized, large-scale coaching education

programs have been developed and implemented in North America. Therefore, it would be misleading to assume that these programs would readily extend to diverse cultural and ethnic groups and sporting bodies based in other parts of the world.

Recent evidence from systematic review (Langan, Blake & Lonsdale, 2013) on the effectiveness of coach education programs and interventions, revealed that only very few interventions met the standards for sound design, implementation and evaluation of public health programs and policy (Effective Public Health Practice Project; EPHPP tool) (Thomas, Ciliska, Dobbins & Micucci, 2004), suggesting a shift from “theory inspired” to theory based coach education programs and interventions.

Recent studies examining coaching practice in youth sport have shown that coach’s philosophy is often inconsistent with their behaviour (Dorsch, Riemer, Zimmer, & Karreman, 2009). Rutten et al., (2007) found that, due to these inconsistencies some coaching practices were associated with maladaptive behavioral patterns in youth participating in sport. More importantly, coach education programs failed to raise coach awareness regarding the effects of their behavior on young athletes’ behavioral, affective, and cognitive responses (Telfer, 2012).

The fact that coaches can readily be trained to provide such an environment for young athletes (e.g., Smith & Smoll, 1997) suggests that coach training can be an important vehicle for improving the benefits of sport participation for young athletes (Cumming et al., 2007).

Coaching environments may have an important impact on young athletes (e.g., Smith & Smoll, 1997), and this suggests that coach training is an important vehicle for promoting the benefits of sport participation among young athletes (Cumming et al., 2007).

Recent findings on elite youth soccer coaching suggest that the lack of theoretical underpinning of coach education programs result on poor coaching practices which are based on perceptions of what “is good” for the development of youth athletes (Partington, Cushion & Harvey, 2014) and mainly driven by “folk pedagogies” (Bruner, 1999).

The content of coach education interventions varied significantly in purpose and to our knowledge, only one intervention (i.e., Smith, Smoll & Cumming, 2007) attempted to manipulate one of the key-factors that influence the quality of sport participation and experience, that is, the motivational climate that coaches create. The concept of *motivational climate* refers to situational influences on athletes and interpersonal interactions between athletes and significant others (Ames, 1992). It focuses on social–psychological aspects, rather than objective features (e.g., instructions, praise, and encouragement) of the environment (Duda et al., 2007). As coaches are the most influential figures in sport contexts, they play a significant role in creating and establishing a motivational atmosphere within team environment.

Motivational Climates from a Self-Determination Theory Perspective

Self-determination theory (SDT; Deci & Ryan, 1985, 2000) is a macro-theory adopted by motivational researchers in diverse domains to describe the contextual and dispositional factors influencing human motivation and provides the framework to distinguish whether behavior is perceived as intrinsically driven or imposed by external pressures or demands. Of critical importance in SDT theory is the distinction between *autonomous* (also called self-determined) and *controlled* (or externally determined) forms of motivated behavior. The degree to which individuals experience their involvement in a given activity as autonomous or controlled determines the initiation, direction, intensity, and persistence of one’s effort (Weinberg & Gould,

1995). The practicality of SDT has made its application very popular in sport and PE settings. Research has consistently shown that self-determined or autonomous forms of motivation lead to numerous adaptive behavioral, affective, and cognitive outcomes, while externally motivated behavior is associated with maladaptive processes and motivational patterns. A sub-theory of SDT, Basic Needs Theory (BNT; Ryan & Deci, 2000), posits that the contextual factors do not have an immediate influence on behavior regulations; rather, they are mediated by the satisfaction of three fundamental psychological needs: competence, relatedness, and autonomy. *Competence* represents athletes' need to feel a certain degree of efficacy in their effort to manage and master the context in which they function (Markland & Vasteenkiste, 2008). *Relatedness* refers to a secure sense of belongingness and connectedness in meaningful, quality relationships with other people or groups (Baumeister & Leary, 1995; Deci & Ryan, 2000), while to be *autonomous* means to "behave with a sense of volition, willingness, and congruence; it means to fully endorse and concur with the behavior one is engaged in" (Deci & Ryan, 2012, p. 85).

Research has shown that these fundamental ingredients of intrinsic motivation can either function in an additive (e.g., the satisfaction of one need supports to some degree the other psychological needs) (Deci & Ryan, 2012) or multiplicative fashion (e.g., in a mixed-feedback condition containing components of both information and control, the motivational inadequacies in one condition cannot be compensated and/or reimbursed by the strengths in another) (Keegan et al., 2011; Ryan, Mims & Koestner, 1983; Kast & Connor, 1988).

Over the past years, studies from education, physical education, and sport contexts have identified the need for effective supportive strategies to create motivational environments that facilitate the satisfaction of autonomy, competence,

and relatedness. Regarding the distinction between autonomous and controlled motivation, research has consistently reported that need-supportive environments lead to higher perceptions of intrinsic motivation and produce adaptive emotional (e.g., positive emotions; Brière & Vallerand, 1990), cognitive (higher levels of concentration; Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995), and behavioral (intentions to engage in sport; Chatzisarantis, Biddle, Hagger, & Smith, 2003) responses. Remarkably, Hogue, Fry, Fry, and Pressman (2013), found that controlling motivational environments might even have direct health implications for sport participants, as elevated stress hormone levels were associated with ego-involving climates. Additionally, educational research has shown that autonomy-supportive environments are associated with positive effects on learner functioning and outcomes (i.e., motivation, engagement, development, learning, performance, psychological well-being) (Reeve, 2009). Autonomy-supportive strategies are interpreted as adaptive for learner functioning and outcomes because they promote feelings of personal causation, a sense of freedom to engage in a behavior, and a deep sense of agency and personal control (Reeve, Nix, & Hamm, 2003).

In line with SDT, in a seminal article, Mageau and Vallerand (2003) very clearly illustrated coaching behaviors and strategies that were more influential in terms of autonomy need support. In a highly socially supportive or interpersonally involving coaching atmosphere, athletes are cared for and valued, not only as players but also as persons. Athletes in a well-structured environment have choices and can voice their opinions, within clearly defined boundaries, regarding participation in team activities. They are also encouraged to develop a self-referenced conception of success and are given constructive feedback as well as a rationale for tasks they are instructed to perform, all in a non-controlling fashion (Mageau et al., 2003). In

general, overt behaviors and strategies are qualitatively diverse and, in some cases, conceptually different from autonomy supportive and controlling learning environments (Reeve et al., 2014). Perceptions of autonomy support are associated with athletes' need satisfaction; in turn, need satisfaction is positively correlated with quality sport engagement, low attrition levels, and well-being in general (Amorose & Anderson-Butcher, 2007; Adie, Duda, & Ntoumanis, 2008, 2012; Balaguer, González, Fabra, Castillo, Mercé, & Duda, 2012), while Reinboth and Duda (2004) pointed out a clear link between perceived relatedness and environments high in interpersonal involvement.

Recent studies by Haerens et al. (2013) and Van der Berghe et al. (2013) underlined the two-fold nature (i.e., quantitative and qualitative) of relatedness as well as its contribution in need-supportive environments. Relatedness satisfaction has been shown to be positively associated with well-being (Sheldon & Bettencourt, 2002), whereas in physical education contexts, Cox and Williams (2008) suggested that relatedness is a more accurate predictor of self-determined forms of motivation than competence. Furthermore, literature has shown that manifestations of socially supportive coach behaviors (i.e., relatedness support) are associated with positive psychological responses (i.e., satisfaction; Weiss & Fredericks, 1986; enjoyment of the sport experience; Smith & Smoll, 1991; self-esteem; Quested & Duda, 2009), and constructs (i.e., intrinsic motivation; Deci &Ryan, 1985), as well as with needs satisfaction (i.e., relatedness; Reinboth et al., 2004), and lower attrition rates (Barnett et al., 1992).

On the other hand, research has explored the maladaptive effects of need-thwarting or controlling motivational strategies. Bartholomew, Ntoumanis, and Thøgersen-Ntoumani (2009), in an extensive review, explored the "darker side of

coaching". They identified a taxonomy of six controlling coaching strategies: (a) use of tangible rewards, such as trophies, awards, money, and scholarships to activate or sustain engagement in sport; (b) controlling feedback during instruction and non-constructive criticism or even praise following success; (c) excessive personal control, as demonstrated by limited opportunities for athletes to have a say in things or to develop initiatives; (d) intimidating behaviors, such as belittlement, verbal abuse, yelling, or devaluation; (e) promotion of ego-involvement by encouraging an other-referenced conception of competence; and (f) negative conditional regard: withdrawing their attention and support when athletes do not exhibit desirable behaviors and attributes.

Related research conducted by Bartholomew et al. (2011) found that when athletes perceived the coaching environment to be controlling they experienced maladaptive consequences (e.g., negative affect, burnout, depression). In contrast to autonomy-supportive climates, controlling environments undermine learners' optimal functioning and outcomes (Reeve, 2009).

Motivational Climates from an Achievement Goal Theory Perspective

Achievement goal theory (AGT; Nicholls, 1989) is a dominant social–cognitive approach that examines how individuals perceive success and pursue competence in achievement situations (Nicholls, 1989). A central tenet of the theory is that individuals construe success in terms of either ability or effort. Individuals who perceive success to be an exerted effort and focus on improvement and learning in a self-referent manner are inclined to be task-involved; by contrast, individuals focused on outperforming others or demonstrating normative ability are likely to be ego-involved (Nicholls, 1989).

The term motivational climate is rooted in research on situational and social factors influencing individuals' intrapersonal predispositions while engaging in achievement contexts such as sports (Ames, 1992; Duda et al., 2007). Simply put, the motivational environment created by significant others, such as teachers or coaches, can significantly influence athletes' perceptions of competence as well as their interpretations of self-referenced success. In turn, the motivational environment partly determines the degree to which an athlete is either task- or ego-oriented (Boyce, Gano-Overway, & Campbell, 2009). In a task-involving (or mastery) climate, coaches encourage cooperation among players and reinforce exerted effort. Mistakes in such an environment are considered part of learning process, and information-based feedback is provided. Moreover, coaches stress that all players are valuable members and contribute equally to team effort. By contrast, in an ego-involving (or performance) environment, coaches promote intra-team rivalry, coaches encourage the demonstration of competence based on normative standards, only superior ability players are recognized, and mistakes are punished.

The vast majority of sports-related research on AGT supports that motivational climates promoting mastery goal adoption have adaptive motivational outcomes for sport participants. Individuals high in mastery involvement are more likely to select challenging tasks and activities; they are expected to remain engaged despite difficulties, as they see exerted effort and personal investment as a source of success (Nicholls, 1989; Duda & Nicholls, 1992; Newton & Duda, 1995). Motivational climates promoting mastery perceptions are associated with a diverse range of adaptive cognitive, affective, and behavioral outcomes such as increased perceived competence (e.g., Digelidis, Papaioannou, Laparidis, & Christodoulidis, 2003), subjective well-being (e.g., Reinboth, et al., 2004), satisfaction, enjoyment, and

intrinsic interest (e.g., Vazou, Ntoumanis, & Duda, 2005), life skills acquisition and coping (e.g., Ommundsen, Roberts, & Kavussanu, 1998), sustained interest in an activity (e.g., Zarrett & Eccles, 2009), and high levels of moral functioning (e.g., Fry & Newton, 2003; Ommundsen, Roberts, Lemyre & Treasure, 2003). By contrast, environments perceived as performance-oriented appear to promote a belief that sport is a means to gain social status and that success is associated with ability and, sometimes, with "rule bending" (e.g., Kavussanu, Roberts & Ntoumanis, 2002; Seifriz, Duda & Chi, 1992). Performance environments are also likely to generate negative emotions in participants or at best, do not promote positive sport experiences (e.g., Parish & Treasure, 2003; Liukkonen, Barkoukis, Watt & Jaakkola, 2010). Further, they are positively correlated with anxiety (e.g., Papaioannou & Kouli, 1999; Pensgaard & Roberts, 2002), attrition (e.g., Sarrazin, Vallerand, Guillet, Pelletier & Cury, 2002), and are likely to provoke intra-team rivalry (e.g., Ommudsen et al., 2005).

AGT has also served as a theoretical basis for the objective examination of coach-created motivational atmospheres that seek to unveil the practices and behaviors that seem to have the greater effect on youth athletes in terms of motivation and personal development.

Recent theoretical advancements in the study of motivation acknowledge obvious parallels between AGT and SDT concepts (e.g., motivational climate and intrinsic motivation), which complement each other in explaining motivational processes and subsequent outcomes (e.g., Deci & Ryan, 2000). Thus, drawing from earlier research (e.g., Reinboth & Duda, 2006) and joint consideration and interpretation of motivational processes from an AGT and SDT standpoint, a coach education program (i.e., *Empowering Coaching*™) was developed with the aim of

empowering coaches to make sport environments more engaging, enjoyable, positive, and adaptive for young children (Duda, 2013).

Development of a Coaching Program

The large scale, multi-national project Promoting Adolescent health through an intervention is aimed at improving the quality of their participation in Physical Activity (PAPA) project revolved around the potential of youth sport to promote children's mental and emotional health and physical activity engagement. A theoretically grounded coach education training program (i.e. *Empowering Coaching*™), which was designed to create a sporting environment which was more positive and adaptive for young children, was customised for grassroots soccer, delivered and evaluated across five European countries; namely, England, France, Greece, Norway and Spain (Duda, 2013).

The PAPA approach to coach education, unlike previous interventions, utilizes constructs from an integrated theoretical model—AGT and SDT—and is one of the few empirical attempts to objectively assess coach-initiated environments in terms of the motivational processes that these two prominent theories involve. Thus, as part of the larger PAPA project, an observational assessment of the climate that coaches create was conducted. The objective[1] measurement of coaches' behaviors related to the motivational climate initiated by grassroots football coaches was measured using a newly developed systematic observation instrument: the Multidimensional Motivational Climate Observational System (MMCOS; Smith et al., 2015). MMCOS uses constructs from AGT and SDT and provides a multidimensional assessment of the coach-created motivational climate, according to Duda's (2013) multidimensional conceptualization of empowering and disempowering motivational climates. The

[1] For clarity and precision, from this point forward we will refer to the objective measurement of coaches' behaviors related to the motivational climate as objective motivational climate.

instrument focuses on the seven environmental dimensions identified in AGT and SDT literature as significant in enhancing individual competence and self-determined motivation, and in empowering young athletes to be task-involved in sport settings. A detailed description of the MMCOS, as well as the development and validation procedures of the instrument can be found elsewhere (see Smith et al., 2015).

The need-supportive, or empowering dimensions (Duda, 2013) of the instrument represent facets of the climate that empower athletes to experience optimal motivation and well-being within sport and physical education settings. *Autonomy-support* refers to the sense of volition and choice when engaging in activities. An autonomy-supportive coach acknowledges, fosters, and facilitates athletes' active involvement in interesting, meaningful, and engaging activities (Mageau & Vallerand, 2003; Reeve, 2009). *Task-involving* coaching strategies include the encouragement of athletes' self-referenced definitions of success, wherein personal improvement and maximum effort are of primary importance (Ames, 1992). Sport-specific research (e.g., Newton et al., 2000) has added to our understanding of task-involving climates by identifying key coaching behaviors that contribute to athlete task involvement (e.g., role importance, cooperative learning and focus on improvement and exerted effort). A *relatedness supportive* coach environment is marked by positive coach–athlete interactions which are characterized by emotional support, feelings of concern, closeness, warmth, and unconditional acceptance and inclusion, communicated in a consistent, non-contingent manner (Fry & Gano-Overway, 2010). Belongingness or connectedness (i.e., the need to be connected to and supported by emotionally significant others) appears to be a fundamental psychological element facilitating intrinsic motivation and predicting high engagement in physical activities (Zhang, Salmon, Kosma, Carson, & Gu, 2011). The *structure* dimension is defined as optimal

provision of information and guidance, as well as clear learning expectations. Coaches provide athletes with clear instructions regarding the purpose of an activity and the expected learning outcomes. They offer assistance while the task is in progress, as well as constructive feedback after the task has been completed (Jang, Reeve, & Deci, 2010; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). Recent research shows that the level of engagement (Jang et al., 2010) and perceived competence in an activity (Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008) appear to be contingent upon the quality of the environment. Although the structure dimension is not an empowering dimension by definition, it depends on the extent to which each coach-initiated environment is structured in an empowering or disempowering-oriented fashion.

On the other hand, disempowering dimensions of the climate (Duda, 2013) diminish athletes' psychological needs and optimal motivation. *Controlling* interpersonal styles—overt personal control over athletes, devaluation of athletes' perspectives, controlling use of rewards or language, and intimidation (i.e., coercive or seductive pressures and demands; Bartholomew, Ntoumanis, & Thogersen-Ntoumani, 2010; Reeve, 2009) determine whether a coach's conditional regard is positive or negative. Contexts perceived as controlling will diminish intrinsic motivation or lead to detrimental psychological outcomes and may cause a shift in athletes' perceived locus of causality from internal to external (Ryan et al., 2002). Contrary to the findings of Deci and colleagues (Deci, Schwartz, Sheinman, & Ryan, 1981), notable studies (Pelletier, Fortier, Vallerand, & Briere, 2001; Tessier, Sarrazin, & Ntoumanis, 2008) have found a very weak negative relationship between autonomy and controlling coaching behaviors, suggesting that the aforementioned interpersonal styles may not necessarily represent opposite ends of the same continuum. This has

important implications for sport practitioners as, for instance, a highly controlling coaching environment may not readily indicate lack of autonomy-supportive coaching strategies. Therefore, research examining the above interpersonal styles in parallel rather than in contrast is warranted (Bartholomew et al., 2010). Moreover, coaches creating an ego-involving motivational climate emphasize on a conception of success based on normative standards and other-referenced criteria such as outperforming others, or avoid demonstrating lower ability compared to others with as less effort as possible (Ames, 1992; Duda & Balaguer, 2007). Coach strategies promoting ego-involving climates include public recognition of superior or inferior ability, encouragement of intra-team rivalry, and punishment for mistakes (Newton et al., 2000). Finally, *relatedness thwarting* coaching strategies are conceptually diverse from relatedness support. Vasteenkiste & Ryan (2013) argue that need thwarting pertains to intentional and explicit actions by socializing agents towards hindering the psychological needs. In relatedness thwarting strategies, coaches lack care or concern for athletes, belittle athletes' values, provide a limited sense of connectedness or belongingness, create a cold and unfriendly environment (with a low degree of interpersonal involvement and communication), lack of inclusion for all athletes, as their acceptance is contingent upon desirable behavior (Skinner & Belmont, 1993).

Although sport psychology literature has acknowledged that sport participation may have beneficial effects upon youth's personal development (e.g., Danish, Petitpas, & Hale, 1992; Smoll & Smith, 2002), it does not readily contribute to positive youth development. Indeed, researchers have found both positive and negative effects of engagement in sports (Duda, 2001; Eccles, Barber, Stone, & Hunt, 2003; Cook & Dorsch, 2014). Therefore, it is the meaning athletes attribute to the environment and the quality of sport experience that *may* facilitate athletes' well-

being and psychosocial development. To date, research examining the effects of sport participation on young athletes has produced mixed findings (Eccles & Barber, 1999).

Systematic Observation of Coach-Initiated Motivational Climate

The vast majority of AGT and SDT research on motivational climate in physical education and sport settings has relied on self-report measures; however, motivational scholars have called for an "objective" assessment of coaching environments (Duda, 2001). Consistent with social cognitive theory, it is asserted that the subjective meaning attached to significant others' behaviors in a certain environment ultimately affects orientations; cognitive and affective responses serve as filters between the coach-created climate and the meaning attribute by athletes (Smoll & Smith, 1989). Although very important, the heavy dependence on questionnaire methodology that has been widely used with the aim to measure motivation and reveal underlying motivational mechanisms, suffer from inherent shortcomings such as biased perceptions of motivational climates (Murayama, Elliot, & Friedman, 2012). Observational methodologies can offer valuable insights regarding coaching environments that may not be attainable through subjective self-report measures.

One methodological approach that has greatly contributed to our understanding of the coaching process is behavioral observation (Kahan, 1999). Observational research has classified how coaches behave in naturalistic sport settings and has shed light on coaches' common motivational practices. Moreover, observational methodologies can complement experimental design studies conducted in naturalistic settings, which seek to unveil the mechanisms that trigger motivational processes and infer causality (Hulleman & Senko, 2010).

Thus, a validated and reliable instrument that taps the objective motivational climate is of considerable practical value as it may reveal the degree to which there is

congruence between objective and subjective environments; that is, whether coaches, athletes, and independent observers perceive the actual, theory-defined motivational atmosphere in the same way. Moreover, instruments that capture distinct facets of the coach-initiated motivational climate may reveal whether motivationally relevant structures and dimensions operate in an "additive or multiplicative fashion" (Morgan, Sproule, Weigand, & Carpenter, 2005, p. 100). In other words, systematic observation tools can facilitate our examination of whether some dimensions of the motivational climate are more influential and may compensate for the inadequacies of other structures, or on the other hand, certain behaviors have a unique contribution or greater impact on the climate. For example, fostering basic needs supporting strategies may result in atmosphere that is less disempowering in terms of motivation (e.g., Duda, 2013, p. 4) or antithetically, even scarce occurrence of need-thwarting behaviors may have disproportionately greater negative impact on the perceived climate (e.g., "bad is stronger than good"; Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001) compared to multiple need-supportive behaviors. Additionally, such measurement instruments may also provide predictive accuracy in relation to the reported athletes' basic psychological needs satisfaction, which are in turn associated with indices of well-being. Recently, Haerens et al., (2013) identified a very worthy cause for developing observational instruments to help rate sport and physical education environments from a motivational perspective; these instruments could aid in the evaluation of the effectiveness of coach training programs aimed at modifying overt instructional behaviors. A recent systematic review of the effectiveness of coach education interventions (Langan et al., 2013) revealed that no relevant published studies have collected pre-intervention data to detect post-training differences between groups. This leads to an obvious call for more rigorous evaluation of

interventions aimed at modifying coach behaviors. It also suggests that when considering coach behavior assessments, this should be utilized both before and after intervention workshops and coach clinics. Additionally, behavioral assessments of coach-created atmospheres may help reveal the degree to which motivational strategies are applied consistently across diverse environments and various athlete levels (Smith, Smoll, & Cumming, 2009). Further, observational assessments at the team level would be far more preferable in our effort to obtain objective, unbiased results (Murayama, Elliot, & Friedman, 2012) supplementary to athletes' self-reports (Smith et al., 2007).

To date, relatively few studies have assessed the coach-initiated motivational environment in naturalistic sport settings using observational methods. Drawing from an AGT framework, Morgan and colleagues (2005) developed a computerized observational coding system to assess teaching behaviors and pupils' perceptions of motivational climate in physical education classes. Morgan et al., (2005) used Epstein's taxonomy (TARGET) to categorize behaviors according to structures of the instrument. Boyce et al. (2009) also developed an observational methodology—supplementary to coaches and athletes' perceptions—to assess the coach-initiated motivational climates in school teams. In a notable study, Tessier et al. (2008), from an SDT standpoint, developed a qualitative systematic observation instrument to assess the verbal interactions between physical education teachers and pupils in physical education classes, while Haerens and colleagues (2013) observed and rated physical education teachers' overt need-supportive practices in conjunction with pupils' perceptions across a series of physical education lessons. Tessier, Sarrazin and Ntoumanis (2010) also observationally tested the effects of a training program for physical education teachers aimed at improving overt autonomy-supportive behaviors.

Finally, van der Berghe and colleagues (2013) tested via systematic observation the relationship between PE teachers' causality orientations and overt teaching behaviors. As Tessier et al. (2013) argue the main conceptual shortcoming of these approaches used above is that they fail to assess holistically the climate in terms of both need-supportive and need-thwarting practices. Further, these studies assessed need-supportive and need-thwarting behaviors as mutually exclusive. That is, potent need-supporting practices assumed weak need-thwarting potential. Recent studies and advancements in the objective measurement of motivational environments (e.g., Bartholomew et al., 2011; Tessier et al., 2013; Reeve et al., 2014) suggest that these two states may well coexist in both athletes' perceptions and in coaches' practices. This has particular value in the examination of motivational climates, as increasing or decreasing a certain dimension might have a greater impact on the overall perceived climate. As pointed out by Barkoukis and co-workers (2010), the evidence indicating that task-involving motivational climates are psychologically healthier than ego-involving climates suggests that it is important to examine whether such climates are stable over time; indeed, if motivational climate perceptions change, does this in turn relate to changes in important psychological outcomes? To date, longitudinal studies of the perceived motivational climate are relatively rare.

Until recently there was no observational tool assessing motivational climate based on the two dominant motivational theories in sport, that is, SDT and AGT. Based on Dudas' (2013) integrative model, PAPA project researchers developed a new observational tool of motivational climate in sport, the MMCOS (Smith et al., 2015). The MMCOS facilitates the rating and differentiation of key empowering and disempowering coach-initiated behaviors and practices. The MMCOS is hierarchically structured and enables the rating of the coach-initiated motivational

climate according to the higher-order empowering and disempowering factors, the seven lower-order dimensions (autonomy support, controlling, task involving, ego involving, relatedness support, relatedness thwarting, and structure), and 32 specific coach behavioral strategies identified within previous AGT- and SDT-based sport research (Smith et al., 2015). The MMCOS is a unique objective measure because it adopts a qualitative approach to coding that taps the psychological meaning of the climate dimensions. That is, MMCOS does not simply tally the frequency of an observed coaching style, but rather takes into consideration the intensity or quality of the coach's delivery and how pervasive the environment was in terms of its motivational "meaning."

In light of this measurement advancement, in chapter 2, we have utilised MMCOS to evaluate the effectiveness of the *Empowering Coaching*™ program on the objective motivational climate created by grassroots football coaches in England, France, Spain, and Greece. Findings provide evidence regarding the effectiveness of the *Empowering Coaching*^{TM} training program on changing the objective motivational climate operating in grassroots sport, holding implications for young athletes' sporting experiences and likelihood of sustained engagement.

Alternative Approach to Objective Measurement of the Motivational Climate

Scholars have long called for objective assessment of the motivational climate (e.g., Duda, 2001). Only recently, there has been a trend towards contextualizing findings from relevant studies. Sequential analysis has been applied to different scientific settings (Abbott, 1995) and best describes dynamic processes of social interaction (Bakeman & Gottman, 1997). Also, it adopts a diverse approach to analyzing and interpreting behavioral data as it contextualizes the observed events in

contradiction to traditional data analysis that assumes that the social world consists of fixed entities with variable attributes (Abbott, 1995).

Furthermore, sequential approach to systematic observation data may provide answers to more complex research questions that involve the examination of human behavior that unfolds sequentially in time, which in turn should help us understand how behavior functions moment-to-moment (Bakeman & Gottman, 1997). Further, it allows us to identify efficiently distinct patterns of behavioral patterns as well as interdependencies between behaviors over time that can better contextualize correlational findings (Chorney, Garcia, Berlin, Bakeman, & Kain, 2010).

Analyzing behavioral data chains with sequential analytic techniques involves the calculation of frequency and probability of transitions between pairs of events within a certain time lag. Therefore, a typical coding scheme in sequential analysis involves initiation or preceded behavior (criterion) and a following behavior (target) sequencing in time. Statistical software can calculate how often the criterion event is followed by the target event within a certain behavioral chain and in relation to other behaviors. Transition probability (a kind of conditional probability) is the number of transitions for a particular combination of events and *z* scores to examine the degree to which transitional probability deviates from its expected value.

A fundamental assumption of sequential analytic techniques in systematic observation data is that we have *dependence* in the observations. Instead this being a problematic situation, as in classical parametric statistics, it is the cornerstone of this specific statistical approach.

Sequential analytic techniques have recently been applied to map interdependencies between verbal behavior, gestures and game outcome in tennis

matches (Zourbanos et al., 2015). Sequential analysis has also been used to model and study athletes' appraisal, coping, and thought processes (e.g., Calmeiro, Tenenbaum, & Eccles, 2010; Calmeiro & Tenenbaum, 2011) in sport settings, and Tzioumakis et al., (2012) explored the motivationally relevant behavioral patterns of football grassroots coaches.

Relevant literature has underlined the importance of sequential analysis not only in identifying and mapping processes and interactions, but most importantly, in patterning change (Bakeman & Gottman, 1997; Sharpe, Hawkings & Lounsbery, 1998). Using sequential analytic techniques yields important information regarding behavioral and interactional pattern changes, which would not have been uncovered if only using traditional statistics (Sharpe, et al., 1998). Furthermore, sequential analysis software allows researchers to convert sequential data to *transitional state diagrams*, which are graphic representations that facilitate the process of identification and analysis of pattern change (Calmeiro & Tanenbaum, 2011). Hence, sequential analytic techniques offer a complementary method of patterning and detecting change in behavioral and interactional sequences to traditional statistical procedures. Thus, the purpose of the second study was to firstly, explore the motivational patterns that Greek grassroots football coaches exhibited during training sessions, and secondly to offer an alternative, complementary to traditional statistic procedures, method of detecting differences in these motivational patterns between experimental and control group coaches.

Coaches' Motivational Regulations and Well-Being

Interventions in the sport domain have mainly targeted coaches to fulfill their aims (e.g., Langan, Blake, & Lonsdale, 2013; Su & Reeve, 2011). In specific, large-scale, theory-based interventions aimed at educating coaches to construct adaptive

sport environments that fostered athletes' healthy psychosocial functioning and well-being. Hence, coaches are the main vehicles of change within the sporting context, therefore their feelings of ownership of the intervention is crucial for its effectiveness. In order to ensure coaches' optimal involvement with the intervention, they need to be satisfied with the intervention content and they need to be also motivated in order to modify their behaviors. Literature has shown that coaches and PE teachers are more willing to implement innovations in their field if they are autonomously motivated and committed to the interventions (Gorozidis & Papaioannou, 2014). This has important implications for their personal optimal growth and well-being. Furthermore, there is a link between coaches' and athletes' motivation, with more intrinsically motivated athletes might make their coaches more intrinsically motivated too.

Although coaches occupy a pivotal role in sport settings and determine the quality of athletes' sport experiences, their physical, emotional, psychological health, well-being and functioning (Duda, 2013), scarce attention has been devoted to the impact that the coaching environment has on coaches' motivation, psychological functioning, and well-being. A basic tenet of SDT, as a macro theory of motivation and personal development, is that individuals will flourish and effectively function in adaptive psychological environments that facilitate more internalized forms of motivation and well-being. Therefore, the investigation of coach motivation within the coaching context is critical as it impacts not only their own satisfaction, commitment, vitality and positive affect, but also largely influences their athletes' motivational orientations and performance (Deci & Ryan, 2000; Mageau & Vallerand, 2003).

SDT has served as a dominant theoretical concept in the examination of motivation and motivational processes in sport literature. Also, SDT distinguishes

motivation into two broader categories, that is *autonomous* (i.e., intrinsic-identified regulation) motivation and *controlled* (i.e., external and introjected regulation) motivation. These two basic distinctions are pivotal as they cause diverse consequences and outcomes. *Autonomous* motivation is associated with adaptive outcomes such as learning (Boiche, Sarrazin, Grouzet, & Pelletier, 2008), persistence (Pelletiere, Fortier, Vallerand, & Briére, 2001), and greater psychological wellness (Sheldon, Ryan, Deci, & Kasser, 2004) to name a few, and on the other hand, *controlled* motivation has been linked with maladaptive consequences such as less persistence, worse social functioning and in general depleted energy levels and psychological ill-being (Ryan & Deci, 2000). Therefore, the examination of the reasons why coaches experience more or less internalized forms of motivation may lead us to the reasons underlying coaches' psychological well-being and adaptive functioning, and in turn this may provide us with the reasons *why* coaches exhibit the behaviors they do. This is very important from an applied perspective as we can develop, examine, and disseminate interventions aiming to modify coaching behaviors for the benefit of their young athletes.

Thus, the purpose of the third study was to investigate, within the framework of the PAPA project, the potential effects that the coach education program (i.e., *Empowering Coaching*™) had on coaches' autonomous and controlled motivation, satisfaction, commitment, and subjective well-being indices.

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Chapter II

Effects of a Theory-Based Coach Education Program on the Objective Motivational Climate Operating in Grassroots Football Across Four European Countries

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Abstract

This study investigated the longitudinal effects of a theoretically grounded coach education program (i.e., *Empowering Coaching*™) aimed at optimizing the experiences and engagement of young athletes taking part in sport. The coach-created motivational climate was objectively assessed by the Multidimensional Motivational Climate Observation System (MMCOS; Smith et al., 2015), which draws from Duda's (2013) integrated conceptualization of the motivational climate as informed by achievement goal theory (Nicholls, 1989) and self-determination theory perspective (Deci & Ryan, 1985;2000). Sixty- eight youth soccer coaches from four countries (England, France, Spain, and Greece) recruited within the European "Promoting Adolescent Physical Activity" (PAPA) project (Duda, 2013) were filmed during a training session at baseline, one month after the training workshop and at the end of the season. The video files were analyzed according to MMCOS' 'empowering' and 'disempowering' over-arching dimensions and the Achievement Goals Theory (AGT) and Self-Determination Theory (SDT)-based sub-dimensions. A series of linear and quadratic multilevel models revealed that compared to the control group, coaches in the experimental arm created a significantly less disempowering environment, less ego-involving and a more task-involving climate over the course of the season. The autonomy support, relatedness support, and the overall empowering features of intervention arm coach behaviors were improved in the short term. Findings provide evidence regarding the effectiveness of the *Empowering Coaching*^{TM} training program on changing the objective motivational climate operating in grassroots sport. Results are discussed in relation to implications for young athletes' sporting experiences and likelihood of sustained engagement.

Keywords: motivational climate, youth sport, coach behavior, intervention, longitudinal

Effects of a Theory-based Coach Education Program on the Objective Motivational Climate Operating in Grassroots Football Across Four European Countries

Youth sport is considered as one of the most popular organized leisure activities in the world, and millions of children regularly participate recreational sporting activities (Ewing & Seefeldt, 2002; Mahoney, Larson, Eccles, & Lord, 2005). From a developmental perspective, youth sport environments are important because they are assumed to offer socializing experiences and function as a "rehearsal for real life" as they bare resemblance to other important life contexts (Larson, 2000; Scanlan, 2002). Previous research has pointed to potential positive psychological, physical health and social consequences of youth sport participation (Bailey, 2006; Janssen & LeBlanc, 2010). The possible negative impact of engagement in organized youth sport has also been noted in past work (e.g., Bean, Fortier, Post & Chima, 2014).

Research has consistently shown that coaches are the most influential figures in the sport context and are of pivotal importance in determining the quality and impact of sport participation (Duda & Balaguer, 2007; Smoll & Smith, 2006). However, experiences with coaches can positively and/or negatively affect athletes' sustained engagement in sports, and in turn, have implications for athletes' health, welfare, and optimal functioning (Duda, 2001; Duda & Balaguer, 2007). Given the importance of coaches in the sport context, as well as in multiple aspects of youth's lives, coach education programs have been developed and implemented with the aim of fostering emotional and physical development, in addition to athletic skill advancement in children and adolescents (Fraser-Thomas & Côté, 2009).

Despite the fact that accumulated scientific research has contributed greatly on our understanding of the effects of coaching behaviors and practices, this wealth

of knowledge has had relatively limited impact on the promotion of healthy adolescent development (Conroy & Coatsworth, 2012). In a recent systematic review on the interpersonal effectiveness of coach education programs conducted over the past three and half decades, Langan, Blake, and Lonsdale, (2013) showed that only four independent interventions, leading to 8 studies, fulfilled the inclusion criteria of the Effective Public Health Practice Project (EPHPP) tool (Thomas, Ciliska, Dobbins, & Micucci, 2004). This highlights the scarcity of theory based rather than "theory inspired" interventions in this area. A key limitation of such intervention efforts to date is that they did not specifically target the major social environmental and motivation-relevant determinants of optimal engagement and psychological well-being as identified in previous theory-grounded research (Langan et al., 2013).

Grounded in contemporary social cognitive theories, sport research has centered on the motivational environment or climate created by the coach as a key determinant of a variety of cognitive, affective and behavioral outcomes (Adie, Duda, & Ntoumanis, 2008; 2012; Duda & Balaguer, 2007). These outcomes include the extent to which athletes are motivated for autonomous and controlled reasons (Amorose & Anderson-Butcher, 2007), enjoy their participation (Boixados, Cruz, Torregrosa, & Valiente, 2004) and hold intentions to continue taking part in sport (Pelletier, Fortier, Vallerand, & Briere, 2001).

The concept of *motivational climate* in the sporting realm refers to the psychological environment operating in training and competition which influences athletes' motivation and motivational processes and is a function of what coaches say and do in terms of provision of feedback, organization, bases of recognition and evaluation (Duda & Balaguer, 2007). The majority of the work on the concomitants of the motivational climate stems from Achievement Goals Theory (AGT; Ames, 1992;

Nicholls, 1989) and Self-Determination theory (SDT; Ryan & Deci, 2016). This research has centered on the nature and significance of the social-psychological environment surrounding athletes, and the implications of the perceived motivational climate on athletes' cognitions, affective responses and behaviors (Duda & Balaguer, 2007). However, much less research exists on the determinants and implications of the objective environment that coaches shape. A number of observational systems grounded in either AGT or SDT have been developed to tap the objective environment that teachers (e.g., Haerens et al., 2013) and sport coaches (e.g., Webster et al., 2013) engineer via their interactions with students and athletes, respectively. Recently Smith and colleagues (Smith et al., 2015) developed and validated an observational system grounded in an integrated perspective of a multi-dimensional motivational climate that considers features of the psychological environment emphasized by AGT *and* SDT (Duda, 2013). Employing this new observational tool, the aim of this study was to test the effect of a AGT and SDT-grounded coach education program (i.e., *Empowering Coaching*™) on the objectively assessed, multi-dimensional climate created by youth football coaches (Smith et al., 2015).

Objective Assessment of the Coach-created Motivational Climate

The vast majority of AGT- and SDT-based research on the motivational climate in physical education and sport has relied heavily on self-report measures that have been administered to the students or sport participants participating in these settings (Duda & Balaguer, 2007). However, as stated by motivational scholars, "objective" assessment of coaching environments are also needed (Duda, 2001) as the heavy dependence on questionnaire methodology suffers from inherent shortcomings such as potentially biased perceptions of motivational climates

(Murayama, Elliot, & Friedman, 2012) and possible common-method variance (De Meyer et al., 2014; Podsakoff, MacKenzie, & Podsakoff, 2012). Observational methodologies can offer valuable insights regarding coaching environments that may not be attainable through subjective self-report measures (see Haerens et al., 2013; Smith et al., 2016).

The Multidimensional Motivational Climate Observational System (MMCOS; Smith et al., 2015) was the first to consider the assumed motivationally-relevant features of the psychological environment as proposed by AGT and SDT in terms of examining the multidimensional environment created by coaches. More specifically, the MMCOS examines the potency of the different features of the motivational climate via a hierarchical structure whereby observers rate the psychological environment according to the higher-order empowering and disempowering factors, seven second-order climate dimensions (autonomy support, task-involving, relatedness support, controlling, ego-involving, relatedness thwarting and structure), and 32 distinct lower-order factors that depict coach behavioral practices which previous AGT and SDT-based sport literature has identified (Smith et al., 2015).

The MMCOS overcomes limitations of previous quantitative approaches (in which the frequency of different coach behaviors are determined), as it can firstly, capture simultaneously the hierarchical, multidimensional nature of diverse climate features and dimensions as conceptualized by Duda (2013). Secondly, by adopting a qualitative methodology, can better determine the quality or potency of the psychological impact that the coach-initiated motivational environment observed can have on the athletes participating in that environment. Preliminary psychometric properties revealed, according to observer ratings from three different countries, a

satisfactory degree of inter and intra-observer reliability. Partial least squares (PLS) confirmatory analysis also provided evidence of adequate factorial validity of the instrument (after removing ego-involving dimension), as well as predictive validity for lower-order environmental dimensions. In more recent research and in support of the discriminant validity of the observational system, ratings on the MMCOS differed as expected across training and competitive environments (Smith, Quested, Appleton, & Duda, 2016).

Development of the *Empowering Coaching*™ Program

Reviews of previous AGT intervention studies revealed that supervisor trainings are efficient to change their created motivational climate, and so that interpersonal style of leaders such as teachers and coaches are malleable (Ntoumanis and Standage, 2009; Su and Reeve, 2011). To our knowledge, there are no publications involving large-scale interventions from a joint AGT and SDT consideration in any domain (e.g., education, workplace, health).The reported interventions in Su and Reeve (2011) were comprised of a variety of training methods, including extensive reading materials, brief one-time trainings, PowerPoint slide presentations, individualized tutoring, and general skills training. However, interestingly, across the studies, the greater impact was seen among interventions that presented content in a way that is theoretically grounded, proposed practical applications of theoretical concepts, offered opportunities to individually and collectively reflect and discuss content, and provided follow-up guidance that aid in the integration and implementation of concepts. Thus, based on these reviews, *Empowering Coaching*™ interactive and self-reflective workshops did not intent to merely raise awareness by providing a list of actions that should be followed ‘on the

pitch' but rather, the aim was to help coaches develop a conceptual understanding of motivation, motivation processes, and their outcomes (Duda, 2013).

Another relevant issue brought up from the literature is that few studies discussed the lasting effects of training. Only one indicates that physical education teachers who were trained to be autonomy supportive were able to maintain their use of autonomy supportive behaviors one year later (Cheon & Reeve, 2013). Thus, in order to examine the long-term effect of the *Empowering Coaching*™ program, the coaches were followed during one complete season.

In addition, the way workshops were structured and delivered by trained soccer coach tutors intend to assist coaches to "embed" a more "empowering" approach to their coaching philosophies, with an aim to adopt these in everyday coaching practices and maintain them across time.

The Present Study

The aim of this paper is to test the effectiveness of the *Empowering Coaching*™ program, as tailored and implemented in the PAPA project, on the objective coach-created motivational climate in the context of youth sport. The present study is a cluster-controlled trial in which the objective motivational climate initiated by grassroots football coaches from England, France, Spain, and Greece, was assessed three times during the course of one football season. Specifically, it was hypothesized that the *Empowering Coaching*™ training program would lead to an increase across the season in the empowering dimensions of the climate (i.e., autonomy support, relatedness support, task-involving and structure) as well as on the overall ratings of the empowering features of the climate. On the other hand, it was expected that the *Empowering Coaching*™ training program would produce a decrease in the disempowering dimensions of the climate (i.e., controlling, ego-

involving, and relatedness thwarting) as well as on the overall disempowering climate rating across three measurements during the football season.

Method

Participants

Sixty-eight (66 male, two female) grassroots football coaches (M_{age} = 35.7, *SD* = 9.7; $M_{coaching\ experience}$ = 6.89, *SD* = 4.4) of athletes aged 10 to 15 years old ($M_{team\ age}$ = 11.92, *SD* = 1.45) from the United Kingdom (*n* = 17), France (*n* = 11), Spain (*n* = 18), and Greece (*n* = 22) were recruited within the larger European-based PAPA project and were also randomly allocated to a control and an intervention arms. The intervention arm consisted of 36 coaches (M_{age} = 35.2, *SD* = 9.3; $M_{coaching\ experience}$ = 6.71, *SD* = 3.7) and 32 coaches participated in the control condition (M_{age} = 36.1, *SD* = 10.1; $M_{coaching\ experience}$ = 7.20, *SD* = 4.9). Ethical approval for this study was granted by the corresponding ethics boards of the co-investigators' universities. Participants gave informed consent to be filmed during training sessions at three time periods (T1–T3). Athletes' guardians were also informed about the filming and the purpose of the study and were given the opportunity to opt their child out of the study. Moreover, the young players were also given a clear choice of withdrawing from participating in the program despite consent being provided by their guardians. Athletes, parents and coaches were informed that the filming would be used only for research purposes and it would not be exhibited elsewhere. Limited coach attrition occurred between the three time periods (*n* = 9). Attrition was due to various reasons (e.g., team change, club change, and profession change). In T2 data were obtained from 66 coaches (United Kingdom, *n* = 17; France, *n* = 11; Spain, *n* = 16; Greece, *n* = 22). In T3 59 coaches were filmed (England, *n* = 13; France, *n* = 8; Spain, *n* = 16; Greece, *n* = 22).

Procedure

Filming was conducted three times across the course of an athletic season (Figure 1). The first filming took place during the first 4 weeks of the season for both groups of coaches, before intervention coaches attended an approximately 6 hour, classroom based version of the *Empowering Coaching*™ workshop. The second filming occurred within a time window of six weeks for both groups of coaches, immediately after intervention coaches attended the intervention workshops. The third filming for both groups of coaches took place approximately four to six weeks before the end of the season. The exact time of filming depended on the availability of coaches. Coaches in the control arm followed the same filming schedule, but did not receive a workshop.

Before the filming day, a researcher visited the training site to familiarize participants with the filming procedure (Van der Mars, 1989). During the day of the filming, the researcher arrived before the start time to set up video equipment and attach a wireless microphone to the coach. To minimize reactivity to the video cameras and prevent the cameras from interfering with regular sessions, cameras were placed in an unobtrusive section of the play area. Coaches were recorded during their training sessions with a digital camcorder, and audio was captured with a wireless microphone attached to the coach. After each filming, video files were analyzed for content and

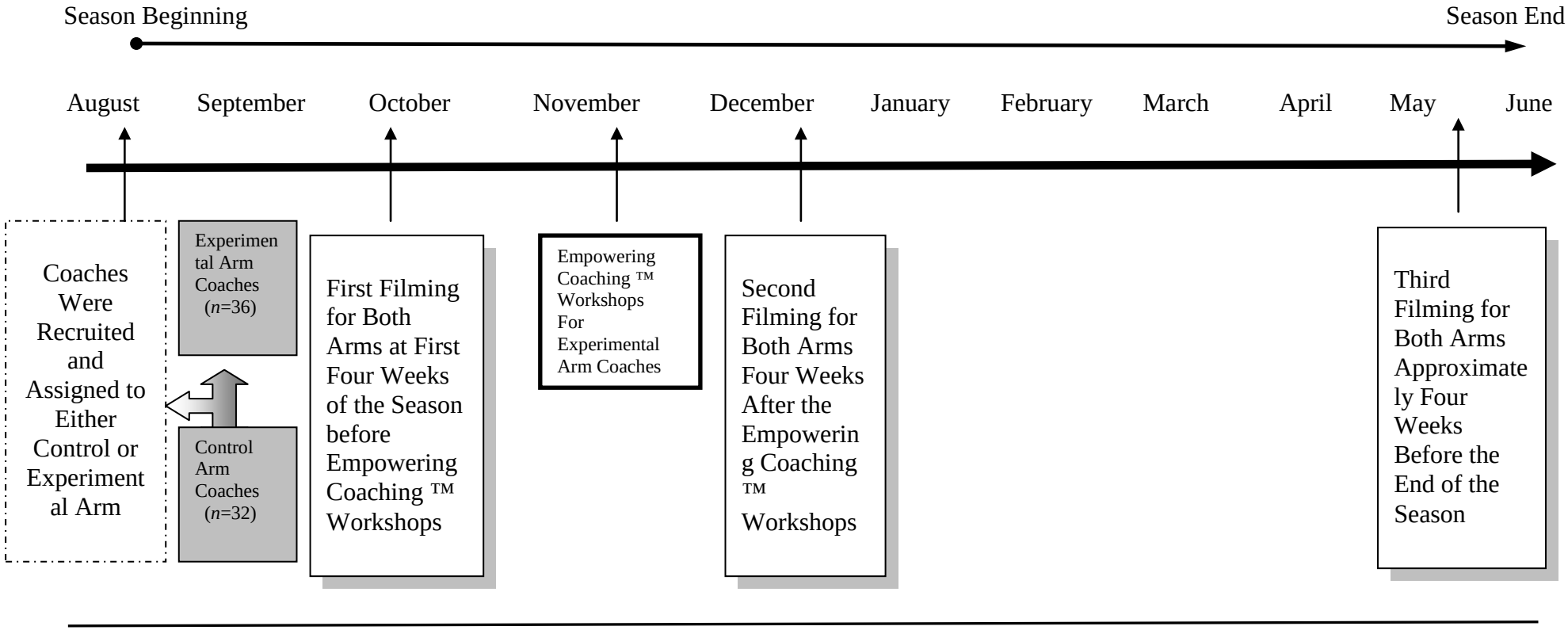


Figure 1. Procedural timeline for the Empowering Coaching™ workshop and the three time points of data collection across a season.

clarity to ensure the quality of audio and visual data were appropriate for the subsequent coding using the MMCOS (Smith et al., 2015).

For the present study, coding of the video footage was conducted by two raters from each country who were blind to the exact purpose of the study and were unaware of the classification of coaches in across the intervention and control arms. Rigorous rater training procedures were followed to ensure inter- and intra-rater agreement (Smith et al., 2015). Reliability for all codings across all countries was established, exceeding the cutoff value ($k > .70$). Raters were postgraduate students in the discipline of sports psychology and had a strong knowledge of the conceptual and theoretical background of the study, as well as experience in teaching or coaching football (Smith et al., 2015).

Since the duration of training sessions varied significantly, we adopted an approach for analyzing the footage that differed from methodologies utilized in previous systematic observations (e.g., van der Mars, 1989). This analytical approach involved splitting videos to four equal quarters to ensure that all recorded footage was coded, as even very brief interactions occurring in-between time blocks may significantly affect the motivational atmosphere. Raters coded the footage according to a marking scheme that took into account the style and range of strategies employed by the coaches, as well as the impact (e.g., perceived intensity, individual or group effects) of strategies on the climate. At the end of each quarter, raters coded the potency of each of the seven environmental dimensions on a scale of 0 (*very low potency*) to 3 (*very strong potency*). After raters coded the entire training session, they provided an overall rating of the degree to which the coaching atmosphere was empowering and disempowering using the same scale (Smith et al., 2015).

Introducing PAPA: An Integrated Multidimensional Approach to Motivational Climate

The European-based Promoting Adolescent Physical Activity (PAPA; http://www.projectpapa.org) project aimed at promoting sport environments more engaging, enjoyable, positive, and adaptive for young children in UK, France, Greece, Norway and Spain (Duda, 2013). More specifically, the PAPA project involved the delivery of a modified version of *Empowering Coaching*™ training program designed to meet the needs of grassroots football coaches, with the aim of working with them enabling them to become more empowering and less disempowering in their behaviors.

As delivered in the PAPA Project (as an *Empowering Coaching*™ extension) is grounded in a a theoretical perspective theoretically integrated conceptualization of the motivational climate and its effects (Duda, 2013; see Figure 2), an empowering climate has been defined as a psychological environment that is supportive of athletes' basic psychological needs for autonomy, competence and relatedness, and that encourages task-referenced perceptions or construals of competence. Autonomy support, structure, interpersonal implication (or relatedness support), and task-involving features are considered as key characteristics or sub-dimensions of empowering environments. By contrast, a disempowering climate refers to a psychological atmosphere assumed to contribute to diminished satisfaction and even thwarting of the aforementioned athletes' basic psychological needs and facilitate other-reference conceptions of competence. Controlling, chaotic, hostile (or relatedness thwarting) and ego-involving features are classified as disempowering environments (for more details see Duda, 2013).

More specifically, an *autonomy-supportive* coach acknowledges feelings and perspectives, provides meaningful choices, offers rational, encourages initiative, provides non-controlling feedback, and facilitates athletes' active involvement in interesting, meaningful, and engaging activities (Mageau &

Vallerand, 2003; Reeve, 2009). A structured interpersonal style is characterized by the coach providing athletes with clear instructions, expected learning outcomes, and organization, and offering guidance throughout the task is in progress, as well as constructive feedback after the task has been completed (Jang, Reeve, & Deci, 2010; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). A *relatedness supportive* coach environment is marked by positive coach–athlete interactions which are characterized by emotional support, feelings of concern, closeness, warmth or caring, (Fry & Gano-Overway, 2010), and unconditional

Empowering Conceptualization

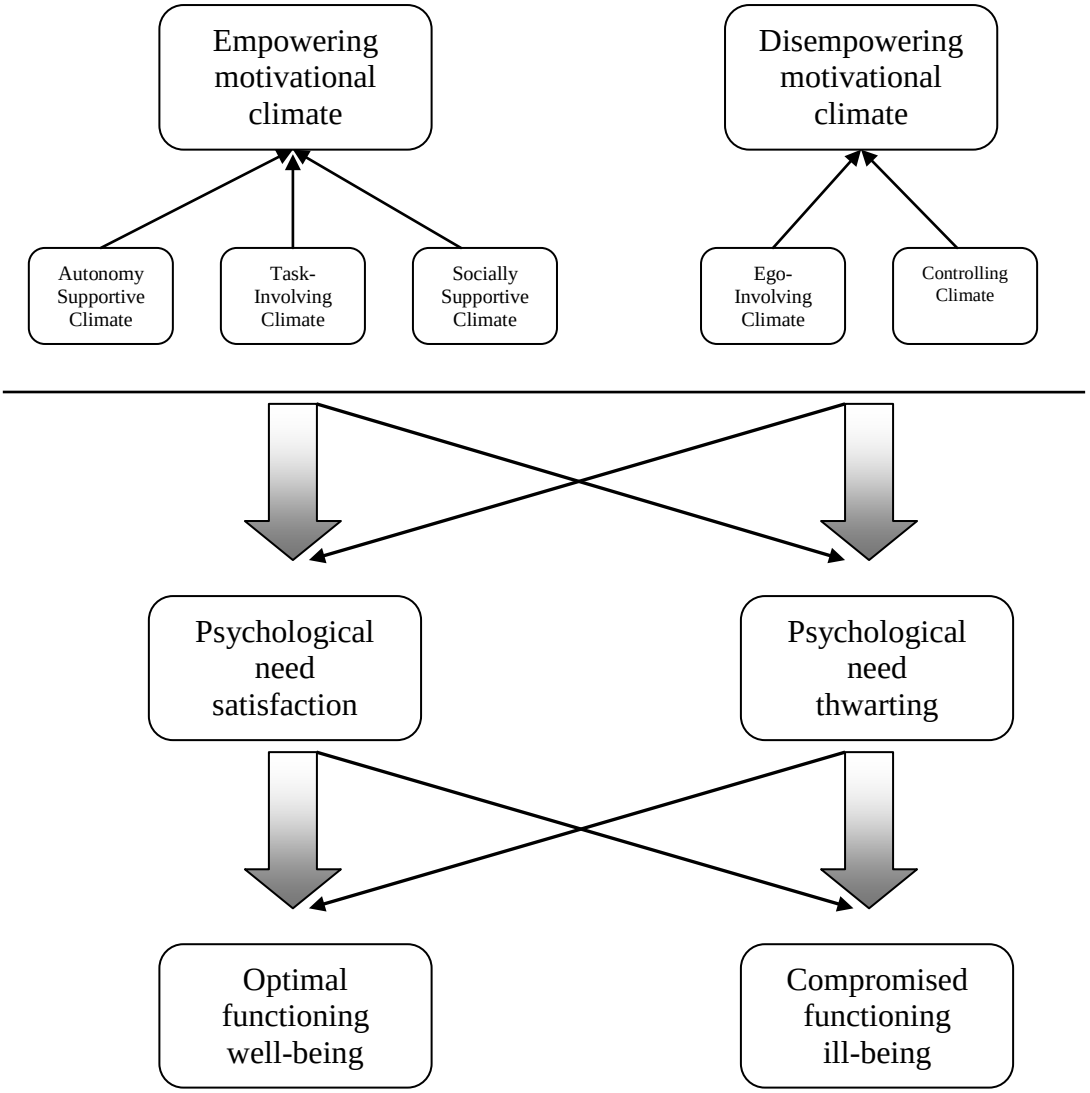


Figure 2. Duda's (2013) conceptualization of the motivational climate via a joint consideration of AGT and SDT constructs.

acceptance and inclusion, communicated in a consistent, non-contingent manner , *Task-involving* coaching strategies include the encouragement of athletes' self-referenced criteria as gauges of success, by focusing on personal improvement and on exertion of maximum effort, fostering cooperative learning, and emphasizing that everyone has an important role to play within the team (Duda & Balaguer, 2007; Newton, Duda & Yin, 2000).

On the other hand, *controlling* interpersonal styles are characterized by overt personal control over athletes, devaluation of athletes' perspectives, controlling use of rewards or language, intimidation (i.e., coercive or seductive pressures and demands), and conditional regard (Bartholomew, Ntoumanis, & Thogersen-Ntoumani, 2010; Reeve, 2009). In a *chaotic* environment coach tends to deliver no or confusing instructions that prevent players from being effective, and limits their understanding of what to do and how to do it (Skinner & Edge, 2002). A *relatedness thwarting* coaching environment is characterized as cold, critical, and marked by acceptance being contingent upon desirable behavior(s) (Skinner & Edge, 2002). Finally, coach strategies promoting *ego-involving* climates include public recognition of superior or inferior ability, encouragement of intra-team rivalry, and punishment for mistakes conducive to fostering a fear of failure (Duda & Balaguer, 2007; Newton et al., 2000).

Intervention Workshops

Coaches in the intervention arm attended the *Empowering Coaching*™ training program (Duda, 2013). *Empowering Coaching*™ draws from the two dominant motivational theory frameworks (AGT and SDT) and other principles and strategies of behavioral change. The six-hour coach training program that was

implemented as part of the European-based PAPA project aimed to provide a theory- and evidence-based intervention that fosters positive sport experiences for children and sustained sport participation (Duda, 2013). All intervention materials were translated (and back translated; see Duda, et al., 2013). The 6-hour classroom-based coach training program was implemented as part of the European-based PAPA project aimed to provide a theory- and evidence-based intervention that fosters positive sport experiences for children and sustained sport participation (Duda, 2013). Training was carried out in two step. Firstly, coach educators – chosen because of their coaching experience – were trained during one full day by the research team to deliver the *Empowering Coaching*™ workshops. Secondly, coach educators delivered the *Empowering Coaching*™ training to the intervention grassroots coaches in two three-hours workshops carried out one week apart. Coach educators were volunteers and did not receive any financial consideration. These coach educators introduced intervention grassroots coaches to an "empowering approach" to coaching by enhancing their understanding of the processes involved in optimising players' motivation. This was achieved by presenting in-depth the key theoretical principles of the *Empowering Coaching*™ and helping coaches to understand the and apply these principles so that intervention coaches integrate these with their current coaching philosophy, and maximize current good coaching practice by identifying strategies that may facilitate the modification of their behavior and the application of these principles in training, matches, and across a football season. The *Empowering Coaching*™ intervention package involved audiovisual materials (PowerPoint presentations, subtitled DVDs), interactive activities to allow coaches identify need-supportive and need-thwarting coaching behaviors and strategies (i.e., ABC game), and workbooks to aid. In addition, a website was developed in each country (i.e., www.empoweringcoaching.co.uk) to support the

implementation of the intervention across the season. Workshops were filmed for later examination of the fidelity[2] of the content delivered. A detailed description of the conceptual and empirical foundations of the program as well as the key features of the intervention can be found elsewhere (see Duda, 2013; Duda et al., 2013).

Data Analysis

To test our hypotheses, due to clustering data designs, multilevel analyses were performed. Nested data can potentially violate the independence assumption of ANOVA or the ordinary least-squares assumption in multiple regression (Hox, 2010). To address independence violations, multilevel modeling is suggested as the preferred analysis due to its ability to produce limited Type I errors and unbiased parameter estimates. Within the framework of multilevel modeling, repeated measurements in longitudinal design studies are also treated as nested data, where multiple observations are nested for individual participants (Peugh, 2010). A major advantage to employing multilevel modeling techniques with longitudinal data in a pretest–posttest design—compared to ANCOVAs—is that it allows incomplete data to be included in the analysis without losing statistical power (Hox, 2010). Multilevel modeling was implemented through SPSS MIXED MODELS, Version 22.

To examine the major research questions and following the suggestions of Bryk and Raudenbush (1992), a series of two-level growth models were performed, with repeated observations of coaches' behaviors (level 1) nested within coaches (level 2). These analyses consisted of the following four steps. Step one involved using an unconditional means model – with only one intercept and no explanatory variable – to partition the variance of each dependent variable

[2] It should be noted that major challenges concerning large-scale interventions on coaching and youth development (i.e., evaluation of the fidelity of the intervention implementation) are beyond the scope of the present paper

into within- and between-coaches components (Model 1). This allows calculating the Intraclass Correlation Coefficient (ICC), that is to examine whether the degree of variation that exists at level 2 units is above the cut-off of 5% and requires the necessity for multilevel modeling (Peugh, 2010). All ICC values for the null model for the dependent variables used in our study were well above 5%. This procedure was repeated for each dependent variable separately. In step 2, the predictor "time" included in an unconditional growth model as a fixed parameter (model 2). This allowed for testing to determine whether treatment condition was effective across time. "Time" variable consisted of three measurement time points (one pre-intervention and two post-intervention measurements of coach behavior). It was centered on the baseline measure so that the level-1 intercept represents individual initial status and time coding in our data set was 0, 2, and 8, corresponding to the time intervals (in months) after baseline (0) measurement (Heck, Thomas & Tabata, 2010). In step 3, coach grouping into intervention and control groups was included as a level 2 variable intended to explain variations in level 1 intercepts across coaches (model 3). To facilitate interpretation coaches were coded as dummy variables (control group coaches=0, experimental group coaches=1) allowing for comparisons between subgroups (Raudenbusch & Bryk, 2002). In addition, the "group" *X* "time" interaction was entered to examine the extent to which differences between conditions varied across time. In the last step, as in growth models need not be linear, quadratic parameters (i.e., time by time and time by time by group) were also included in the models (Hox & Roberts, 2011) (model 4). This allows detecting whether there are any changes in the rate of change (acceleration or deceleration) over the three measurement occasions (Heck, Thomas & Tabata, 2010).

Following Rasbash et al.'s (2000) recommendations, to check for improvement in the model fit we assessed the significant improvement in the fit

statistic. We calculated the deviance statistic of the model (i.e. Δ−2 log L/df), which follows a χ^2 distribution at *k* degree of freedom, *k* representing the number of adding parameters to estimate. When χ^2 is significant at $p < .05$, this indicates a greater improvement in the fit statistic compared to the previous model. We further examined how much of the deviance is explained by the interaction model by presenting effect sizes. We calculated effect sizes using the R^2_{CS} statistic (Cox & Snell, 1989). The R^2_{CS} statistic is a log-likelihood ratio based R^2 taking into account sample size, which is defined as follows:

$$R^2_{CS} = 1 - exp(\frac{Deviance_{model} - Deviance_{null}}{n})$$

Where log L_M is the maximum likelihood of the model, log L_0 is the maximum likelihood of the unconditional model, and *n* represents sample size (Cox & Snell, 1989). Although *R*-squares (like R^2_{CS}) are a commonly used option to estimate effect-size in multilevel modeling (Aguinis, Gottfredson & Culpepper, 2013), Tabachnick and Fidell (2007) underline the fact that they cannot be interpreted as explained variance. Rather, the observed *R-squares* indicate how much of the deviance is explained, and can be used to estimate the substantive worth of the model. Because R^2_{CS} has a theoretical maximum value of less than 1, Hox (2010) suggests that values in the .2 and .4 range indicate good prediction.

Results

Descriptive statistics

Descriptive statistics of mean values for each variable across the four countries for both groups are provided in Table 1. Mean scores for the environmental dimensions (Table 1) reveal that for the intervention arm coaches, two of the need-supportive dimensions (i.e., autonomy support and relatedness support) are considered as being very low in potency. Observers in all

Table 1.
Descriptive Statistics of Motivational Climate Dimensions For All 3 Measurement Time Points

	AS	CO	TI	EI	RS	RT	ST	EMP	DIS
Mean Experimental[a]	1.05	1.06	1.50	0.43	1.46	0.58	1.84	1.63	1.03
Mean Control[a]	0.83	1.22	1.47	0.51	1.28	0.69	1.82	1.45	1.21
SD Experimental[a]	0.64	0.53	0.56	0.42	0.62	0.55	0.47	0.67	0.56
SD Control[a]	0.72	0.56	0.64	0.44	0.70	0.59	0.55	0.72	0.66

Note. Experimental group n =36; Control group n =32.
Key. AS: Autonomy Support; CO: Controlling; TI: Task-Involving; EI: Ego-Involving; RS: Relatedness Support; RT: Relatedness Thwarting; ST: Structured; EMP: Empowering; DIS: Disempowering.
[a] Numbers are derived from a 3-point rating scale used by trained raters.

three measurement occasions rated coaches below the theoretical mean of the scale. The task-involving as well as the structure potency were rated as moderate as the scores were above 1.5. Also, the intervention coaches, as revealed by observer ratings, created overall a moderate to high potency empowering motivational environment. On the other hand, experimental coaches in terms of each of the need-thwarting variables (i.e., controlling, ego-involving, relatedness thwarting and the overall disempowering environment) had very low scores across all three measurement occasions. In contrast, control group coaches in all need-supportive and need-thwarting variables, as well as in the overall empowering and disempowering climate they create were rated as being very low to moderate except for the structure dimension that was above the theoretical mean of the scale in all three measurement occasions.

Main Analyses

Table 2 presents the results of multilevel growth models, and graphic representations of the objective climate dimensions broken down by experimental condition and measurement occasion are illustrated in Figure 3.

For the higher order factors, the *Empowering Coaching*™ had an effect of .23 on the *empowering* dimension. The time main effect for the linear model was not significant (β = .01, *SE* = .01, *ns*) and the group main effect was also not significant (β = -.16, *SE* = .13, *ns*). The time *X* group interaction (model 3) was not significant (β = -.01, *SE* = .02, *ns*) suggesting non-significant linear changes in the overall empowering climate over time. The deviance statistics comparing the main effects model with the interaction linear model did not decrease significantly (Δ = .14, *ns*). For the quadratic components of the model we found non-significant time main effect (β = -.02, *SE* = .08, *ns*), a non-significant group main effect (β = -.02, *SE* = .16, *ns*) but significant time *X* group and time *X* time *X* group interactions (β = .24, *SE* = .11, p = .03 and β =- .03, *SE* = .01, p = .03 respectively). Visual inspection of Figure 3(*h*) suggests that intervention coaches temporally increased their observed overall empowering climate from T1 toT2 measurement occasions but decreased it from T2 to T3.

The deviance statistics comparing the interaction linear model (model 3) with the quadratic model (model 4) decreased significantly (Δ= 8.0, $p < .05$).

The intervention had an effect of .20 on the *disempowering* dimension. The time main effect for the linear model (Figure 3i) was not significant (β = .01, *SE* = .01, *ns*) while the group main effect was also not significant (β= .17, *SE* = .10, *ns*). The time *X* group linear interaction (model 3) was significant (β = -.06, *SE* = .02, p = .007), suggesting after the intervention there was a significant linear decline in the overall disempowering climate created by experimental coaches in their teams over the course of the football season (i.e., measurements 2 and 3). Moreover, a significant decrease of deviance statistic between the main effects model and the interaction linear model (model 3) was observed (Δ = 8.73, $p <$ .05). For the quadratic components of the model (model 4), both time and group main effects were not significant (β = .05, *SE* = .08, *ns* and β = .19, *SE* = .23, *ns* respectively). The time *X* group and the time *X* time *X* group interactions were also not significant (β = .04, *SE* = .10, *ns* and β = -.11, *SE* = .11, *ns* respectively) suggesting no significant acceleration or deceleration of the overall disempowering coaching climate over the three measurements in the course of the football season. The deviance statistics comparing the interaction linear model with the quadratic model did not decrease significantly (Δ= 2.59, *ns*).

Regarding the lower-order factors, the *Empowering Coaching*™ had an effect of .32 on the autonomy support environmental dimension. A linear model showed that the time and group main effects were not significant (β= .01, *SE* = .01, *ns* and β = -.24, *SE* = .14, *ns* respectively). The time *X* group interaction revealed a trend towards significance (β = -.02, *SE* = .02, p = .08) with intervention coaches increasing their observed autonomy support. The deviance statistics comparing the main effects model (model 2) with the interaction linear model (model 3) did not decrease significantly (Δ =.53, *ns*). For the quadratic components we found a significant time *X* time *X* group interaction (β = -.03, *SE* = .01, p = .008). Based on the examination of Figure 3(*a*) the latter finding implies that intervention coaches increased their observed autonomy support from T1 toT2 measurement occasions

but decreased it again from T2 to T3. The deviance statistics comparing the interaction linear model (model 3) with the quadratic model (model 4) decreased significantly (Δ = 6.84, $p < .05$).

The *Empowering Coaching*™ had an effect of .24 on the *controlling* environmental dimension. For the linear model (Figure 3b), the time main effect was not significant (β = -.01, *SE* = .01, *ns*) and the group main effect was also not significant (β= .16, *SE* = .09, *ns*). The time *X* group interaction was also not significant (β = -.03, *SE* = .02, *ns)* suggesting that after the intervention experimental coaches had not decreased significantly their controlling behaviors over the course of the football season. The deviance statistics comparing the main effects model (model 2) with the interaction linear model (model 3) did not decrease significantly (Δ = 2.15, *ns*). For the quadratic model, the time main effect and the group main effect were not significant (β = .04, *SE* = .07, *ns* and β = .16, *SE* = .20, *ns* respectively). Also, the time *X* group and the time *X* time *X* group interactions were non-significant (β =.09, *SE* = .09, *ns* and β = -.13, *SE* = .10, *ns* respectively) suggesting that there was not a significant acceleration or deceleration of the coaching controlling behaviors over time. The deviance statistics comparing the interaction linear model (model 3) with the quadratic model (model 4) did not decrease significantly (Δ = 3.85, *ns*).

The intervention had an effect of .25 on the *ego-involving* environmental dimension. Both time and group main effects of the linear model (Figure 3c) were not significant (β = -.01, *SE* = .01, *ns* and β = .07, *SE* = .07, *ns* respectively). The time *X* group interaction was significant (β = -.05, *SE* = .02, p = .002) suggesting that following their training intervention coaches had exhibited constantly across measurements 2 and 3 significantly lower ego-involving behaviors. The deviance statistics comparing the main effects model (model 2) with the interaction linear model (model 3) decreased significantly (Δ = 8.97, $p < .05$). For the quadratic components of the model both time and group main effects were not significant (β = .02, *SE* = .05, *ns* and β = .20, *SE* = .16, *ns* respectively). The time *X* group and time *X* time *X* group interactions were not significant as well (β = .02, *SE* = .08, *ns* and β

= -.07, *SE* = .08, *ns*) respectively, as no significant acceleration or deceleration of the coaching controlling behaviors occurred over time. The deviance statistics comparing the interaction linear effects model with the quadratic model did not decreased significantly (*Δ* = 2.21, *ns*).

The intervention had an effect of .18 on the *task-involving* environmental dimension. Both time and group main effects of the linear model (Figure 3d) were not significant (*β* = .05, *SE*=.03, *ns* and *β* = -.03, *SE* = .13, *ns* respectively). The time *X* group interaction showed a certain trend

Table 2.
Parameter Estimates for Linear and Quadratic Multilevel Models Examining the Effectiveness of the Empowering Coaching™ Program Across the Seven Environmental Dimensions and the Two Higher Order Factors.

Environmental dimensions	Unconditional (empty) model		Model 1 (Main effects)		Model 2 (Main effects)		Model 3 (Level 2-Interaction-Linear)		Model4 (Level 2-Quadratic)		
	Estimate (β)	*SE*	Estimate (β)	*SE*	Estimate (β)	*SE*	Estimate (β)	*SE*	Estimate (β)	*SE*	*95% CI*
Autonomy Supportive											
Fixed effects											
Intercept (γ_{00})	0.94***	0.69	0.91***	0.10	1.01***	0.12	0.88***	0.14	**1.18*** **	**0.36**	[.47, 1.88]
Time(γ_{10})			0.02	0.04	0.02	0.04	0.09	0.05	**-0.36**	**0.40**	[-1.15, .43]
Condition(γ_{01})[a]					-0.24	0.13	0.04	0.21	**-1.06***	**0.49**	[-2.03, -.94]
Time*Condition (γ_{11})							-0.14[†]	0.81	**1.38***	**0.54**	[.30, 2.46]
Time*Time*Condition (γ_{20})									**-0.31***	**0.13**	[-.58, -.04]
Random effects											
W. C. V. (σ^2)	0.21***	0.02	0.22***	0.03	0.21***	0.02	0.20***	0.02	0.19***	0.02	
B. C. V. (τ_{00})	0.24***	0.05	0.24***	0.05	0.23***	0.05	0.24***	0.05	0.24***	0.05	
ICC	.53										
R^2_{CS}			0.05		0.20		0.24		0.32		
Model fit											
-2 LL	353.84		350.14		338.23		335.10		328.27		
$\Delta\ \chi^2$ (p)			3.7		11.91		3.13		6.84*		
Controlling											
Fixed effects											
Intercept (γ_{00})	1.13***	0.05	1.20***	0.09	1.14***	0.10	**1.29*** **	**0.13**	1.13***	0.36	[.87, 1.40]
Time(γ_{10})			-.03	0.04	-0.04	0.04	**-0.11***	**0.06**	-0.25	0.41	[-.22, .53]
Condition(γ_{01})[a]					0.16	0.09	**-0.15**	**0.18**	0.48	0.49	[-.77, .16]
Time*Condition (γ_{11})							**0.16**[†]	**0.08**	-0.56	0.56	[-.32, .01]
Time*Time*Condition (γ_{20})									0.10	0.14	
Random effects											
W. C. V. (σ^2)	0.22***	0.02	0.22***	0.03	0.22***	0.02	0.21***	0.02	0.21***		
B. C. V. (τ_{00})	0.07**	0.03	0.07**	0.03	0.07**	0.02	0.07**	0.02	0.07**		
ICC	.26										

R^2_{CS}			0.06		0.15		0.20		0.24		
Model fit											
-2 LL	307.61		302.78		296.15		292.30		288.92		
$\Delta\ \chi^2$ (p)			4.83		6.63		3.85		3.78		
Ego-Involving											
Fixed effects											
Intercept (γ_{00})	0.46***	0.03	0.55***	0.07	0.53***	0.08	**0.73*** **	**0.10**	0.54†	0.29	[.53, .93]
Time(γ_{10})			-0.04	0.03	-0.05	0.03	**-0.15*** **	**0.04**	0.27	0.40	[-.24, -.06]
Condition(γ_{01})[a]					0.07	0.07	**-0.35***	**0.15**	-0.13	0.33	[-.64, -.05]
Time*Condition (γ_{11})							**0.21****	**0.06**	-0.13	0.45	[.08, .34]
Time*Time*Condition (γ_{20})									-0.02	0.11	
Random effects											
W. C. V. (σ^2)	0.14***	0.01	0.14***	0.02	0.14***	0.01	0.13***	0.01	0.13***	0.01	
B. C. V. (τ_{00})	0.03*	0.01	0.04*	0.02	0.03*	0.01	0.04**	0.01	0.04**	0.01	
ICC	.20										
R^2_{CS}			0.09		0.13		0.25		-0.80		
Model fit											
-*2* LL	220.54		214.03		210.98		201.04		260.60		
$\Delta\ \chi^2$ (p)			6.51*		3.05*		9.94				
Task-Involving											
Fixed effects											
Intercept (γ_{00})	1.47***	0.06	1.38***	0.09	1.38***	0.10	**1.28*** **	**0.12**	1.08***	0.29	[1.04, 1.6]
Time(γ_{10})			0.05	0.03	0.05	0.03	**0.10***	**0.04**	0.46	0.31	[.01, .18]
Condition(γ_{01})[a]					-0.03	0.13	**0.17**	**0.18**	0.30	0.39	[-.01, .52]
Time*Condition (γ_{11})							**-0.10**	**0.06**	-0.14	0.42	[-.23, .02]
Time*Time*Condition (γ_{20})									0.06	0.10	
Random effects											
W. C. V. (σ^2)	0.12***	0.01	0.12***	0.01	0.12***	0.01	0.12***	0.01	0.12***	0.01	
B. C. V. (τ_{00})	0.23***	0.05	0.23***	0.05	0.23***	0.04	0.23***	0.05	0.23***	0.05	
ICC	.65										
R^2_{CS}			0.08		0.11		0.15		0.18		
Model fit											
-2 LL	274.91		268.94		266.45		263.74		260.98		
$\Delta\ \chi^2$ (p)			5.97*		2.49		2.71		2.77		

Relatedness Supportive											
Fixed effects											
Intercept (γ_{00})	1.37***	0.07	1.28***	0.10	1.34***	0.12	1.32***	0.14	**1.7*** **	**0.34**	[1.02, 2.39]
Time(γ_{10})			0.04	0.03	0.05	0.04	0.06	0.05	**-.58**	**0.38**	[-1.34, .17]
Condition(γ_{01})[a]					-0.16	0.13	-0.16	0.13	**-.74**	**0.47**	[-1.67, .19]
Time*Condition (γ_{11})							-0.01	0.07	**1.06***	**0.52**	[.03, 2.10]
Time*Time*Condition (γ_{20})									**-.26***	**0.13**	[-.52, -.01]
Random effects											
W. C. V. (σ^2)	0.18***	0.02	0.18***	0.02	0.18***	0.02	0.18***	0.02	0.18***	0.02	
B. C. V. (τ_{00})	0.25***	0.05	0.25***	0.05	0.24***	0.05	0.24***	0.05	0.24***	0.05	
ICC	.58										
R^2_{CS}			0.07		0.14		0.15		0.20		
Model fit											
-2 LL	332.50		327.50		321.51		321.47		317.35		
$\Delta\ \chi^2$ (p)			5		5.99*		0.04		4.13		
Relatedness Thwarting											
Fixed effect											
Intercept (γ_{00})	0.63***	0.05	0.62***	0.10	0.59***	0.11	0.70***	0.14	**0.95***	**0.40**	[.15, 1.75]
Time(γ_{10})			0.01	0.05	0.002	0.04	-0.05	0.06	**-0.04**	**0.46**	[-1.32, .51]
Condition(γ_{01})[a]					0.09	0.09	0.09	0.09	**0.03**	**0.56**	[-1.06, 1.14]
Time*Condition (γ_{11})							0.11	0.09	**0.02**	**0.63**	[-.34, .28]
Time*Time*Condition (γ_{20})									**-0.03**	**0.15**	
Random effect											
W. G. V. (σ^2)	0.27***	0.03	0.27***	0.03	0.27***	0.03	0.18***	0.02	0.18***	0.02	
B. G. V. (τ_{00})	0.06*	0.03	0.06*	0.03	0.05[†]	0.03	0.24***	0.05	0.24***	0.05	
ICC	.18										
R^2_{CS}			0.06		0.12		0.15		0.17		
Model fit											
-2 LL	329.14		324.88		319.73		318.15		316.44		
$\Delta\ \chi^2$ (p)			4.26*		5.15*		1.58		1.74		
Structured											
Fixed effects											
Intercept (γ_{00})	1.82***	0.05	1.74***	0.08	1.76***	0.09	1.79***	0.11	**1.86*** **	**0.27**	[1.33, 2.40]
Time(γ_{10})			0.04	0.03	0.04	0.03	0.02	0.04	**-0.16**	**0.30**	[-.76, .44]

Condition(γ_{01})[a]					-0.04	0.10	-0.10	0.15	**-0.44**	**0.37**	[-1.18, .29]
Time*Condition (γ_{11})							0.03	0.06	**0.63**	**0.41**	[-.19, 1.45]
Time*Time*Condition (γ_{20})									**-0.17**	**0.10**	[-.37, .04]
Random effects											
W. C. V. (σ^2)	0.11***	0.01	0.11***	0.01	0.11***	0.01	0.11***	0.01	0.11***	0.01	
B. C. V. (τ_{00})	0.14***	0.03	0.15***	0.03	0.15***	0.03	0.14***	0.03	0.14***	0.03	
ICC	.57										
R^2_{CS}			0.08		0.03		0.10		0.14		
Model fit											
-2 LL	237.06		231.32		230.36		230.07		227.04		
$\Delta\ \chi^2$ (*p*)			5.74*		0.96		0.29		3.03		

	Empty model		Model 1		Model 2		Model 3		Model 4		*95% CI*
Higher Order Factors	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	
Empowering									**ICC 48%**		
Fixed effects											
Intercept (γ_{00})	1.53***	0.69	1.45***	0.11	1.51***	0.13	1.48***	0.15	**1.6*** **	**.40**	[.81, 2.38]
Time(γ_{10})			0.04	0.04	0.04	0.04	0.06	0.06	**-.22**	**.44**	[-1.10, .66]
Condition(γ_{01})[a]					-0.16	0.13	-0.09	0.22	**-1.01**	**.54**	[-2.09, .05]
Time*Condition (γ_{11})							-0.04	0.09	**1.37***	**.61**	[.17, 2.57]
Time*Time*Condition									**-.34***	**.15**	[-.63, -.04]
Random effects											
W. C. V. (σ^2)	0.25***	0.03	0.25***	0.03	0.25***	0.03	0.25***	0.03	0.25***	0.03	
B. C. V. (τ_{00})	0.24***	0.05	0.23***	0.06	0.22***	0.05	0.22***	0.05	0.22***	0.05	
ICC	.48										
R^2_{CS}			0.06		0.14		0.14		0.23		
Model fit											
-2 LL	373.06		368.76		362.53		362.35		355.19		
$\Delta\ \chi^2$ (*p*)			4.3		6.23*		0.18		7.19*		
Disempowering											
Fixed effects											
Intercept (γ_{00})	1.11***	0.05	1.03***	0.11	0.96***	0.12	**1.19*** **	**0.15**	1.26***	0.43	[1.0, 1.2]
Time(γ_{10})			0.04	0.05	0.03	0.05	**-0.08**	**0.06**	-0.32	0.48	[-.05, .13]

Condition(γ_{01})[a]					0.17	0.10	**-0.35**	**0.21**	0.35	0.57	[-.04, .38]
Time*Condition (γ_{11})							**0.26*** **	**0.09**	-0.27	0.65	[.07, .45]
Time*Time*Condition (γ_{20})									0.01	0.16	
Random effects											
W. C. V. (σ^2)	0.28***	0.03	0.28***	0.03	0.28***	0.03	0.27***	0.03			
B. C. V. (τ_{00})	0.09**	0.03	0.09**	0.04	0.08*	0.03	0.08*	0.03			
ICC	.25										
R^2_{CS}			0.07		0.13		0.22				
Model fit											
-2 LL	343.21		338.51		333.55		326.30				
$\Delta\ \chi^2$ (*p*)			4.7*		4.96*		7.25*				

Note. **Bold** indicates best fitting model with respective confidence intervals.

Key. W.C.V: Within-Coach Variance; B.C.V: Between-Coach Variance; I.C.C.: intraclass correlation coefficient; R^2_{CS}: Cox and Snell pseudo R^2; SE: standard error; LL= log likelihood; [a] 0= control group coaches, 1= intervention group coaches; reference category=control group coaches; 95% CI: 95% confidence intervals.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

toward significance (β =.03, *SE* = .01, *p*=*.088*) indicating that the intervention group coaches significantly increased their overt task-involving behaviors over the course of the season. The deviance statistics comparing the main effects model with the interaction linear model did not decrease significantly (Δ = 2.91, *ns*). As for the quadratic model, both time and group main effects were not significant (β =- .08, *SE* = .05, *ns* and β = -.05, *SE* = .18, *ns* respectively). The time *X* group and the time *X* time *X* group interactions were also not significant (β =.02, *SE* = .07, *ns* and β = .01, *SE* = .07, *ns* respectively) suggesting no significant acceleration or deceleration of the coaching task-involving behaviors over time. The deviance statistics comparing the interaction linear model with the quadratic model did not decrease significantly (Δ = 4.19, *ns*).

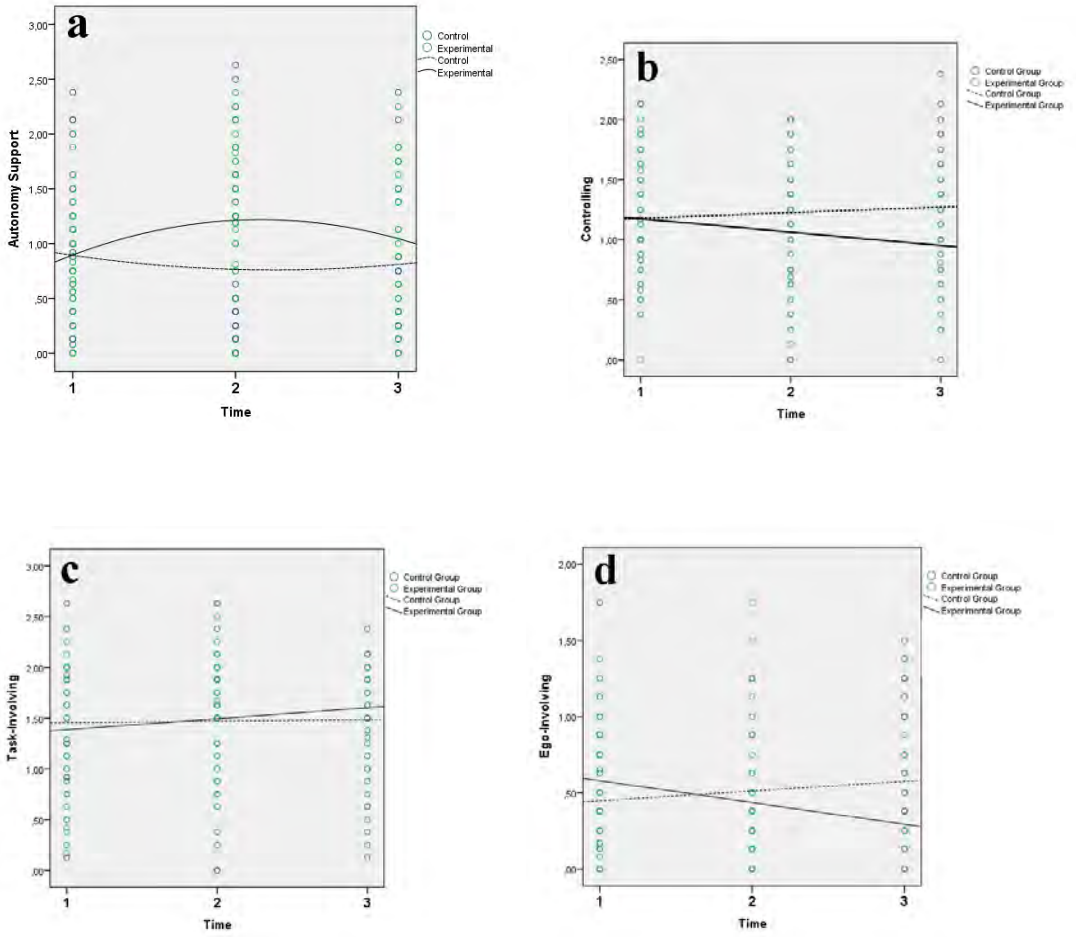
The intervention had an effect of .20 on the *relatedness support* environmental dimension. For the linear model the time main effect was not significant (β = .01, *SE* = .01, *ns*) and the group main effect was also not significant (β = -.16, *SE* = .13, *ns*). The time *X* group interaction was not significant (β =.01, *SE* = .02, *ns*). The deviance statistics comparing the main effects model with the interaction linear model did not decrease significantly (Δ = .28, *ns*). Although the quadratic model (Figure 3e) does not fit the data better compared to linear model, we found that for the quadratic components a significant time *X* time *X* group interaction (β = -.02, *SE* = .01, *p* = .04), with intervention coaches temporally increasing their observed relatedness support from T1 toT2 measurement occasions but decreasing it from T2 to T3. The deviance statistics comparing the interaction linear model with the quadratic model did not decrease significantly (Δ = 3.90, *ns*).

The *Empowering Coaching*™ had an effect of .17 on the *relatedness thwarting* environmental dimension. For the linear model (Figure 3f) the time main

effect was not significant (β = .01, *SE* = .05, *ns*) and the group main effect was also not significant (β = .09, *SE* =.09, *ns*). The time *X* group interaction was not significant (β = -.03, *SE* = .02, *ns*) suggesting no significant alterations between experimental and control group coaches' relatedness thwarting behaviors occurred over the three measurement points through the football season. The deviance statistics comparing the main effects model with the interaction linear model did not decrease significantly (Δ = 1.52, *ns*). For the quadratic model, both time and group main effects were not significant (β = .07, *SE*=.08, *ns* and β = .04, *SE* = .22, *ns* respectively). The time *X* group and the time *X* time *X* group interactions was also not significant (β =- .01, *SE* = .10, *ns* and β = -.03, *SE* = .11, *ns* respectively) suggesting no significant acceleration or deceleration of the coaching relatedness thwarting behaviors over the three measurements over course of the football season. The deviance statistics comparing the interaction linear model with the quadratic model did not decrease significantly (Δ = 1.53, *ns*).

The *Empowering Coaching*™ had an effect of .14 on the *structured* environmental dimension. The time main effect for the linear model (Figure 3g) was not significant (β = .01, *SE* = .01, *ns*) and the group main effect was also not significant (β = -.04, *SE* = .10, *ns*). The time *X* group interaction was not significant (β =- .01, *SE* = .01, *ns*) suggesting no significant changes in coaches' structure behaviors over the three measurement points through the football season. The deviance statistics comparing the main effects model with the interaction model did not decrease significantly (Δ = 1.18, *ns*). For the quadratic components of the model both time and group main effects were not significant (β =.02, *SE* = .05, *ns* and β = -.07, *SE* =.17, *ns* respectively). The time *X* group and time *X* time *X* group interactions were not significant as well (β = -.10, *SE* = .07, *ns* and β =.10, *SE* = .07, *ns*)

respectively, as no significant acceleration or deceleration of the coaching structure behaviors occurred over time. The deviance statistics comparing the interaction linear model with the quadratic model did not decreased significantly (Δ = 2.89, *ns*).



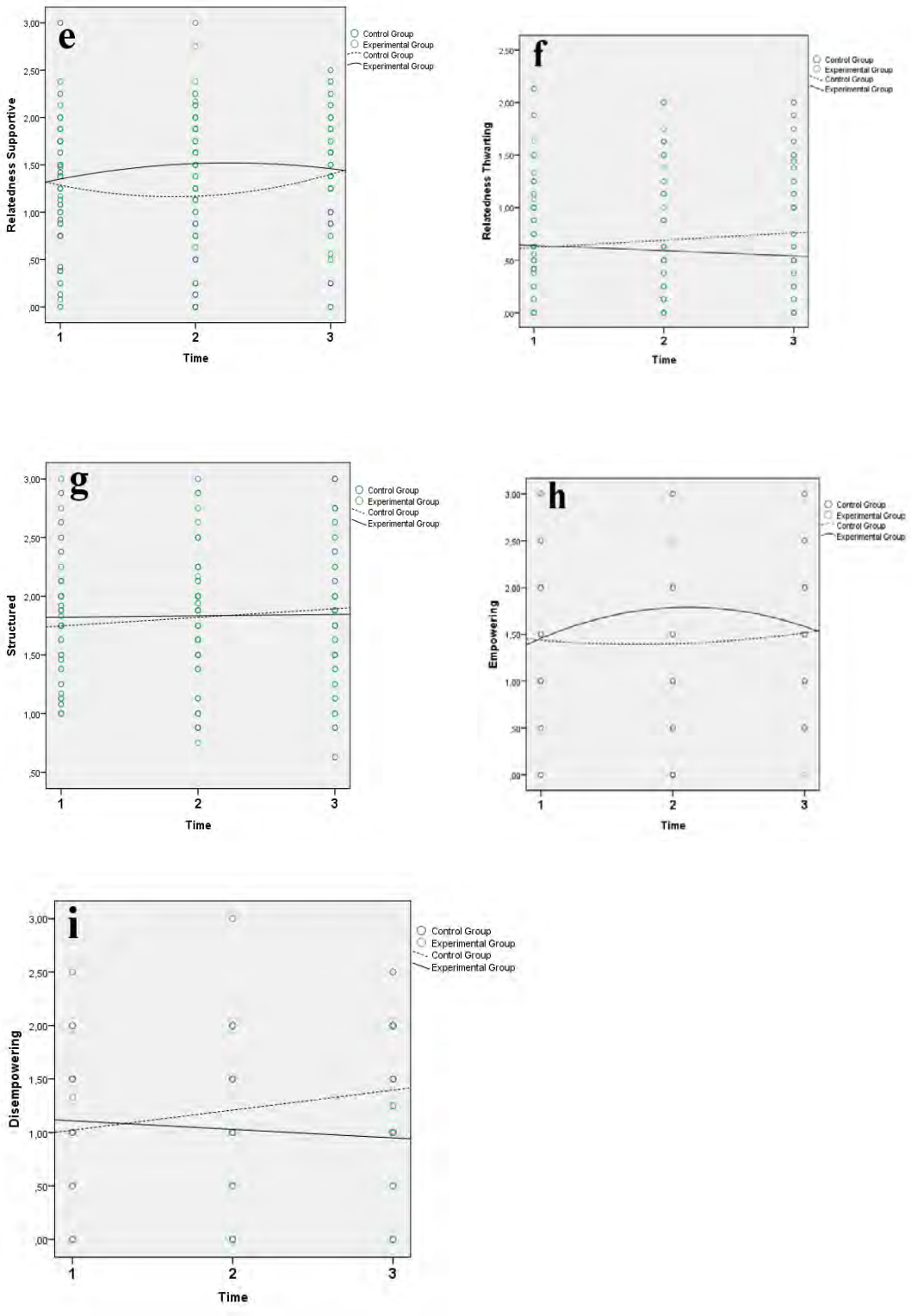


Figure 3. Graphic representations of the objective motivational climate dimensions including Autonomy Support (a), Controlling (b), Task-Involving (c), Ego-Involving (d), Relatedness Support (e), Relatedness Thwarting (f), Structured (g), Empowering

(h), and Disempowering (i), broken down by experimental condition and measurement occasion.

Note. Time 1= Time Point 1(pre-intervention); Time 2= Time Point 2 (post-intervention); Time 3=Time Point 3(post-intervention); Numbers are derived from a 3-point rating scale used by trained raters. Solid lines represent the control group, while dashed lines represent the experimental group.

Discussion

The aim of the present study was to objectively evaluate the effectiveness of a longitudinal intervention program aimed at modifying the coach-created motivational climate in grassroots football across four countries (i.e., France, United Kingdom, Spain and Greece).

In this large cross-country intervention study, experimental group coaches compared to control group coaches seem to have created a more potent need-supportive motivational environment for their players as in the task-involving, structure and the overall empowering climate had moderate to high scores. This was anticipated as the main purpose of the present study was to educate intervention arm coaches to create a grassroots football environment more engaging, enjoyable, positive, and adaptive for young children (Duda, 2013).

Empowering Coaching™ program improved significantly the motivational climate created by coaches from the experimental group on six out of nine dimensions measured over the course of the season. In particular, the *Empowering Coaching*™ program decreased durably (i.e., linear effect) *disempowering* dimensions (i.e., overall disempowering environment and ego-involving climate), and in addition, improved in the short-term, although not durably (i.e., quadratic effect) the empowering dimensions (i.e., overall empowering environment,

autonomy-support and relatedness support). *Empowering Coaching*™ training content and embedded learning activities might have made coaches more aware and probably more "sensitive" to the maladaptive effects and consequences these strategies have on youth sport participants and provided them with alternatives to minimize these practices on the pitch. These findings are particularly important and in accordance with Su and Reeve's (2011) suggestions about the potential benefits that could result from raising coaches' awareness concerning possible maladaptive effects from the use of need thwarting strategies. By understanding and recognizing such behaviors, coaches might be more willing to adopt controlling coaching practices to a lesser extent.

In line with other interventions in sport (e.g., Smith et al., 2007) and PE settings (e.g., Aelterman et al., 2014), our findings indicate that coach and PE teacher in-service training can result to a motivational atmosphere marked by enhanced need-supportive features and decreased need-thwarting strategies.The present results suggest that the *Empowering Coaching*™ approach to coach training was effective, as intervention arm coaches seem to have created a more adaptive motivational environment in their teams. We assume that these effects are probably due to the core principles of the intervention; participant coaches were not asked to modify and alter their personal values and coaching philosophies but rather they were trained to recognize both adaptive and maladaptive coaching practices and motivational processes, and as a result, to "internalize the messages conveyed and feel more committed and competent about becoming more empowering coaches" (Duda & Appleton, 2016, p.373).

The most enduring effect on climate dimensions was the decrease of ego-involving climate. We assume that coaches were particularly concerned about issues

of inequality and fewer opportunities given to low ability athletes and they tried to reverse this pattern in their teams. Such an approach might have also included a deliberate effort by the intervention coaches to diminish maladaptive ability-referenced comparison effects between team members as well as to minimize the use of punitive language and strategies. Although, intervention coaches had low scores in baseline measurement in the ego-involving dimension, they succeeded in further reducing ego-involving climate. They were successful in doing it presumably because related behaviors and strategies were easier for them to recognize and adapt (e.g. punitive behaviors) or because they felt that these behaviors had a very “strong” and distinct negative effect on their teams’ atmosphere.

The intervention effects on overall empowering environment, autonomy-support and relatedness support were short-term. Intervention arm coaches immediately after training appear to have valued and incorporated autonomy and relatedness supportive strategies within their teams, but it seems that after their initial training experience, reverted to their usual motivational practices, either because of the lack of effective follow-up training activities or due to external pressures and constraints (Mageau & Vallerand, 2003). It is possible that a “proximity effect” took place as coaches had a vivid training experience during the first few weeks or months after the intervention but it wear off as season progressed. Also, results showed a marginally significant increase in task involvement in the intervention coaches group throughout the season. Taking into consideration the baseline measurement scores suggesting a relatively high task-involving climate before the intervention, it might have been challenging for intervention coaches to improve substantially a motivational environment already high in task involvement. For some coaches it may have been more complex to emphasize for example, even more on task-involving

cues as perhaps they were unable to implement it successfully, or they were already proficient in planning and executing technical and tactical football skills and therefore may held less importance to them.

For controlling, structure, and relatedness thwarting the effects of the intervention were less pronounced. One possible explanation for this is the fact that our study's experimental group consisted of coaches with more coaching experience.

This might have important implications for the effectiveness of the intervention as these coaches probably had an established coaching philosophy and particular motivational beliefs, therefore attempting to modify those turned out quite challenging. Trying to focus on what they might have considered as most important dimensions, might have been more appealing and easier for them. In addition, as the intervention program was largely oriented towards empowering practices, control-oriented coaches might have experienced some degree of cognitive conflict and "accommodated the training message in a more conditional way" (Su & Reeve, 2011, p. 182). Thus, coaches combining both the aforementioned characteristics (experience and control-orientation) might had developed an increased unwillingness or even resistance to implement an alternative coaching approach and in turn modify their overt coaching behaviors (Pajares, 1992; Su & Reeve, 2011). This is in line with Su and Reeve's (2011) suggestions that prior professional experience and potentially more experienced participants might act in a relatively more reserved way towards more autonomy supportive approaches to coaching.

Several reasons might explain the lack of some significant effects or the lack of large effects of the intervention on coaching behaviors. One of them is pressure from the club and specifically from parents towards grassroots coaches to perform successfully in terms of maximizing win-loss record. Having in mind that in some

countries (e.g., Greece) grassroots coaching is largely a paid profession, in many cases parents and clubs put coaches under enormous pressure to win and in general to adjust to the known patterns. Extending recent evidence indicating the detrimental effects of club pressure on coach motivation and psychological well-being (Alcaraz, Viladrich, Torregrosa, & Ramis, 2015) we might surmise that less intrinsically motivated coaches are also reluctant to implement coaching innovations (e.g., Gorozidis & Papaioannou, 2014).

A final suggestion deriving from the present findings is that although it would not have been possible in the PAPA project, future attempts to implement *Empowering Coaching*™ should consider the need for 'top up' training for coaches as the season progresses. In addition, subsequent coach training programs, and individualized coaching guidance towards accomplishing the objectives of the programs are desirable. The current findings imply that supplementary workshops across the season might strengthen the effects of the intervention and produce even more stable, more empowering coach-initiated team climate.

However, the present study does not come without certain limitations. The present report draws conclusions from data deriving from a single source, that is, observational data. Apart from inherent shortcomings of systematic observation (e.g., relatively low number of filmed sessions compared to the total amount of practice sessions throughout the season), findings stemming only from observational studies assessing sport environments should be viewed with caution. It has been suggested that objective reality as recorded by systematic observation instruments can not fully reflect reality as perceived by the athletes (Nicholls, 1989; Harwood et al., 2015) as athletes usually interpret the coach-initiated atmosphere through their own cognitive and affective lens (Smoll & Smith, 1989). A recent study by Smith and colleagues

(Smith et al., 2016) using a mixed-method approach to examining the degree of congruence between objective and subjective motivational environments, adds significantly to our knowledge of how to facilitate the creation of more adaptive youth sport environments.

Despite the above limitations, still the present study contributes substantially to literature by providing empirical evidence on the effectiveness of large-scale, longitudinal, evidence-based and empirically tested interventions aiming to empower the coach-created motivational climate in grassroots football. Results clearly suggest it is worthwhile to invest in and allow greater dissemination of a theoretically-driven and empirically supported coach education programs, such as Empowering Coaching™ which seem to be particularly useful to coaches in terms of their coaching development (Stoszkowski & Collins, 2015). Also, we have obtained promising results showing that we can achieve an effective multiplication and dissemination of the present theory- and evidence-based intervention program by trained educators with a great degree of content fidelity.

Furthermore, we provide some preliminary evidence for the cross-cultural transferability of the *Empowering Coaching*™ Program, as the results of the present study reveal very similar coach-created motivational climate patterns across the four different countries. This holds significant implications for the understanding of the underlying processes concerning youth motivation and development within the sport context and provides support for the development of cross-cultural policies towards theory-driven and evidence-based coach training programs which contribute to youth health and psychological well-being (Duda et al., 2013). On the basis of the promising findings presented in this paper, further study of the effects that

intervention programs such as *Empowering Coaching*™ have on the observed motivational climate in elite settings and individual sports would be of great interest.

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Chapter III

Exploring the Motivational Patterns of Grassroots Football Coaches Across a Season. A Sequential Analysis Perspective.

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Abstract

Using a newly developed observational system that reliably captures the motivational environment created by youth sport coaches (Smith et al., 2015), and drawing from research programs aiming to examine how the joint consideration of the person and the situation might help investigators identify relative stable and distinctive patterns of human behavior (e.g., Cognitive-Affective Processing System; CAPS; Mischel & Shoda, 1995), we analyzed behavioral data from 22 Greek grassroots football coaches recruited in a large coach education program (i.e., *Empowering Coaching*™) with sequential analytic techniques. Aim of the present study was to explore whether grassroots football coaches exhibit stable motivational patterns over time across seven dimensions of the coaching environment and additionally, whether these patterns differ between experimental and control group coaches. Results revealed that both groups exhibited relatively stable behavioral patterns for both pre- and post –intervention measurements, but experimental group coaches showed a significant trend towards increasing empowering and diminishing disempowering dimensions of the motivational climate.

Keywords: sequential analysis, behavioral patterns, motivational climate

Exploring the Motivational Patterns of Grassroots Football Coaches Across a Season. A Sequential Analysis Perspective.

Recent youth sport literature has examined the impact of several factors on the motivational climate within sport settings including parents and peers (e.g., O'Rourke, Smith, Smoll & Cumming, 2014; Vazou, Ntoumanis & Duda, 2005). However, the vast majority of research examining the initiation and formation of such motivational environments suggests that coaches exert a great influence on the social environment that is created within sport settings. Results have also shown that coaches not only affect their athletes' performance and skills but also their psychosocial development (Duda & Balaguer, 2007). Researchers in their effort to measure the motivational climate, have used diverse methodologies such as self-reports and qualitative measures including diaries, and interviews (e.g., Keegan, Harwood, Spray & Lavallee, 2010). Despite the fact that these measures reflect the extent to which agents in the sport context perceive the environment, scholars have long called for an approach that taps the objective motivational environment initiated within the sport domain (e.g., Duda, 2001).

Advancements in the investigation of the functioning of the athletic environment have provided valuable information in terms of the quantity, frequency and intensity of coaching behaviors and practices (Morgan, Sproule, Weigand & Carpenter, 2005) but only recently researchers have shifted their interest from purely descriptive measures of coach-created climates to a more qualitative, theory driven examination of the factors that trigger motivational related outcomes (e.g., Smith, Tessier, Tzioumakis, et al., 2015). To aid this approach, theoretical frameworks that are well suited to examine the antecedents of the motivational climate were utilized.

Specifically, the Achievement Goal Theory (AGT; Nicholls, 1989) and Self Determination Theory (SDT; Deci &Ryan, 2000) frameworks have monopolized the coach-initiated motivational climate research over the past decades and have provided most of our knowledge concerning the underlying motivational mechanisms mainly in youth sport and physical education settings.

Coach-Initiated Motivational Atmosphere

SDT theory is a well-validated theoretical framework that has been quite influential in examining the extent to which individuals are motivated towards an activity. According to SDT continuum, the degrees of motivation vary from more intrinsic ones to the less self determined. Intrinsic motivation is experienced when individuals engage in certain activities out of inherent pleasure and interest, and research has repeatedly shown that intrinsic forms of motivation are positively related with adaptive psychosocial outcomes and behaviors, while extrinsically motivated behaviors are characterized by highly controlling forms of motivation which are contingent upon rewards, focus on normative evaluations or emphasized the avoidance of negative well-being consequences. These controlled forms of motivation have been associated with various forms of maladaptive functioning. Basic psychological needs theory (Ryan & Deci, 2002), a SDT mini-theory, postulates that coaches' behaviors may have different effects on well-being and individual functioning of their athletes to the extent which the needs for autonomy, competence and relatedness are fulfilled or thwarted. Social contexts such as sport environments that facilitate the satisfaction of these needs are linked with adaptive psychosocial outcomes (e.g., Adie, Duda & Ntoumanis, 2012; Amorose, 2007), while environments that impair the fulfillment of these needs lead to detrimental

cognitive, behavioral and affective outcomes (e.g., Bartholomew, Ntoumanis & Thørgesen-Ntoumani, 2010).

Another prominent theory of motivation, AGT, has served as a framework for explaining motivational functions within the coaching environment. AGT postulates that coaches can initiate a motivational environment that is either task or ego oriented (Ames, 1992). A task-oriented coaching climate is characterized by recognition of exerted effort, self-improvement, promoting cooperation and ensuring role importance for each team member. Conversely, an ego oriented coach focuses on evaluating competence based on normative standards, encourages intra-team rivalry, places emphasis on outperforming others and emphasizes mistake contingent punishment (Ames, 1992). The motivational climate literature within youth sport suggests that a task-oriented coaching climate may lead to a series of adaptive cognitive, behavioral and affective consequences for athletes such as increased intrinsic motivation, regardless of ability (Duda, Chi, Newton, Walling, & Catley, 1995), lower anxiety levels (Smith, Smoll & Cumming, 2007), increased perceived competence and overall athletes' well being (Fry, Guivernau, Kim, Newton, Gano–Overway, & Magyar, 2012; Reinboth & Duda, 2006). In contrast, an ego-involving coach-created motivational atmosphere is linked with athletes' elevated stress and anxiety levels as well as with increased negative feelings (Ntoumanis, Biddle & Haddock, 1999), deceptive practices (Harwood, Spray, Keegan, 2008), or even physical ill-being (Hogue, Fry, Fry & Pressman, 2013).

Objective Assessment of Coach-Initiated Motivational Climate

Within sport, the coach-created motivational environment is a key determinant of athletes' motivation and their psychological development (Duda & Balaguer, 2007). However to date, the understanding of the coaching environment

relies heavily on athletes' self-reported assessments of the environment. Although important, self-report scales that have been widely used to measure motivation and reveal underlying motivational mechanisms suffer from inherent shortcomings such as biased perceptions of motivational climates (Murayama, Elliot, & Friedman, 2012). While athletes' perceptions are considered to be the critical determinant of their own psychological development (Horn, 2008) it is important to consider alternative viewpoints, particularly if researchers aim to successfully intervene and encourage more adaptive coaching environments for their players. Over the past decade, motivational scholars have called for alternative perspectives in the measurement of the motivational environment created by coaches, specifically coaches' perceptions and objective ratings of the motivational climate (Duda & Balaguer, 2007; Keegan et al., 2010; Tessier et al., 2013). Consistent with social cognitive theory, it is asserted that the subjective meaning attached to significant others' behaviors in a certain environment ultimately affects orientations; cognitive and affective responses serve as filters between the coach-created climate and the meaning attribute by athletes (Smoll & Smith, 1989). Observational methodologies can offer valuable insights regarding coaching environments that may not be attainable through subjective self-report measures. Moreover, observational methodologies can complement experimental design studies conducted in naturalistic settings, which seek to unveil the mechanisms that trigger motivational processes and infer causality (Hulleman & Senko, 2010).

Thus, a validated and reliable instrument that taps the objective motivational climate is of considerable practical value as it may reveal the degree to which there is congruence between objective and subjective environments; that is, whether coaches, athletes, and independent observers perceive the actual, theory-defined

motivational atmosphere in the same way. Recently, Haerens et al. (2013) identified a very worthy cause for developing instruments to help rate sport and physical education environments from a motivational perspective; these instruments could aid in the evaluation of the effectiveness of coach training programs aimed at modifying overt instructional behaviors. Additionally, behavioral assessments of coach-created atmospheres may help reveal the degree to which motivational strategies are applied consistently across diverse environments and diverse athlete level (Smith, Smoll, & Cumming, 2009). Further, given that there are modest intra-correlations among scales assessing perceptions of the motivational climate (e.g., Papaioannou, Marsh, & Theodorakis, 2004), observational assessments at the team level would be far more preferable in our effort to obtain more reliable results, supplementary to athletes' self-reports (Smith et al., 2007).

Recently, sport scientists have conducted a number of studies assessing the coach-initiated motivational environment in naturalistic sport settings. Drawing from an AGT framework, Morgan and colleagues (2005) developed a computerized observational coding system to assess teaching behaviors and pupils' perceptions of motivational climate in physical education classes using Epstein's taxonomy (TARGET). Boyce, Gano-Overway, and Campbell (2009) also developed an observational methodology—supplementary to coaches' and athletes' perceptions—to assess the coach-initiated motivational climates in school teams. In a notable study, Tessier et al. (2008), from an SDT standpoint, developed a qualitative systematic observation instrument to assess the verbal interactions between physical education teachers and pupils in physical education classes, while Haerens and colleagues (2013) observed and rated physical education teachers' need-supportive overt practices in conjunction with pupils' perceptions across a series of physical

education lessons. Tessier et al. (2010) also observationally tested the effects of a training program for physical education teachers aimed at improving overt autonomy-supportive behaviors. Finally, van den Berghe and colleagues (2013) tested via systematic observation the relationship between PE teachers' causality orientations and overt teaching behaviors.

The Multidimensional Motivational Coaching Environment

Research results highlighted above provide evidence for the notion that coach-created environments that potentially fulfil players' basic psychological needs and encourage task-focused conceptions of competence are likely to produce adaptive behavioral, affective and cognitive outcomes for athletes. Via a joint consideration of both AGT and SDT research related evidence it is asserted that sport-related psychological environments marked by features that are supportive of players' basic psychological needs for autonomy, belongingness are empowering. Motivational climates characterized by the aforementioned features have been conceptualised by Duda (2013) as being *empowering*. In contrast, sport-related psychological environments marked by features that potentially thwart players' basic psychological needs for autonomy, belongingness and encourage an other-focused conception of competence by being ego-involving are linked with maladaptive outcomes for youth athletes. These environments have been conceptualised as *disempowering* (Duda, 2013). In previous research, the coaching environment had been examined by a AGT and SDT joint consideration approach (Reinboth et al., 2004) where it was found that coaching environments high in autonomy and relatedness support and task-involvement positively predicted athletes' autonomy, belongingness and competence need satisfaction respectively. In a recent investigation with vocational dancers, Quested and Duda (2010) demonstrated, from

a AGT and basic needs mini-theory perspective, that task-involving as well as autonomy supportive social climates are positively linked with dancers' need satisfaction and positive affect underscoring the multidimensional nature of the motivational climates. Drawing from Duda's (2013) joint consideration of AGT and SDT, and the relevant research, a newly developed observational instrument aiming to tap the objective coach-initiated motivational climate, namely the Multidimensional Motivational Climate Observation System (MMCOS) captures 7 key aspects of the social environment namely, autonomy support, relatedness support, task-involving, controlling, relatedness thwarting, ego-involving and structure (Smith, et al., 2015). MMCOS is a qualitative measure that integrates constructs from AGT and SDT providing a multidimensional assessment of the empowering and disempowering coach-created motivational climates, according to Duda's (2013) conceptualization. The present observational tool focuses on key environmental dimensions identified in AGT and SDT literature as pivotal in supporting individual competence and self-determined motivation, and in empowering young athletes to be task-involved in sport settings. For more details of the MMCOS development and validation procedures see Smith et al., (2015).

Sequential analysis

To date, motivational climate assessment relied mainly in descriptive aspects of both quantitative as well as qualitative statistical procedures. Recently, Jeong (2012) proposed that sequential analysis would enable researchers to model patterns of motivational processes observed in training or competition. Sequential analysis has been used in diverse disciplines (Abbott, 1995) and symbolizes a tendency in the social sciences toward thinking about 'events in contexts' instead of 'entities with variable attributes' (Aisenbrey & Fasang, 2010). Sequential analytic studies examine

discrete behavior occurrences in a contextual level and explore patterns of interactions among individuals and/or events over time (Bakeman & Gottman, 1997). Furthermore, sequential techniques applied to systematic observation data can be used to examine issues like the fashion that behavior is sequenced in time, identify behavioral patterns, and assess contingencies among data collected over time (Bakeman & Gottman, 1997). Sequential analytic techniques calculate the frequency and the probability of transitions between pairs of behaviors (or set of behaviors) within a certain lag. In such a sequence, the first behavior is called *"given"* while the behavior following "given" is called "*target"* (Bakeman & Gottman, 1997). Sharpe (1997) suggests that exploring behavioral data via interactive methods may provide researchers with answers on how human interaction may serve as response to previous behaviors and mediate future behavioral responses. In our case, interaction is operationally defined as two-event sequences comprising of a given behavior and target behavior (Jeong, 2003).Sequential analysis in its simplest form informs us whether one behavior or set of behaviors follows another behavior or a set of behaviors more often than would be expected by chance; or in other words does a coach *"given"* behavior increases the probability of a subsequent *"target"* coach behavior? (Sharpe, 1997). Given that coach behavior is usually contingent upon athletes' behavior and vice versa, we assume by adopting an interactionistic approach, that a given and a target behavior is "mediated", at least partially, by athlete behavior. Therefore, by analyzing sequentially coach behavioral patterns in terms of the motivational climate they create, we may be informed of the degree of consistency these patterns have over time. Additionally, according to the aforementioned interactionistic approach, these coach behavioral patterns may even provide us with an *indirect* pattern of athlete response to coach behavior over time.

Sequential analytic techniques have been recently used to examine research questions within the sport domain. Lausic, Tenenbaum, Eccles, Jeong, and Johnson (2009) performed a sequential analysis to examine differences in discourse patterns between winning and losing teams. Calmeiro, Tenenbaum and Eccles (2010), attempted to interpret complex set of appraisals and coping processes of six male trapshooting athletes during a competitive event with the use of sequential techniques, while Calmeiro and Tenenbaum (2011) used content analysis and event sequence analysis to reveal thought processes during a golf-putting task of six golfers of diverse experience. Lausic and colleagues (2014) analysed verbal communication data with the use of sequential analysis to unfold patterns and sequences of verbal team communications and explore its relationship with non verbal communication and competitive performance during NCAA male tennis doubles matches. Finally, Zourbanos et al., (2015) investigated, with the use of sequential analytic techniques, the intricacies of verbalizations, gestures, and performance during competition. To our knowledge, the examination of motivational pattern sequencing over time has been sparse. Only one study conducted by Tzioumakis and colleagues (2012), has investigated how the patterns of the motivational climate created by youth football coaches, unfolds over time with the use of sequential analytic techniques. The results of this study revealed that the patterns of the coach created motivational environment, as coded by independent raters, are stable over time with a low degree of variability.

In summary, the results of sport-related research using sequential analysis are focused on how to model and study athletes' appraisal, coping and thought processes and not on the sequencing of the motivational patterns over time. Thus, the goals of the present research are: a) to examine the consistency of each of the seven

environmental dimensions of the instrument applying sequential analytic techniques, and b) to explore the "motivational signatures" of the grassroots football coaches that participated in the observational study of the PAPA project in Greece via sequential analysis. Our motivation to conduct such a study and examine our data from a different perspective stems mainly from research programs aiming to examine how the joint consideration of the person and the situation might help investigators to identify relative stable and discriminative patterns of human behavior (e.g., Cognitive-Affective Processing System; CAPS; Mischel & Shoda, 1995). In our case, by analyzing behavioral data with sequential analytic techniques, we aimed to investigate whether situational contexts influence human behavior and in particular, whether youth sport coaches exhibit relative stable "*behavioral signatures*" in terms of motivationally relevant behaviors as they interact with youth athletes during practice sessions or they "fluctuate" as they unfold over time. Drawing also from the work of Smith and Harwood (2002) we aim that the analysis of objective motivational data from a sequential analytic perspective might provide us with an insight of the transiency of the potency of the motivational climate dimensions over time as rated by independent trained observers. As Smith, Shoda, Cumming and Smoll (2009) have suggested, studies aiming to capture individual differences in persons' behavior require the use of reliable behavioral coding systems. Following their suggestion, we have used a newly developed observational system that reliably captures the motivational environment created by youth sport coaches (Smith et al., 2015). We further examined whether, the manipulation of situational variables (e.g., a coach education program) would result in major effects on overt coaching behaviors as coded by independent trained coders.

Thus, the aims of the present research are to examine whether grassroots football coaches exhibit stable motivational patterns over time across seven dimensions of the coaching environment and additionally, whether these patterns differ between experimental and control group coaches.

Method

Participants

Twenty-two male grassroots football coaches[3] (M_{age} = 33.8, *SD* = 7.4) of athletes aged 10 to 15 years old ($M_{team\ age}$ = 11.52, *SD* = 1.67) from Greece were recruited from the larger European-based PAPA project (Duda, 2013). Participant coaches were randomly distributed to control and experimental groups. Each group comprised of 11 coaches. Experimental group coaches attended a coach education program (i.e, *Empowering Coaching*™) as part of a theory and evidence-based intervention (i.e., The PAPA Project) aiming to created positive youth sport environments that nurture positive sport experiences for youth and sustain sport participation (Duda, 2013).The theoretical and empirical foundations of the PAPA Project as well as the key features of *Empowering Coaching*™ are described in details elsewhere (see Duda, 2013). Both control and experimental group coaches gave informed consent to be filmed during training sessions at three different time periods (T1–T3). For the present study, ethical approval was granted by the University of Thessaly, Greece ethics board. Athletes' guardians were also informed about the filming procedure and they were assured that their children were not the focus of the study therefore the camcorder would focus primarily on the coaches and

[3] The participants of the current study were drawn from a large longitudinal study, findings from which (pertaining to different research questions) are being published elsewhere.

not on the athletes. Guardians were also provided with a brief description of the study purpose and were also given the opportunity to opt their child out of the study. There was no coach attrition occurred between the three time periods.

Procedure

Video recordings were conducted three times across the course of a football season. The first recording took place within a 4 weeks span at the beginning of the football season. The second recording occurred within the second and third month of the football period, while researchers visited the clubs for a third recording approximately four to six weeks before the end of the football season. The exact time of recordings depended on the availability of coaches.

Before the filming day, a researcher visited the training site to familiarize participants with the filming procedure (van der Mars, 1989). During the day of the filming, the researcher arrived before the start time to set up video equipment and attach a wireless microphone to the coach. To minimize reactivity to the video cameras and prevent the cameras from interfering with regular sessions, cameras were placed in an unobtrusive section of the play area. Coaches were recorded during their training sessions with a digital camcorder, and audio was captured with a wireless microphone attached to the coach. After each filming, video files were analyzed for content and clarity to ensure the quality of audio and visual data was appropriate for the subsequent coding using the MMCOS.

For the present study, coding of the video footage was conducted by two raters. Rigorous rater training procedures were followed until reliability for all codings was established, exceeding the cutoff value ($k > .70$). Raters were postgraduate students in the discipline of sports psychology and had a strong

knowledge of the conceptual and theoretical background of the study, as well as experience in teaching or coaching football.

Since the duration of training sessions varied significantly, we adopted an approach for analyzing the footage that differed from methodologies utilized in previous systematic observations (e.g., van der Mars, 1989). Our approach involved dividing each session duration to four equal quarters to include all recorded footage during the coding process, as even very brief coach-athlete interactions occurring in-between time blocks may have significant impact on the motivational atmosphere. Raters coded the footage according to a marking scheme that took into account the style and range of strategies employed by the coaches, as well as the impact (e.g., intensity, individual or group effects) of strategies on the climate. At the end of each quarter, raters coded the potency of each of the seven environmental dimensions on a scale of 0 (*very low potency*) to 3 (*very strong potency*) (Smith et al., 2015).

Sequential analysis was conducted with the Discussion Analysis Tool (DAT) software (Jeong, 2003). DAT calculates the frequency and the probability of transitions between *pair* of events within a certain lag. In contrast to classical parametric statistics, a basic assumption in sequential analysis of observational data is dependence in the observations. Therefore, in order to detect dependence in the observations we compare observed frequencies with those expected if the observations were independent. Therefore, data dependence is not considered as "problematic" but rather as a prerequisite of sequential analytic studies (Bakeman & Gottman, 1997).

The preset level of statistical significance of patterns is expressed by transition probability in a 0 to 1 scale ($p < .05$, $z < 1.96$; $p < .01$, $z < 2.32$). Transitional probability, which is a type of conditional probability, is distinguished

from other forms of conditional probabilities as the target and the "given" event occur at different times (Bakeman & Gottman, 1997). In our case, transition probability is the number of transitions for a particular combination of "*given*" event and "*target*" event divided by the total number of transitions from that "*given*" event (Grieco et al., 2007). Furthermore, *z* scores (adjusted residuals) were calculated according to Bakeman et al.'s (1997) suggestions, to examine which transitional probability scores deviated significantly from their expected values. For the needs of the present study, both data sets (i.e., experimental and control group of coaches) were recorded separately and DAT software produced separate transitional probability and *z* score matrices for each group. In addition, DAT allows researchers to enhance the clarity of result presentation by converting the observed transitional probabilities between raters' codings into a *transitional state diagram*. A transitional state diagram is a visual representation that supports the illustration and analysis of patterns of coding sequences. Each coding category (0-3 scale) is represented by a node, which is linked to another node by directional arrows. These arrows represent the relative frequency of each transition between raters' codings, and the arrow thickness denotes the magnitude of the transitional probabilities significance between coding categories (Jeong, 2004).

Results

Descriptive statistics provide an overview of the means and standard deviations of the motivational climate exhibited by the participating coaches in each of the seven environmental dimensions across three measurement time points (Table 1). Descriptive statistics results reveal that coaches' autonomy support codings were very low to moderate in potency in both groups across the football season. Conversely, coders rated the controlling dimension high in potency as across all

quarters and measurement points the controlling dimension scores were approaching the theoretical mean of the scale (i.e., 1.5). In addition, participant coaches created a highly task-involving climate as raters' codings revealed an environment which was highly potent in term of task involvement. Conversely, the coach-initiated environment potency was rated very low in terms of ego-involvement as most codings were between 0 and 1. The scores of relatedness supporting dimension were significantly more potent than all previous dimensions as it surpassed the theoretical mean of the scale although slightly. On the other hand, the relatedness thwarting behaviors were considerably low in potency. However, all participant coaches created an environment that was characterized as highly structured, as the relevant dimension had the highest potency of all seven motivational dimensions.

Paired samples t-tests were conducted to assess whether there were any statistically significant changes in the environmental dimensions from the pretest to posttest for both groups (experimental and control) of coaches. The results indicate there was a significant increase in mean scores of the environmental dimensions for the experimental arm from the pretest (M=.72, SD=.44) to posttest (M=1.35, SD=.65); $t(6)$=2.918, p=.027, 95% CI [.102, 1.16]. No significant differences were found in mean scores of the environmental dimensions from the pretest (M=.99, SD=.35) to posttest (M=1.22, SD=.51) for the control arm; $t(6)$= -1.642, p = .152, 95% CI [.114, -1.642].

Further, we examined the patterns of the objective motivational climate as coded by independent trained coders in a 0-3 scale in all training sessions split in quarters. The transitions of codings from one quarter to the following produced a graphic representation on how the motivational climate "fluctuates" during training sessions. Moreover, we examined whether these codings and motivational climate

"fluctuations" or coach "*motivational signatures*" differ between experimental and control group coaches at baseline (pre-intervention) and at T2 and T3 (post-intervention) measurements.

For the "autonomy support" dimension (Figure 1), data analysis via DAT revealed that the experimental coaches produced a pattern with significantly higher frequency of occurrence than expected for the 0→0 (i.e., autonomy support was rated as very low in potency in a *given* quarter → autonomy support was also rated as very low in potency in the *target* quarter) coding sequence at baseline (transitional probability: .50; $z = 1.96$, $p < .05$), while for the post intervention measurements, two patterns with significantly higher frequency of occurrence than expected were observed for the 0→0(.45; $z = 1.96$, $p < .05$) and for the 1→1 (.50; $z = 1.96$, $p < .05$) coding sequences. For the control group coaches, data analysis for the "Autonomy support" dimension at baseline revealed a pattern with significantly higher frequency of occurrence than expected for the 1→1 (.53; $z = 1.96$, $p < .05$) coding sequence, and for the T2 and T3 measurements, we observed three patterns with significantly higher frequency of occurrence than expected: 0→0 sequence (.82; $z = 2.32$, $p < .01$), 1→2 sequence (.35; $z = 2.32$, $p < .01$) and 2→1 sequence (.60; $z = 2.32$, $p < .01$).

For the "Controlling" dimension (Figure 2), we observed for the experimental coaches at the pre-intervention measurement a significant pattern for the 1→1 (.58; $z = 1.96$, $p < .05$) sequence, and for the post-intervention measurements analysis revealed also an even more significant pattern for the 1→1 (.76; $z = 1.96$, $p < .05$) sequence. For the control group coaches at baseline, we observed a significant pattern for the 1→1 (.75; $z = 1.96$, $p < .05$) sequence and for T2 and T3 measurements analysis revealed two patterns with significantly higher frequency of

occurrence than expected, for the 1→1 (.64; $z = 1.96$, $p < .05$) coding sequence and more significant pattern for the 2→2 (.57; $z = 2.32$, $p < .01$) sequence.

Experimental coaches at baseline for the "Task-Involving" dimension (Figure 3) exhibited a very significant pattern for the 2→2 (.92; $z = 2.32$, $p < .01$) sequence and for the post-intervention measurements an equally significant pattern for the 2→2 (.89; $z = 2.32$, $p < .01$) sequence. For the aforementioned dimension, control group coaches at baseline displayed a significant pattern for the 1→1 (.56; $z = 1.96$, $p < .05$) and for the 2→2 (.85; $z = 2.32$, $p < .01$) sequences. In the same vein, for the T2 and T3 measurements we observed also significant patterns for the 1→1 (.31; $z = 1.96$, $p < .05$) and for the 2→2 (.86; $z = 2.32$, $p < .01$) sequences.

For the "Ego-Involving" dimension (Figure 4), we found that the experimental group coaches at pre-intervention measurement produced a significant pattern than expected for the 2→2 (.37; $z = 2.91$, $p < .01$) sequence and for the post-intervention measurements they produced a significant pattern for the 1→1 (.55; $z = 2.12$, $p < .05$) sequence. In contrast, the control group coaches exhibited at baseline, a significant pattern for the 1→2 (.27; $z = 1.98$, $p < .05$) sequence and for the T2 and T3 measurements significant patterns for the 1→2 (.18; $z = 1.96$, $p < .05$) and for the 2→2 (.23; $z = 2.41$, $p < .01$) sequences.

Two patterns with significantly higher frequency of occurrence than expected were found for the 1→2 (.77; $z = 2.15$, $p < .05$) and for the 2→2 (.61; $z = 2.53$, $p < .01$) sequences for the "Relatedness support" dimension (Figure 5) for the experimental coaches at baseline, and for the post-intervention measurements also two significant patterns were observed for the 1→2 (.36; $z = 2.18$, $p < .05$) and for the 2→2 (.89; $z = 3.19$, $p < .01$). For the control group coaches at baseline, two significant patterns were observed, for the 1→1 (.50; $z = 2.01$, $p < .05$) and for the

2→2 (.77; $z = 2.73$, $p < .01$) sequences, while for the T2 and T3 measurements also two significant patterns emerged (1→1; .45; $z = 2.67$, $p < .01$) and (2→2; .71; $z = 2.64$, $p < .01$).

Subsequently, for the "Relatedness thwarting" dimension (Figure 6), for the experimental group coaches at baseline, one significant pattern emerged (2→2; .44; $z = 1.98$, $p < .05$) while from the post-intervention measurements two significant patterns emerged, for the 1→1 (.57; $z = 3.43$, $p < .01$) and for the 2→2 (.47; $z = 3.19$, $p < .01$) sequences. Analyses for the control group coaches at baseline revealed one significant pattern for the 1→1 (.61; $z = 1.99$, $p < .05$) sequence, and for T2 and T3 measurements analysis revealed two significant patterns, for the 1→1 (.52; $z = 2.57$, $p < .01$) and for the 2→2 (.50; $z = 3.77$, $p < .01$) sequences.

Finally, for the "Structure" environmental dimension (Figure 7), we observed two significant patterns, for the 1→2 (.80; $z = 2.03$, $p < .05$) and for the 2→2 (.89; $z = 3.43$, $p < .01$) coding sequences for the experimental group coaches at baseline. At post-intervention measurements we observed only one significant pattern for the 2→2 (.95; $z = 2.75$, $p < .01$) coding sequence. For the control group coaches, analysis revealed two significant patterns for the baseline measurement (1→2; .60; $z = 2.12$, $p < .05$) and (2→2; .86; $z = 2.30$, $p < .05$) while for the T2 and T3 measurements also two significant patterns emerged, for the 1→1 (.25; $z = 1.96$, $p < .05$) and for the 2→2 (.92; $z = 2.03$, $p < .05$) coding sequences.

Discussion

The aims of the present study were firstly, to uncover the patterns of the motivational climate initiated by youth football coaches via sequential analytic techniques and secondly, to detect differences at the motivational patterns between

coaches that participated in the *Empowering Coaching*™ workshops and those who did not.

Results revealed that for the "Autonomy support" dimension, both group of coaches had a relative stable temporal motivational pattern as they both had significant coding sequences of higher frequency of occurrence than expected. Experimental coaches exhibited a stable pattern of very low autonomy provision to their athletes during the pre-intervention period, while their motivational pattern was slightly modified as along the very low autonomy provision pattern observed, an also significant pattern towards a greater degree of autonomy support towards their athletes was observed (e.g., 0→1). On the contrary, for the control group coaches a significant pattern for low provision of autonomy support was observed during baseline, however, during T2 and T3 measurements, a decrease of the autonomy support they provided was observed as a 0→0 and a 2→1 patterns were observed. Thus, experimental group coaches had relative stable motivational patterns for each measurement period separately, but at post-intervention measurement, they modified their behavior to being more autonomy supportive. In contrast, control group coaches had an also relative stable motivational pattern but with a trend to decrease the autonomy they provided to their players. For the "Controlling" dimension, experimental coaches, had a very stable motivational pattern as their behavior was rated as low in both baseline and post-intervention measurements. Control group coaches presented a less stable pattern as a trend in increasing their controlling behaviors was observed. Experimental group coaches for the task-involving dimension presented a very stable motivational pattern in both pre and post-intervention ratings in creating a task-involving climate. Control group coaches despite the fact that the motivational patterns the presented were identical in both

measurements, they were less stable and less task-involving. For the “Ego-involving” dimension, experimental group coaches presented a stable motivational pattern for each measurement period separately, but the pattern for the post-intervention period was considerably less ego-involving. Control group coaches, presented less stable motivational patterns compared to experimental coaches, but they showed a considerable trend towards creating a more ego-involving climate. Both group of coaches showed a very stable “Relatedness supportive” motivational pattern as identical motivational patterns towards creating a relatedness supportive climate were observed for both groups and measurement periods. For the “Relatedness thwarting” dimension, experimental group coaches showed stable patterns for each measurement period separately, but we observed a considerable trend towards minimizing a relatedness thwarting environment. Control group coaches presented a stable pattern at baseline but an obviously less stable motivational pattern at T2 and T3 measurements, but with a considerable trend towards creating a more relatedness thwarting coaching environment. Finally, for the “Structure” dimension, both groups of coaches had identical, although relatively stable motivational patterns, for the baseline measurement. Experimental group coaches, in the post-intervention measurement showed a considerable more stable motivational pattern and a clear trend towards creating a more structured coaching environment. On the other hand, control group coaches, presented a less stable pattern, but also with a considerable trend towards a highly structure climate.

In addition, the observational instrument used proved to be sensitive enough to capture changes in motivational climate in terms of observed coach behavior during a training session. MMCOS as a qualitative measure of the objective motivational climate in youth sport settings detects with high degree of accuracy and

sensitivity the changes of the coach-initiated climate during a training session. Autonomy supportive coaches that acknowledge athletes' perspective, provide choices and rationale for the activities, encourage athletes' initiative taking, and show care and concern for them lead to more self determined motivation by psychological need satisfaction whereas coaches' controlling rewards, overt personal control over their athletes, and lack of care may lead to need thwarting and ultimately undermine athletes' self determined motivation and optimal functioning when engaged in sport activities (Mageau & Vallerand, 2003).

Presumably, a hypothesized contingency between a set of behaviors that precedes and the set of behaviors that follows might be present in such situations. One might suggest that coaches have a predetermined set of behaviors that relate with the motivational climate they create in their teams and from which do not deviate. Despite the fact that a youth sport environment is considered a dynamic setting due to the presence and behaviors of young athletes and coaches and the coach-athlete interactions, maybe coaches are not very sensitive in recognizing situations in which they should be more versatile in order to meet the needs of the young athletes in terms of creating adaptive motivational environments. However, the observed relative stability and consistency across coaches' motivational patterns might suggest that athletes' behavioral responses to coach behaviors are *indirectly* indicative of how they perceive the social environment that their coaches create. For instance, for the control group coaches' athletes, the autonomy supportive practices emphasized by their coaches at baseline measurement, might not have been perceived as effective or preferred by young athletes. In turn, their perceptions might be reflected in their behavioral responses and coaches interpret athlete responses and attempt to modify and regulate their practices. Coaches' effort to modify their

behavior in order to meet athletes' needs is well reflected in T2 and T3 transitional diagram (Figure 1) in which, unlike other instances, three significant patterns are observed, suggesting that coaches in their attempt to create a sport environment as effective as possible, adopted diverse approaches in terms of autonomy supportive strategies.

On the other hand, we observed that some motivational patterns were modified in expected ways across groups and situations. For instance, autonomy support patterns of the experimental group coaches seem to have been modified compared to baseline measurements, to being more autonomy supportive. This is highly probable to be an intervention effect, but as seen from athletes' perspective, this might be an indirect reflection of their perceptions of an effective and desirable coach-created autonomy supportive environment, which in turn is "translated" by their coaches to increased efforts for an even more highly autonomy supportive environment.

Furthermore, as results have showed, the T2 and T3 "ego-involving" patterns of the control group coaches, as rated by independent observers, seem to have shifted from a low to a moderate potency. Thus, graphic illustrations of the motivational climate in terms of transitional state diagrams generated by sequential analytic techniques may provide researchers with a means of assessing variation of the motivational climate over time, supplementary to more sophisticated statistical methods.

Our study revealed that coaches exhibit relative stable motivational signatures over time. For instance, significant variations in motivational patterns like 0→2 or 0→3 coding sequences were not observed.

The results of the present study are in accordance with the results of Tzioumakis and coworkers (submitted) that examined the impact of the intervention program on the experimental group coaches via multilevel modeling.

Given the nature of the current study, there are a number of limitations that further research should address. First, although we have strong indications that grassroots football coaches exhibit stable motivational signatures in terms of the motivational practices they emphasize, the results should be viewed with caution as numerous contextual and situational factors affecting these patterns may well co-exist. Further, the relatively small sample of coaches that have participated in the current study prevent us from generalizing our observations to other samples and situations. Future studies, with larger samples, of diverse ages and levels of experience will provide us with an insight of the usefulness of the present technique as method of assessing motivational environments. Finally, although authors strongly urge researchers to adopt methodological approaches such ours, we also suggest that such methodologies would nicely complement other methodological approaches (e.g., self-reports, interviews) in an attempt to holistically explore the coach-initiated motivational climates in youth sport settings.

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Table 1.

Pre- and Post-Intervention Means and Standard Deviations of the Environmental Dimensions of the Objective Motivational Climate

	Experimental		Control	
	pre	post	pre	post
AS	.92 (.59)	1.13 (.31)	.84 (.46)	.85(.51)
CO	1.31 (.43)	1.17 (.41)	1.23 (.30)	1.31 (.34)
TI	1.86 (.24)	1.81 (.24)	1.70 (.39)	1.61 (.39)
EI	.68 (.47)	.52 (.51)	.52 (.50)	.71 (.49)
RS	1.63 (.29)	1.67 (.29)	1.45 (.44)	1.37 (.45)
RT	.73 (.48)	.64 (.63)	.63 (.43)	.75 (.57)
STR	1.86 (.27)	1.88 (.18)	1.76 (.25)	1.84 (.15)

Note: AS: Autonomy Support; CO: Controlling; TI: Task-involving; EI: Ego-involving; RS: Relatedness supportive; RT: Relatedness thwarting; STR: Structure. Numbers refer to means; numbers in parentheses refer to standard deviations. Numbers are derived from a 0-3 rating scale.

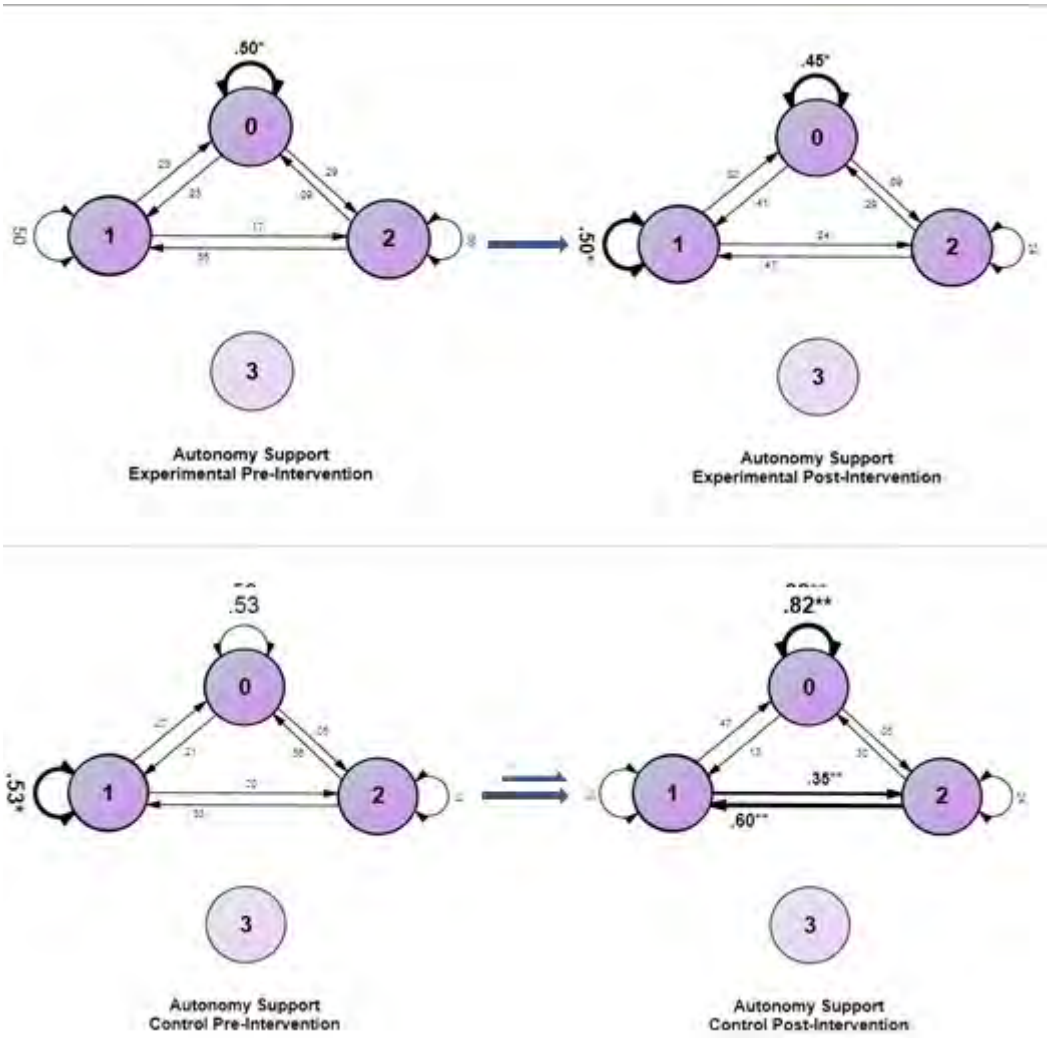

Figure 1. Pre and post-intervention patterns of raters' codings of the objective motivational climate for the experimental and control group coaches of the Autonomy supportive dimension and transitional probability rates for 264 quarters in 88 training sessions.

Note: The circles represent the potency scale (0 =*very low potency*, 3=*very strong potency*) and the arrows thickness depict the significance of the probability rates.

* $p<.05$, $z<1.96$; ** $p<.01$, $z<2.32$.

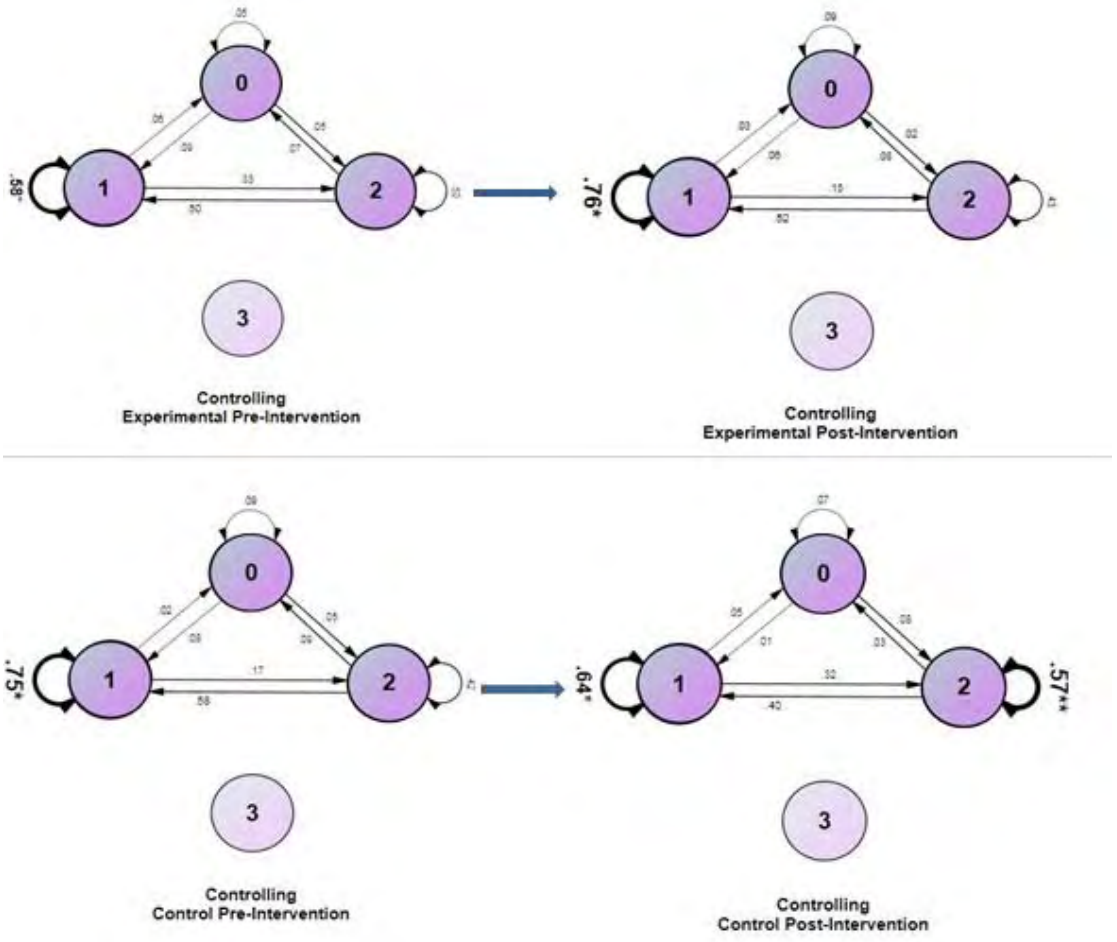

Figure 2. Pre and post-intervention patterns of raters' codings of the objective motivational climate for the experimental and control group coaches of the Controlling dimension and transitional probability rates for 264 quarters in 88 training sessions.

Note: The circles represent the potency scale (0 =*very low potency*, 3=*very strong potency*) and the arrows thickness depict the significance of the probability rates.

* $p<.05$, $z<1.96$; ** $p<.01$, $z<2.32$.

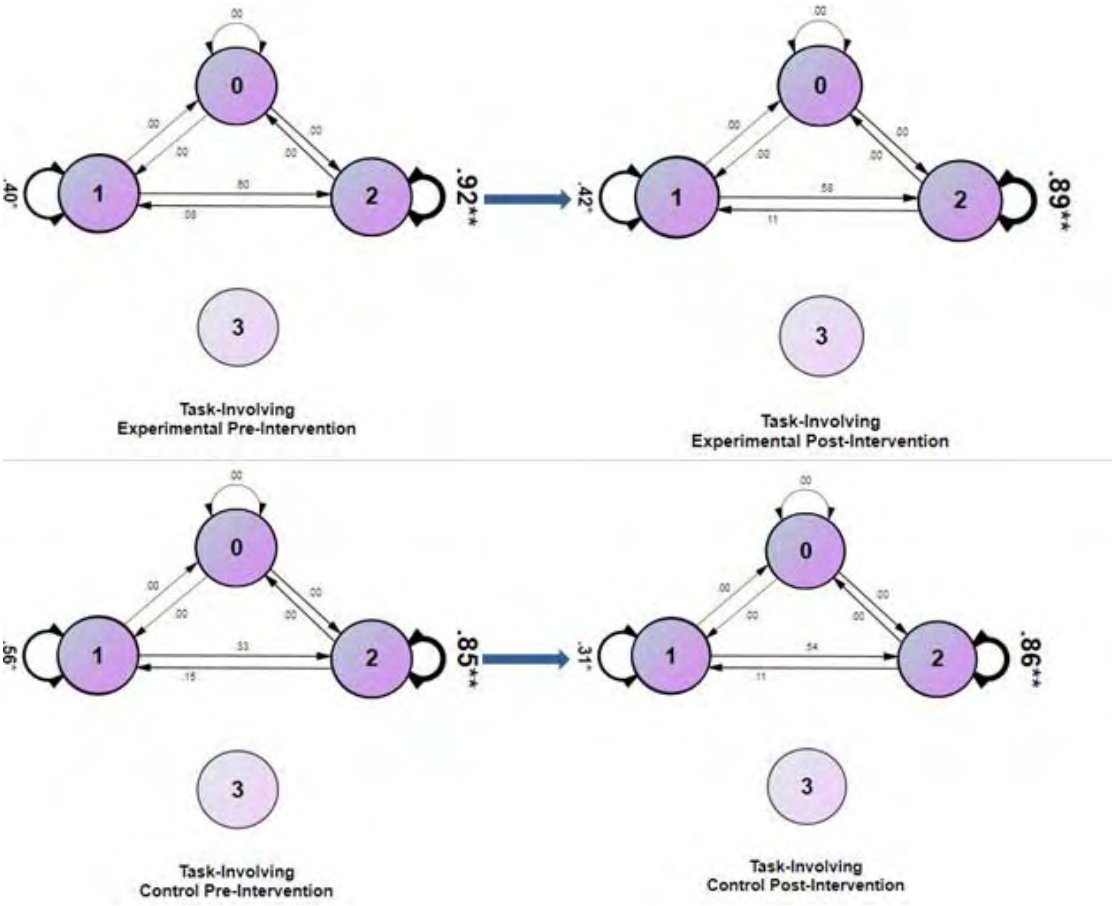

Figure 3. Pre and post-intervention patterns of raters' codings of the objective motivational climate for the experimental and control group coaches of the Task-involving dimension and transitional probability rates for 264 quarters in 88 training sessions.

Note: The circles represent the potency scale (0 =*very low potency*, 3=*very strong potency*) and the arrows thickness depict the significance of the probability rates.

* $p<.05$, $z<1.96$; ** $p<.01$, $z<2.32$.

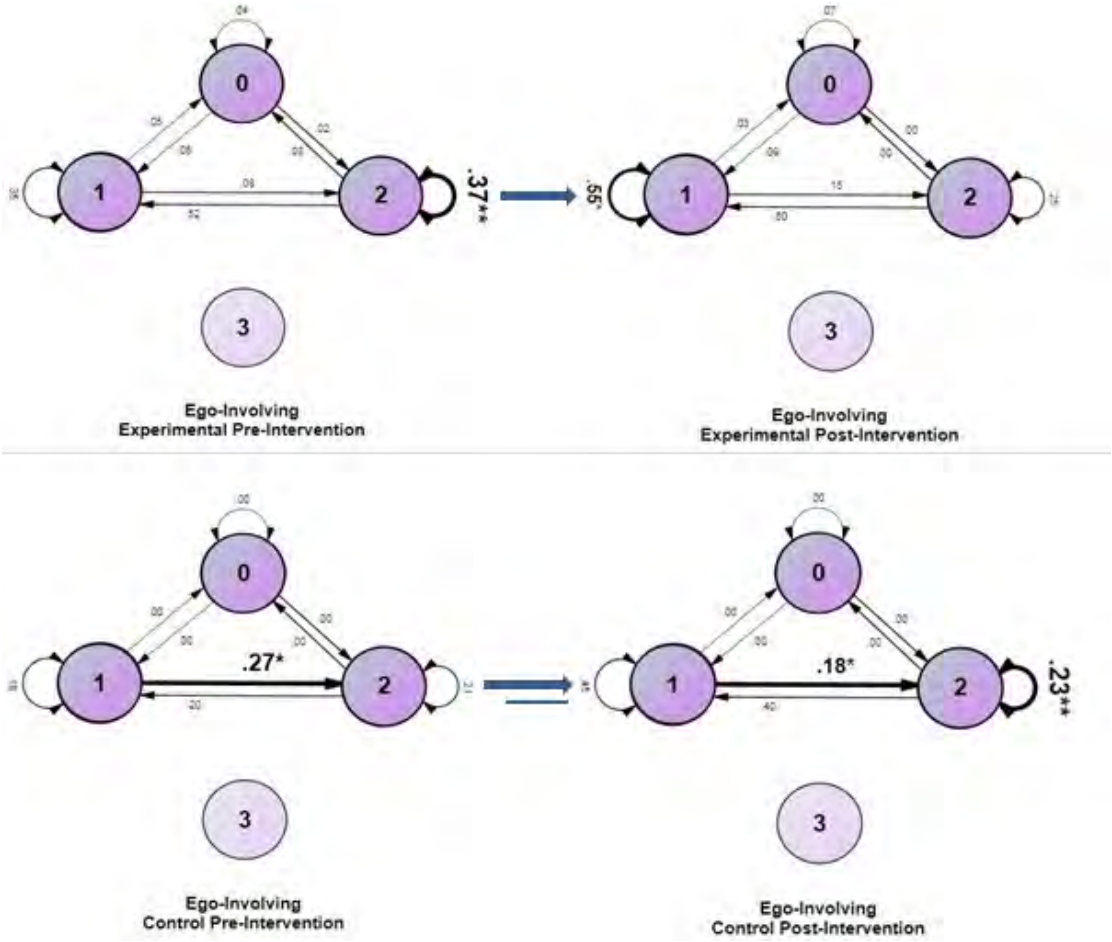

Figure 4. Pre and post-intervention patterns of raters' codings of the objective motivational climate for the experimental and control group coaches of the Ego-involving dimension and transitional probability rates for 264 quarters in 88 training sessions.

Note: The circles represent the potency scale (0 =*very low potency*, 3=*very strong potency*) and the arrows thickness depict the significance of the probability rates.

* $p<.05$, $z<1.96$; ** $p<.01$, $z<2.32$.

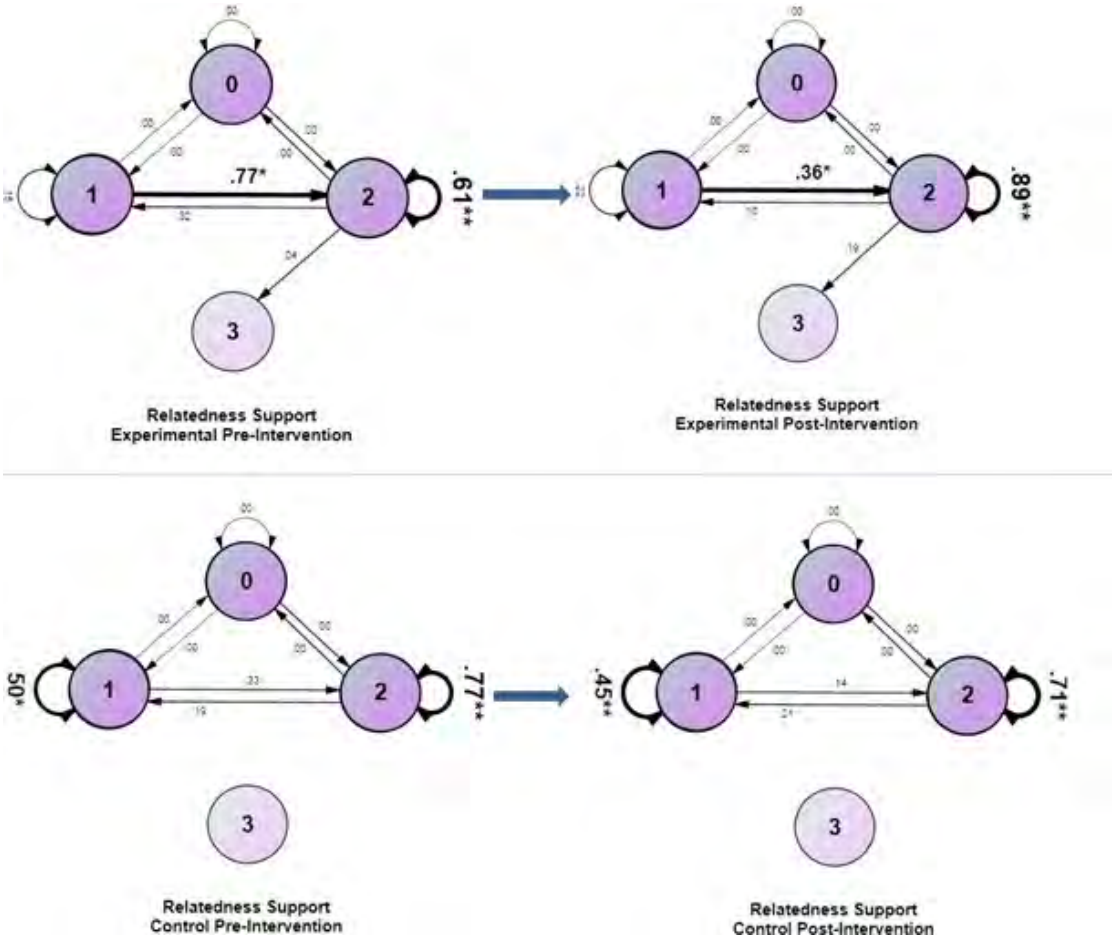

Figure 5. *Pre and post-intervention patterns of raters' codings of the objective motivational climate for the experimental and control group coaches of the Relatedness supportive dimension and transitional probability rates for 264 quarters in 88 training sessions.*

Note: The circles represent the potency scale (0 =*very low potency*, 3=*very strong potency*) and the arrows thickness depict the significance of the probability rates.

* $p<.05$, $z<1.96$; ** $p<.01$, $z<2.32$.

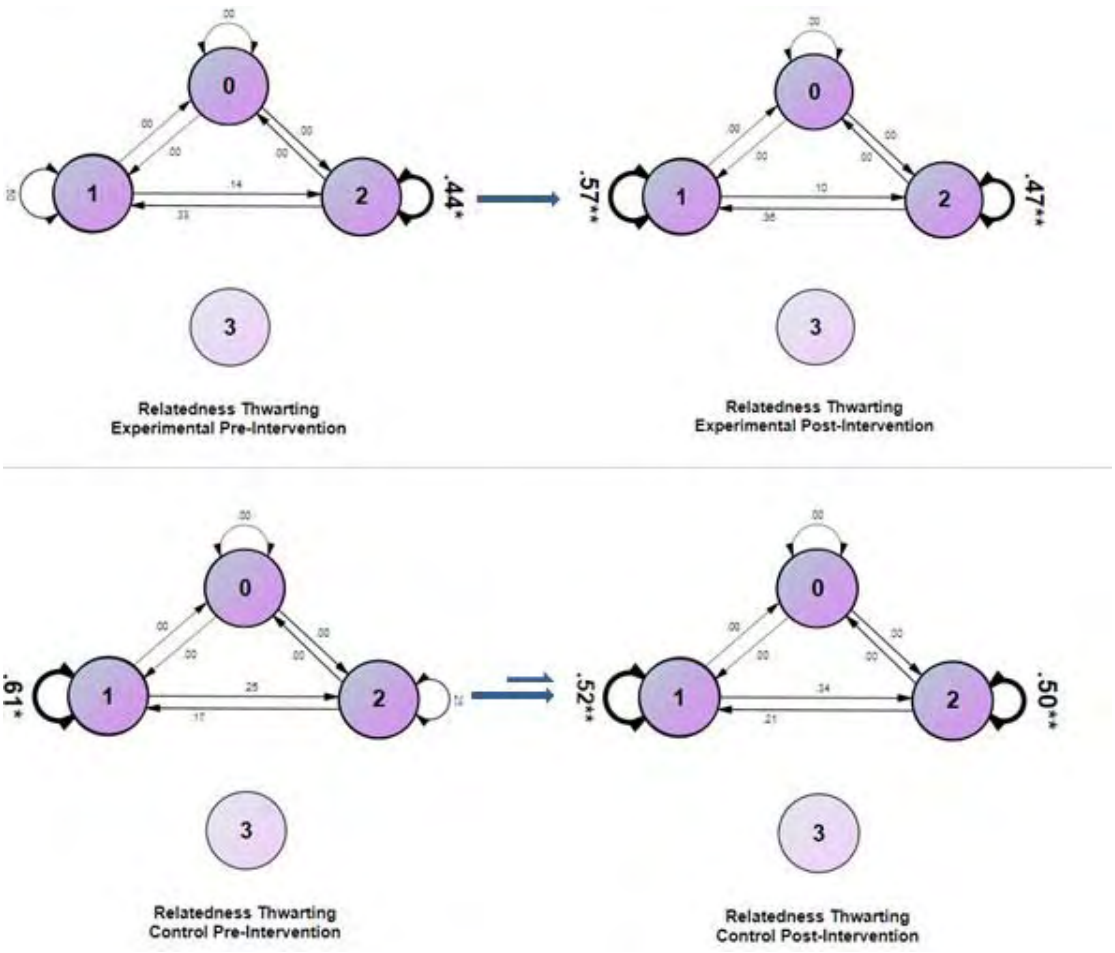

Figure 6. Pre and post-intervention patterns of raters' codings of the objective motivational climate for the experimental and control group coaches of the Relatedness thwarting dimension and transitional probability rates for 264 quarters in 88 training sessions.

Note: The circles represent the potency scale (0 =*very low potency*, 3=*very strong potency*) and the arrows thickness depict the significance of the probability rates.

* $p<.05$, $z<1.96$; ** $p<.01$, $z<2.32$.

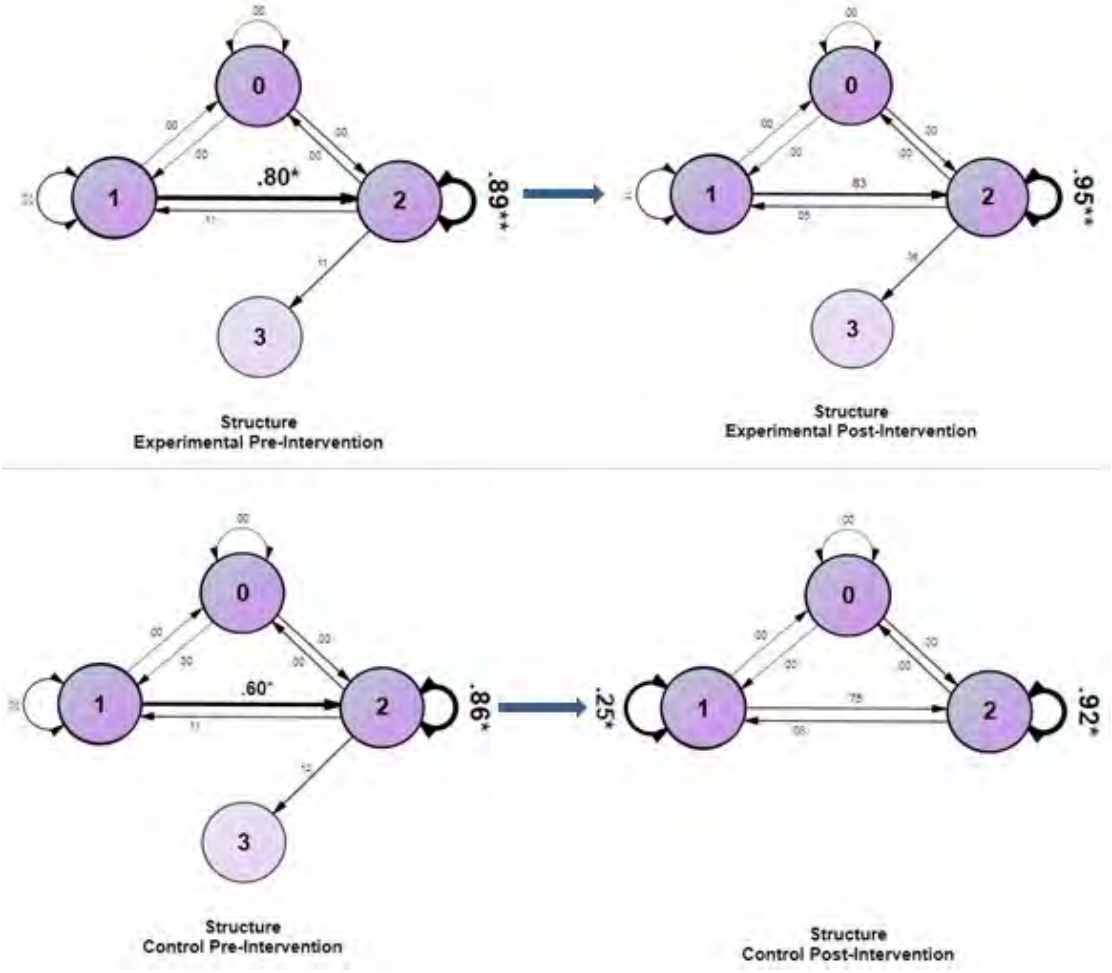

Figure 7. Pre and post-intervention patterns of raters' codings of the objective motivational climate for the experimental and control group coaches of the Structure dimension and transitional probability rates for 264 quarters in 88 training sessions.

Note: The circles represent the potency scale (0 =*very low potency*, 3=*very strong potency*) and the arrows thickness depict the significance of the probability rates.

* $p<.05$, $z<1.96$; ** $p<.01$, $z<2.32$.

Chapter IV

Examination of the Effects of a Coach Education Program on Coaches' Motivational Regulations, Satisfaction, Commitment, and Subjective Well-being Indices.

(Manuscript submitted for publication the under the following author listing: Tzioumakis, Y., Karamitrou, A., Comoutos, N., Krommidas, C., Keramidas, P., Digelidis, N., Duda, J.L., & Papaioannou, A.)

Abstract

Grounded in Self-Determination Theory (SDT), the present study examined the longitudinal effects of a theoretically grounded coach education program (i.e., *Empowering Coaching*™) aimed at optimizing the experiences and engagement of young athletes taking part in sport, in coaches' motivational regulations, satisfaction, commitment, and well-being indices. Using parallel multiple mediation analysis, we investigated whether coaches' autonomous and controlled motivation in post-intervention mediated the relationships between the intervention arm coaches and their subjective well-being in post-intervention. Coaches' controlled motivation emerged as the strongest (negative) mediator in the relationship between intervention coaches and their satisfaction and commitment to coaching as well as their positive affect. Consistent with previous studies, it is suggested that a reciprocal direction of influence between coaches and athletes exists, in term of team functioning and outcomes. Results are discussed in terms of development, implementation, and dissemination of theory and evidence-based coach education programs.

Keywords: coach, motivational regulations, well-being, intervention, longitudinal

Examination of the effects of a coach education program on coaches' motivational regulations, satisfaction, commitment, and subjective well-being indices.

Sport psychology literature has consistently shown that coaches play the most significant role in athletes' skill acquisition, performance but also in their psychosocial development and well-being. Although sport-related research has mainly focused on the coach-athlete dyad and the quality of sport experiences of youth athletes have due to their involvement in sport activities, contrastingly scarce research has examined coaches' experiences and the impact that coaching has on their motivation and well-being. More importantly, sport researchers have acknowledged that coaches' experiences and feelings should be at the focus as they shape the sport environment and in turn have an impact on the quality of the sporting experiences of their athletes (Duda & Balaguer, 2007).

Self-determination theory (SDT; Deci & Ryan, 1985; 2012) has served as a dominant framework for the examination of coach-athlete relationships but also for the investigation of coaches' psychological processes and antecedents.

Although the primary differentiation within SDT was between intrinsic and extrinsic motivation, the types of regulation have shifted the focus to a distinction between *autonomous* and *controlled* motivation. The self-regulation subtypes of *introjected* (e.g., motivation contingent to internal rewards and punitive consequences) and *external* (e.g., motivation contingent to external rewards or avoidance of punitive consequences) regulation are types of controlled motivation. *Identified* regulation (e.g., engage in an activity with greater sense of autonomy without feeling controlled or pressured to engage), *integrated* regulation (e.g., motivation emanating from a sense that an activity has an inherent value or it

contributes to a goal personally meaningful) and *intrinsic* (e.g., the person engages in an activity with a sense of personal choice and volition, accompanied by an inherent interest in the activity itself), regulation form autonomous (or more internalized) motivation. SDT research has shown individuals can be strongly motivated by either autonomous or controlled forms of motivation, but these two forms of motivations produce distinct outcomes. In line with SDT, sport and education literature consistently reports positive associations between autonomous motivation and affective, behavioral, and cognitive outcomes (Ryan, 2012). For example, it has been suggested that instructors (teachers and physical educators) who were highly autonomous (as opposed to controlled) motivated presented higher intentions to participate in training and to implement instructional innovations (Gorozidis & Papaioannou, 2014), while autonomous motivation found to mediate the relationship between their mastery goal orientation and intentions to implement innovative instruction (Gorozidis & Papaioannou, 2016).

SDT as a macrotheory of motivation and personal development attempts to link human motivation to other indices of psychological health and well-being (Deci & Ryan, 2008). Psychological well-being within SDT has been described as not only a condition of positive affect but also a eudemonic state (Ryan & Deci, 2001). Also, a key concept of well-being, subjective vitality has been developed and examined within the SDT framework (Ryan & Fredericks, 1997). *Subjective vitality* is a salient and significant indicator of health, motivation, and personal physical as well as psychological well-being (Ryan & Deci, 2001; 2008). Ryan and Frederick (1997) defined subjective vitality as “one's conscious experience of possessing energy and aliveness” (p.530). Despite its important role in every day healthy functioning, SDT research paid relatively limited attention. Nix, Ryan, Manly, and Deci (1999) found a

positive link between autonomous motivation and vitality. Also, Ryan and Frederick (1997) reported that patients who felt more autonomous in their efforts to seek treatment experienced greater levels of subjective vitality.

In the same vein, researchers further investigated the effects of autonomous motivation in other well-being indices. For instance, Millette and Gagné (2008) in a study examining volunteer motivation, reported that autonomous motivation mediated job characteristics and job satisfaction, while in a sample of school principles Fernet, Austin and Vallerand (2012) found a direct link between autonomous motivation and job commitment. Finally, positive affect was found to correlate positively with identified regulation in a set of school-related activities (Ryan & Connell, 1989).

Coaches' motivation and well-being are likely to be affected by reforms and educational innovations aiming to enhance the quality of their coaching and its impact on athletes' motivation and well-being. A large-scale, theory-based intervention that took place in Europe is the PAPA program, aiming to improve coaches' empowering behaviors and/or decrease disempowering behaviors. If the focus of such coach education programs is to sustain change in coaching styles and practices, these coach education programs should also increase coaches' satisfaction, commitment, and autonomous motivation, and in turn, this might also result in coaches' well-being enhancement.

Therefore, the aim of this study was to examine the effects of a coach education program on coaches' motivational regulations, satisfaction, commitment, and subjective well-being indices. To the best of our knowledge, this is the first study that investigates the effects of a theory and evidence-based coach education program on coaches' motivational regulations and its subsequent effect on their well-being.

The Present Study

In the present study, we provided coaches assigned in the experimental group with a theory and evidence-based coach education program (i.e., *Empowering Coaching*™, *for more details see Method section*) aiming to enable them become more empowering and/or less disempowering in their coaching practices (Duda, 2013; Duda et al., 2013). The focus in our study was not the effect of the coach education program that would have on youth athletes, but rather, whether the *Empowering Coaching*™ program would have an effect on coaches' motivational regulations and in turn, whether coaches will report greater levels of satisfaction from coaching, commitment to coaching, and well-being (subjective vitality, positive affect,) compared to baseline measurement. We hypothesized that if the *Empowering Coaching*™ program can enable coaches to modify the climate they create in their teams to be more empowering and/or less disempowering, then coaches could also benefit themselves as Pelletier, Seguine-Levesque, and Legault (2002) have suggested, because of the reciprocal direction of influence between coaches and athletes, in terms of team functioning and outcomes. In other words, when coaches create more empowering and/or less disempowering climates in their teams, we hypothesize that youth athletes experience quality engagement in sport and positive sport experiences (i.e., enjoyment, global self-worth) and/or less maladaptive outcomes (i.e., burnout, physical ill-being), and this in turn, may increase their coaches' self-determined motivation, satisfaction, commitment, and well-being. This reciprocal influence has been empirically examined and proved in cross-sectional but not in longitudinal studies (e.g., Cheon, Reeve, Yu, & Jang, 2014). Also, studies from the coaching and school contexts have shown that enhanced levels of need support, autonomous motivation, and well-being are reciprocal between coach

(teacher) and athlete (student) (Roth, Assor, Kaplan & Kanat-Maymon, 2007; Stebbings, Taylor, Spray & Ntoumanis, 2012).

Method

Data were collected as part of a European-based intervention program aiming at improving the coach-initiated motivational climate (The PAPA Project). The culturally adapted coach education program was designed to assist youth football coaches to raise their awareness of the behaviors they exhibit in the field, their delivery style and provide coaches with a theory and evidence-based roadmap to becoming more empowering. An empowering coach creates a motivational atmosphere, which helps promote self-determined motivation within his/her athletes. Since a detailed presentation of the longitudinal intervention program is beyond the scope of the present article, the reader interested in the development and delivery of the *Empowering Coaching*™ program may refer to relevant publications (i.e., Duda, 2013).

Participants

Participants consisted of 108 male youth football coaches aged between 28 and 68 years (M=42.31, SD=8.64) that had an average coaching experience of 10.7 years (SD=7.3) and volunteered to participate in a coach education program aiming at Coaches were recruited within the larger European-based PAPA project from youth football clubs located throughout Greece. Prior to coach recruitment, ethical approval was obtained from a University Ethics board in Greece and coaches were provided with written and verbal information regarding the scopes of the study. Coaches then were randomly assigned to either experimental (n = 57) or control (n =51) group. Coach attrition occurred between the two time periods (n = 50). Attrition was due to various reasons (e.g., team change, club change, and profession change).

In T2 data (post-intervention) were obtained from 58 coaches (experimental, *n* = 38; control, *n* = 20). Participants were also informed of their right to withdraw from the study at any time for any reason. Baseline data were collected during the first four weeks of the season for both groups of coaches before intervention coaches attended an approximately six hours, classroom-based version of the *Empowering Coaching*™ workshop. The data collection occurred within a time window of six weeks for both groups of coaches, immediately after intervention coaches attended the intervention workshops. The exact time of data collection depended on the availability of coaches. Coaches in the control arm followed the same data collection schedule but did not receive a workshop.

Measures

Work motivation Inventory –Greek version. A Greek version of the WMI (Blais, Briere, Lachance, Riddle & Vallerand, 1993) adapted for the coaching context was administered to the participant coaches. Under the general stem "I coach this football team…" intrinsic motivation was assessed using 12 items (e.g., Because of the pleasurable experience of learning new things at this job"), identified regulation was assessed using 4 items (e.g., "Because it is the job that I have chosen and that I prefer in order to attain a certain standard of living"), introjected regulation was assessed using 4 items (e.g., "Because my work is my life, and I don't want to fail") and external regulation was assessed using 6 items (e.g., "For the paycheck"). Coaches were asked to reflect on their recent coaching experiences the past 3-4 weeks and rate the degree to which they agree with the statements on a 5-point scale ranging from 0 (*never*) to 4 (*very often*). Christodoulidis and colleagues (2004; under review) have provided support for the validity of the translated scale in a sample with physical educators.

Also, for the examination of the factorial validity of the scale, a confirmatory factor analysis was conducted which resulted in an acceptable factor structure: χ^2 = 420.16, df = 230, χ^2 /df = 1.87, TLI = .93, CFI = .95, SRMR = .055, RMSEA = .057 (90% CI= .048-.065). In addition, the scale showed good internal consistency (see Table 2).

Subjective Well-Being

Subjective Vitality. A valid 5-item Greek version (Papaioannou et al., 2013) of the Subjective Vitality Scale (Frederick & Ryan, 1997) was used to assess coaches' feelings of energy and vitality during the last month (e.g.," I nearly always felt alert and awake"), in a 7-point Likert-type scale, ranging from 1 (*not at all true*) to 7 (*very true*). The internal consistency of the scale was satisfactory (see Table 2).

Satisfaction. A valid Greek version (e.g., Papaioannou, 2006) of the Sport Satisfaction scale (Duda & Nicholls, 1992) adapted for the coaching context was used to measure coaches' satisfaction from coaching. Coaches were asked to respond to the 5-item scale under the opening stem "I usually…" (e.g., "…find time flies when I am coaching") indicating the degree of agreement with each item on a 5-point Likert-type scale ranging from *Strongly agree* (1) to *Strongly disagree* (5). Internal consistency of the scale was satisfactory (see Table 2).

Commitment to Coaching. Raedeke and colleagues (2002) defined commitment to coaching as "the coach's degree of attachment and behavioral intent to continue coaching" (p. 77). A double translated to Greek 3-item Commitment to Coaching scale (Raedeke, Warren, & Gratzyk, 2002) with good internal consistency (see Table 2) was used to measure coaches commitment to coaching (e.g., "How committed are you to coaching?", "How attached are you to coaching?" and "How long would you like to stay in coaching?"). Coaches were asked to indicate their

degree of their commitment to coaching on a 5-point Likert-type scale from 1 (*not at all*), to 5 (*very much so*) for the first two items, and from 1 (*a short time*) to 5 (*very long*) for the last item.

Positive and Negative Affect while Coaching. Following double translation, we used a short, 10-item Greek version of the Positive and Negative Affect Schedule (Mackinnon et al., 1999) to measure coaches' positive and negative affect. Under the opening stem "During the past 3-4 weeks, when I was coaching this team, I generally felt…" coaches were asked to rate the extent to which they had experienced positive (5 items; e.g., "Inspired") and negative (5 items; e.g., "Afraid") feelings while they were coaching their teams.

For the examination of the factorial validity of the scale, CFA was conducted which resulted in an acceptable factor structure: χ^2 = 37.98, df = 26, χ^2 /df = 1.41, TLI = .94, CFI = .97, SRMR = .063, RMSEA = .063 (90% CI= .019-.069). Internal consistency was tested by the alpha reliability test.

The back translation of the above scales wes made as follows. They were initially drafted in English and then translated into Greek by a native speaker. The translation-back translation procedure was based on the recommendations from mainstream and sport psychology literature (Duda & Hayashi, 1998; Harkness, 1999). A more detailed description of the translation and adaptation procedures can be found elsewhere (see Duda, 2013; Duda et al., 2013).

Data Analyses

The data were screened and, the equivalence between the intervention and control group in study variables at baseline (Time 1) were assessed by independent t-test for normally distributed continuous variables. Also, descriptive statistics (means,

standard deviations) (see Table 1) scale reliabilities and Pearson's correlations were calculated for all study variables (see Table 2).

In order to examine whether autonomous and controlled motivation at post-intervention (T2) would mediate the effects of intervention on coaches' indicators of well being at T2 (i.e., satisfaction, commitment, subjective vitality, positive and negative affect), while controlling for the respective variables at baseline (T1), we conducted multiple mediation analyses, by using PROCESS macro (v. 2.16), model 4 (Hayes, 2013). PROCESS is a computational tool for path-based mediation analysis which utilizes a boot-strapping approach to evaluate the confidence intervals of the size of particular model-specified indirect effects (*ab*). Bootstrapping entails resampling the original sample thousands of times (e.g., 10,000 times as tested herein) and computing the indirect effect (*ab*) in each sample to create a sampling distribution of the indirect effect. This distribution is used to construct a bootstrap confidence interval (CI), usually 95% CI, for population value of *ab*. When 95% bootstrap CI does not contain zero, then it can be concluded that the indirect effect is significant at $p < .05$ (Preacher & Hayes, 2008).

A relatively new approach to mediation analysis, Hayes' s (2013) procedure is superior to Sobel test and the commonly used Baron and Kenny's (1986) causal step approach in terms of statistical power, the control over Type I error and testing multiple mediators. Also, in contrast to Sobel test does not require the assumption of normality of the sampling distribution of *ab*, which is often not the case (Hayes, 2013). Furthermore, this approach is better suited for small sample sizes contrary to SEM. More specifically, in the examination of multiple mediator models, PROCESS macro allows for the estimation of total, direct, total indirect, and specific indirect effects through each mediator (whilst controlling for effects of all the other

mediators). In addition, the pairwise contrasts between specific indirect effects are calculated. According to Hayes's within multiple mediation models, a significant total indirect effect (i.e., the sum of specific indirect effects) is not necessary in order to examine the specific indirect effects, as a specific indirect can be significant even though the total indirect effect is not. We can conclude that a specific indirect effect or a total indirect effect is statistically significant at $p < .05$ when 95% bootstrap CI does not contain zero.

Following Hayes's (2013) recommendations, five multiple mediation analyses were conducted, one for each dependent variable. In each analysis conducted: 1) every time we listed in the position of the independent variable (X) the condition (X=1 Intervention group/ X=0 Control group, 2) Autonomous and controlled motivation at T2 were entered simultaneously in the position of the mediator variables (M), while 3) in the position of the dependent variable (Y) we put each time the respective examined dependent variable at T2 (i.e., satisfaction, commitment, etc.). In each analysis conducted, we controlled for T1 scores in the dependent variable, as well as T1 autonomous and T1 controlled motivation scores, by treating them as covariates. Finally, for all analyses implemented, the total effects, 10.000 bootstrap samples, and the 95% bias-corrected (BC) bootstrap CI were required. Following the way above, all resulting paths, direct, and indirect effects will be the same as if they had all been estimated simultaneously (as in a structural equation modeling program; Hayes, 2013).

Results

At baseline (Time 1) no significant differences ($p > .05$) were found between the two groups in autonomous and controlled motivation, satisfaction, commitment,

subjective vitality, and positive and negative affect. Descriptive statistics for both intervention and control group in examined variables at baseline (time 1) and post-intervention (time 2) are depicted in Table 1, whereas the correlations and internal reliability scores for all variables at both times are presented in Table 2.

In order to examine whether autonomous and controlled motivation would mediate the effects of condition on coaches' satisfaction, commitment, and indicators of their well-being, parallel multiple mediation analyses were conducted using PROCESS macro, model 4. Figure 1 illustrates the examined models for each dependent variable in the form of a path model. Panel A depicts the examined total effect model, whereas panel B illustrates the examined parallel for each dependent variable multiple mediator models. Table 3 presents the ordinary least squares regression coefficients of the path models illustrated in Figure1, while Table 4 shows the indirect effects (specifics and totals) of condition on coaches' satisfaction, commitment, and indicators of their well-being.

Below, we present the results of parallel multiple mediation analyses about the effects (total, direct, and indirect) of condition on each indicator of coaches' well-being.

Satisfaction

As can be seen in Table 3, in the total effect model, the condition and the covariates explained 36% of the variance in satisfaction at T2, F (4, 51) = 7.18, p < .001. More specifically, the intervention had positive effects on experimental coaches' satisfaction at T2 compared to coaches of the control group (total effect*; b* = .21, p = .024), after controlling for the satisfaction and autonomous and controlled motivation at T1. The condition and the covariates explained 64% of the variance in

autonomous motivation at T2, F (4, 51) =22.28, p < .001, and 29% of the variance in controlled motivation at T2, F (4, 51) = 5.12, p = .002. Finally, after the inclusion of autonomous and controlled motivation at T2 (mediators), the parallel multiple mediator model explained 49% of the variance in satisfaction vitality at T2, F (6, 49) = 7.82, p < .001.

In more details, the intervention had positive effects on experimental coaches' autonomous motivation and negative effects on coaches' controlled motivation at T2 (a_1 path; b = .57, p = .002) and significantly lower levels of controlled motivation at T2 (a_2 path*; b* = -.70, p = .008) compared to coaches of the control group, after controlling for the respective variables at Time 1. In addition, controlled motivation at T2 significantly predicted (negatively) coaches' reported satisfaction at T2 (b_1 path *;b* = -.16, p = .001), whereas the respective effect of autonomous motivation at T2 was not significant (b_2 path*; b* = -0.00, p = .071).The total indirect effect of intervention (*ab* = .1103) on coaches' reported satisfaction at T2 through autonomous and controlled motivation at T2 was not statistically significant as indicated by 95% BC bootstrap CI [-.0272, .2710] which included zero. Examination of the specific indirect effects showed that controlled motivation (*ab* = .1111; 95% BC bootstrap CI [.0357, .2414]) at T2 was the sole statistically significant mediator of the effect of intervention on coaches' reported satisfaction at T2, whereas autonomous motivation at T2 was not (*ab* = -.0007); 95% BC bootstrap CI [-.1015, .1017]). Finally, the direct effect of intervention on coaches' reported satisfaction at T2, was not significant (b = .10, p = .279).

Commitment

The condition with the covariates in the total effect model, explained 40% of the variance in commitment at T2, F (4, 51) = 8.42, p < .001. The condition and the

covariates explained 64% of the variance in autonomous motivation at T2, F (4, 51) = 22.44, p < 001, and 27% of the variance in controlled motivation at T2, F (4, 51) = 4.79, p = .002. Finally, after the inclusion of autonomous and controlled motivation at T2 (mediators), the parallel multiple mediator model explained 45% of the variance in commitment at T2, F (6, 49) = 6.78, p < .001.

In particular, the intervention had positive effects on experimental coaches' commitment at T2 compared to coaches of the control group, after controlling for their commitment and autonomous and controlled motivation at T1. Furthermore, compared to coaches of the control group, the coaches of the intervention group reported statistically significantly higher levels of autonomous motivation at T2, and statistically significantly lower levels of controlled motivation at T2, after controlling for the respective variables at Time 1. The total indirect effect of the intervention on coaches' reported commitment at T2 through autonomous and controlled motivation at T2 was statistically significant as indicated by 95% BC bootstrap CI, which was entirely above zero (0). Examinations of the specific indirect effects showed that only the specific indirect effect via controlled motivation at T2 was statistically significant whereas the specific indirect effect via autonomous motivation was not. Thus, controlled motivation at T2 was the sole statistically significant mediator of the effect of the intervention on coaches' reported commitment at T2. Lastly, the direct effect of the intervention on coaches' reported commitment at T2, after adjusted for the mediators, was not statistically significant.

Subjective Vitality

With regard to subjective vitality, in the total effect model, the condition and the covariates explained 33% of the variance in subjective vitality at T2, F (4, 50) = 6.06, p = .001. Also, the condition and the covariates explained 64% of the variance

in autonomous motivation at T2, F (4, 50) = 22.14, p < .001, and 31% of the variance in controlled motivation at T2, F (4, 50) = 5.59, p = .001. Finally, after the inclusion of autonomous and controlled motivation at T2 (mediators), the parallel multiple mediator model explained 37% of the variance in subjective vitality at T2, F (6, 48) = 4.68, p = .001.

More specifically, the coaches of the intervention group reported significantly higher levels of autonomous motivation at T2 and significantly lower levels of controlled motivation at T2 compared to coaches of the control group, after controlling for the respective variables at Time 1. However, neither controlled motivation nor autonomous motivation at T2 significantly predicted (negatively) coaches' subjective vitality at T2. The total indirect effect of the intervention on coaches' subjective vitality at T2 through autonomous and controlled motivation at T2 was not significant as indicated by 95% BC bootstrap CIs, which included zero (0). Similarly, examinations of the specific indirect effects showed that neither autonomous nor controlled motivation at T2 significantly mediated the effect of condition on coaches' subjective vitality at T2. Lastly, the total and the direct effect of condition on coaches' subjective vitality at T2 were not significant.

Positive Affect

The total effect model, explained 16% of the variance in positive affect at T2 and was not significant, F (4, 51) = 2.41, p = .062. The condition and the covariates explained 63% of the variance in autonomous motivation at T2, F (4, 51) = 22.13, p < .001, and 25% of the variance in controlled motivation at T2, F (4, 51) = 4.14, p = .006. Finally, with the inclusion of autonomous and controlled motivation at T2 (mediators), the parallel multiple mediator model explained 32% of the variance in positive affect at T2, F (6, 49) = 3.85, p = .003.

More specifically, the coaches of the intervention group reported significantly higher levels of autonomous motivation at T2, and significantly lower levels of controlled motivation at T2 compared to coaches of the control group, after controlling for the respective variables at Time 1. However, only controlled motivation at T2 significantly predicted (negatively) coaches' positive affect at T2, whereas the effect of autonomous motivation at T2 was not statistically significant. The total indirect effect of the intervention on coaches' positive affect at T2 through autonomous and controlled motivation at T2 was statistically significant as indicated by 95% BC bootstrap CIs, which was entirely above zero (0). Examination of specific indirect effects showed that controlled motivation at T2 was the only statistically significant (negative) mediator of the effect of the intervention on coaches' reported positive affect at T2, whereas autonomous motivation at T2 was not. Finally, neither the total nor the direct effect of condition on coaches' positive affect at T2 was significant.

Negative Affect

In the total effect model, the condition and the covariates explained 15% of the variance in negative affect at T2, F (4, 51) = 2.29, p = .072. Also, the condition and the covariates explained 69% of the variance in autonomous motivation at T2, F (4, 51) = 28.68, p < .001, and 25% of the variance in controlled motivation at T2, F (4, 51) = 4.36, p = .004. Finally, after the inclusion of autonomous and controlled motivation at T2 (mediators), the parallel multiple mediator model explained 18% of the variance in negative affect at T2, F (6, 49) = 1.84, p = .1112.

In more details, the coaches of the intervention group reported significantly higher levels of autonomous motivation at T2 (a_1 path), and significantly lower levels of controlled motivation at T2 (a_2 path) compared to coaches of the control group,

after controlling for the respective variables at Time 1. However, neither autonomous at T2 (b_1 path), nor controlled motivation at T2 (b_2 path), significantly predicted negative affect at T2. The total indirect effect of the intervention on coaches' negative affect at T2 via autonomous and controlled motivation at T2 was not significant as indicated by 95% BC bootstrap CIs, which included zero (0). Examination of specific indirect effects showed that neither autonomous nor controlled motivation at T2 significantly mediated the effect of the intervention on coaches' negative affect at T2. Finally, as in the case of subjective vitality, neither the total nor the direct effect of condition on coaches' at negative affect at T2 was significant.

To sum up, controlled motivation at T2 fully (negatively) mediated the effects of our intervention on coaches' reported satisfaction, commitment and positive emotion at T2, whereas the intervention has no effect on coaches' reported subjective vitality and negative affect at T2 , neither directly nor indirectly via the associations with autonomous and controlled motivation at T2

Discussion

Grounded on SDT, the purpose of the present investigation was to examine the effect of the coach education program (i.e., *Empowering Coaching*™) on coaches' motivational regulations and in turn, whether coaches will report greater levels of well-being (subjective vitality, satisfaction from coaching, positive affect, and commitment to coaching) compared to baseline measurement.

As results showed, we found direct effects of the *Empowering Coaching*™ program on coaches' satisfaction, commitment, autonomous and controlled motivation. These effects can potentially be ascribed to the context-specific

intervention, which had significant effects on contextual variables like satisfaction, commitment, autonomous and controlled motivation. These results are significant, as it seems that enhancing coaches' motivation, satisfaction and commitment via theory-based coach education programs like the *Empowering Coaching*™ program aiming to improve the quality of their coaching. This has important implications in terms of adopting and sustaining the principles and the core values of the *Empowering Coaching*™ program in the long term. Coach education programs that provide durable results, can have a permanent impact on their coaching, and in turn create more adaptive environments for their athletes.

On the other hand, the intervention did not have a direct effect on more global variables, namely vitality, and positive and negative affect. One possible reason for these findings is that context-specific outcomes such as satisfaction from coaching, commitment to coaching and motivation are more easily affected by coach education programs focused on athletes' motivation, physical activity and well-being because coaches associate athletes' motivation and well-being to their coaching. On the contrary, those variables that were affected to a greater degree from coaches' life in general as vitality, positive and negative affect, were not positively affected. This is consistent with previous findings reporting that work-life conflicts have detrimental effects on coaches' well-being (Stebbings, Taylor, Spray & Ntoumanis, 2012).

Also, as regression-based parallel multiple mediation analysis partially supported our hypothesis using SDT as a framework to understand coaches' motivational processes, as intervention arm coaches reported at T2 higher levels of autonomous motivation and lower levels of controlled motivation when controlled for satisfaction, commitment, and positive emotion. These results reveal that the intervention had an effect on coaches' motivational regulations on the intervention

arm coaches, and specifically increased their identified and intrinsic motivation towards coaching while more controlled forms of motivation towards coaching were lowered after the *Empowering Coaching*™ workshop. This is in line with results regarding the effectiveness of the *Empowering Coaching*™ workshop as the intervention had also a positive effect on the motivational climate that intervention coaches created in their teams in a multinational sample (Tzioumakis et al., submitted).

Further, results revealed that controlled motivation was the most significant (negative) mediator between the intervention coaches and coaches' well-being. Specifically, controlled motivation negatively mediated the relationship between the intervention coaches and their satisfaction, commitment, and positive affect from coaching in post-intervention measurement. This is consistent with the theoretical underpinnings of *Empowering Coaching*™ as the coaching program aimed not only in creating a more empowering environment in their teams, but also an equally important aim was to create a less disempowering climate (Duda, 2013). This has important implications for coaches' well-being, as it seems that focusing on diminishing maladaptive aspects of the climate, rather focusing on enhancing the adaptive aspects of the environment in their teams, perhaps has a greater impact on coaches' well-being. This also holds important implications in terms of the development of coach education programs, as a shift or a further focus in creating less disempowering motivational climates in youth sport perhaps generate more adaptive outcomes for coaches' psychological health and functioning. On the other hand, the fact that in our proposed model autonomous motivation is not a significant mediator between the intervention coaches and their psychological well-being is in contrast with previous results (e.g., Ntoumanis, 2012; Ryan & Deci, 2002).

One reason for this inconsistency might be the fact that the intervention coaches presented already, from baseline, considerably high levels of autonomous motivation not leaving much room for improvement in this variable. Indeed, this condition is confirmed not only by their mean scores on the autonomous motivation scales (see Table 1), but also by the responses given by a purposefully selected sample of these coaches in face-to-face interviews. Theoretically based analysis of their qualitative data revealed that intervention coaches were highly autonomously motivated to participate in this *Empowering Coaching*™ training program (Gorozidis, Tzioumakis, Papaioannou, Krommidas, 2014). Another explanation might be that the core values of the intervention program regarding actively enhancing autonomous motivation were weaker than the embedded learning activities that have made coaches more aware and probably more "sensitive" to the maladaptive effects and outcomes these practices have on youth athletes and provided them with choices and options to diminish these practices.

Further, the lack of direct effect of coaches' autonomous motivation on their subjective vitality and negative affect is also in contrast with previous research (e.g., Stebbings, Taylor, Spray & Ntoumanis, 2012). It is likely again that for the intervention coaches, the effects of *Empowering Coaching*™ on enhancing their autonomous motivation were less pronounced because core aspects of the intervention contrasted their established coaching philosophy and specific motivational values. Therefore, it is likely they have chosen to focus on aspects of the program that considered more important or less contradictive to their coaching philosophies.

In general, although autonomous motivation was not a significant mediator in the hypothesized models, the most relationships with well-being variables were in

the expected direction. For example, significant positive relationships emerged with commitment, positive affect whereas negative associations emerged between autonomous motivation and negative affect.

Limitations and future directions

Though this study was grounded in a prominent theory, is not without limitations. Although this is a longitudinal study, the generalization of the results is restricted by the sample that consists only of men, youth football coaches. A larger sample including women, from diverse sports and sport levels, would allow us to determine with a greater degree of certainty the antecedents of coaches' autonomous motivation and well-being, and to explore deeper the causal relationships between coaches' motivational regulations and well-being indices.

Further, since the initial aim of the *Empowering Coaching*™ was the creation of an adaptive sport environment for youth athletes, it would be interesting to investigate, via athletes' self-report measures, whether the reciprocal direction of influence between coaches and athletes, in term of team functioning and outcomes, exists as this has great implications for the psychological health and adaptive functioning for both athletes and coaches.

Conclusion

Despite the aforementioned limitations, the current longitudinal investigation substantially contributed to sport and specifically coach-related literature as it provides sound evidence of the effectiveness of a theory and evidence-based coach education program that has multiple reciprocal implications for all actors in youth sport settings. The results of the present study also provide promising evidence that investing in and such coach education programs and considering effective dissemination strategies is a worthy cause.

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Table 1

Descriptive Statistics for Intervention and Control Group in the Examined Variables at Time 1(Baseline) and Time 2 (Post-intervention)

Variables	Time 1		Time 2	
	Mean	(*SD)*	*Mean*	(*SD*)
Autonomous motivation				
Intervention	6.02	.82	6.05	.70
Control	5.98	.71	5.37	1.23
Controlled motivation				
Intervention	3.90	1.15	3.40	.93
Control	3.78	1.14	4.03	1.10
Satisfaction				
Intervention	4.69	.36	4.65	.35
Control	4.71	.36	4.46	.46
Commitment				
Intervention	4.56	.56	4.67	.45
Control	4.51	.52	4.24	.62
Subjective vitality				
Intervention	5.21	1.09	5.13	.99
Control	5.25	1.16	5.37	1.01
Positive affect				
Intervention	5.79	.62	5.80	.62
Control	5.72	1.06	5.31	1.19
Negative affect				
Intervention	1.87	.60	1.75	.85
Control	1.72	.90	2.06	1.20

Table 2

Pearson's Correlations and Cronbach's Alpha Coefficients for All Subscales at Time 1 (T1) and Time 2 (T2)

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1. Autonomous motivation T1	-													
2. Autonomous motivation T2	.72**	-												
3. Controlled motivation T1	.35**	.30*	-											
4. Controlled motivation T2	.17	.12	.38**	-										
5. Satisfaction T1	.39**	.24	.10	-.18	-									
6. Satisfaction T2	.31*	.33*	.03	-.43**	.38**	-								
7. Commitment T1	.46**	.26*	.01	-.15	.58**	.41**	-							
8. Commitment T2	.42**	.40**	-.00	-.31*	.31*	.52**	.52**	-						
9. Subjective vitality T1	.31**	.25	.10	-.14	.36**	.36**	.34**	.34**	-					
10. Subjective vitality T2	.17	.18	.13	-.15	.27*	.50**	.34*	.33*	.57**	-				
11. Positive affect T1	.33**	.27*	-.04	-.09	.37**	.27*	.38**	.32*	.36**	.43**	-			
12. Positive affect T2	.18	.22	.15	-.36**	.30*	.54**	.36**	.53**	.39**	.38**	.29*	-		
13. Negative affect T1	-.20*	-.34**	.04	.08	-.40**	-.04	-.31**	-.15	-.27**	-.28*	-.19*	-.24	-	
14. Negative affect T2	.06	-.11	.16	.30*	.02	-.28*	.04	-.09	-.07	-.40**	-.30*	-.13	.25**	-
Cronbach's α	.88	.92	.81	.78	.73	.78	.85	.76	.92	.90	.80	.89	.79	.90

Note. * p < 05. ** p < .01.

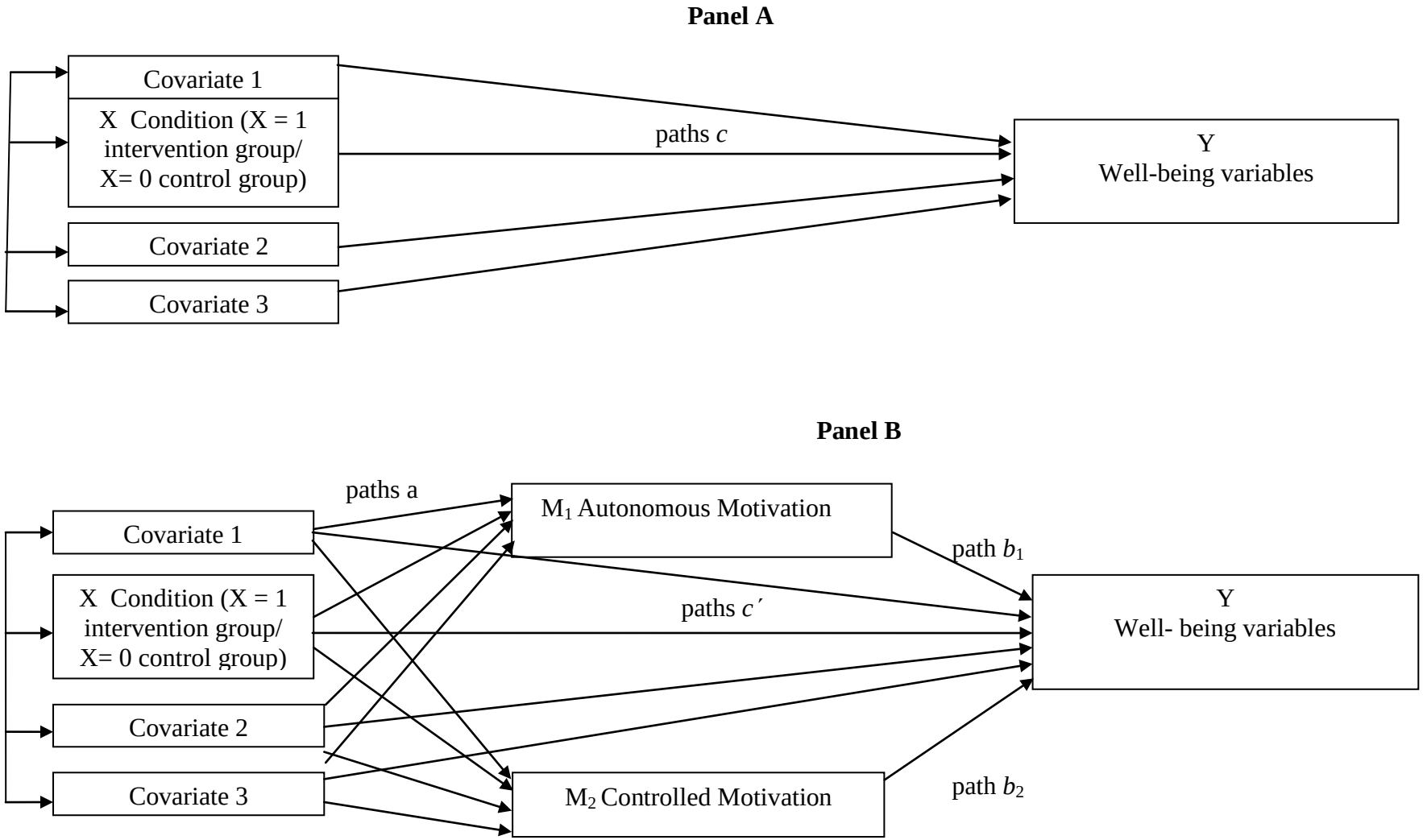

Figure1. The examined models represented in the form of path models and a visual depicting of the four ordinary least squares regressions estimated and reported in Table 2. **Panel A:** The total effect model. **Panel B:** The parallel multiple mediator model.

Table 3
Ordinary Least Squares Regression Coefficients and R-Squared (R^2) Values of the Path Models Depicted in Figure 1

	Mediator variables (MV)			**Total effects model**	**Parallel multiple mediator model**				
Independent variables (IV) & Covariates (C)	**Mediator variable (M_1V)**	**Mediator variable 2 (M_2V)**	**Dependent variables (DV)**	***c* paths (total effects) IV-D**	***a* paths (IV-M_1V)**	***a* paths (IV-M_2V)**	***b_1* paths (M_1-DV)**	***b_2* paths (M_2V-DV)**	***c´* paths (direct effects) IV-DV**
Condition	Auton mot. (T2)	Contr. mot. (T2)	Satisfaction (T2)	.21*	.57**	-.70**	-.00	-.16**	.10
C_1 Auton.mot.(T1)	Auton mot. (T2)	Contr. mot. (T2)	Satisfaction (T1)	.14*	.79***	.16	-.00	-.16**	.16*
C_2 Contr. mot. (T1)	Auton mot. (T2)	Contr. mot. (T2)	Satisfaction (T1)	-.02	.04	.28*	-.00	-.16**	.02
C_3 Satisfaction (T1)	Auton mot. (T2)	Contr. mot. (T2)	Satisfaction (T1)	.44**	.17	-.70	-.00	-.16**	.33*
R^2	Auton mot. (T2)	Contr. mot. (T2)	Satisfaction (T1)	.36***	.64***	.29**		.49***	
Condition	Auton mot. (T2)	Contr. mot. (T2)	Commitment (T2)	.34**	.58**	-.66*	.11	-.14*	.19
C_1 Auton.mot.(T1)	Auton mot. (T2)	Contr. mot. (T2)	Commitment (T2)	.16	.85***	.18	.11	-.14*	.09
C_2 Contr. mot. (T1)	Auton mot. (T2)	Contr. mot. (T2)	Commitment (T2)	-.04	.02	.28*	.11	-.14*	-.00
C_3 Commitment (T1)	Auton mot. (T2)	Contr. mot. (T2)	Commitment (T2)	.34***	-.12	-.32	.11	-.14*	.31**
R^2	Auton mot. (T2)	Contr. mot. (T2)	Commitment (T2)	.40***	.64***	.27*		46***	
Condition	Auton mot. (T2)	Contr. mot. (T2)	Sub. vitality (T2)	-.21	.54**	-.77**	-.01	-.22	-.38
C_1 Auton.mot.(T1)	Auton mot. (T2)	Contr. mot. (T2)	Sub. vitality (T2)	.11	.78***	.12	-.01	-.22	.14

C_2 Contr. mot.(T1)	Auton mot. (T2)	Contr. mot. (T2)	Sub. vitality (T2)	.08	.06	.36**	-.01	-.22	.16
C_3 Sub. vitality (T1)	Auton mot. (T2)	Contr. mot. (T2)	Sub. vitality (T2)	.44**	.05**	-.13	-.01	-.22	.41**
R^2	Auton mot. (T2)	Contr. mot. (T2)	Sub. vitality (T2)	.33**	.64***	.31**		.37**	
Condition	Auton mot. (T2)	Contr. mot. (T2)	Pos. aff.(T2)	.46	.65*	-.46	.08	-.49***	.18
C_1 Auton.mot.(T1)	Auton mot. (T2)	Contr. mot. (T2)	Pos. aff.(T2)	-.07	.20	.26	.08	-.49***	.04
C_2. Contr. mot. (T1)	Auton mot. (T2)	Contr. mot. (T2)	Pos. aff.(T2)	.10	.21	.20	.08	-.49***	.18
C_3 Posit. aff. (T1)	Auton mot. (T2)	Contr. mot. (T2)	Pos. aff.(T2)	.22	.17	-.14	.08	-.49***	.14
R^2	Auton mot. (T2)	Contr. mot. (T2)	Pos. aff.(T2)	.16	.26	.17		.37**	
Condition	Auton mot. (T2)	Contr. mot. (T2)	Neg. aff. (T2)	-.40	.77**	-.55*	-.02	.19	-.28
C_1 Auton.mot.(T1)	Auton mot. (T2)	Contr. mot. (T2)	Neg. aff. (T2)	-.42*	.21	.22	-.02	.19	-.45*
C_2. Contr. mot. (T1)	Auton mot. (T2)	Contr. mot. (T2)	Neg. aff. (T2)	.13	.21*	.22	-.02	.19	.09
C_3 Neg. aff. (T2)	Auton mot. (T2)	Contr. mot. (T2)	Neg. aff. (T2)	.30	-.48**	.23	-.02	.19	.24
R^2	Auton mot. (T2)	Contr. mot. (T2)	Neg. aff. (T2)	.23*	.36***	.19*		.26*	

Notes. All path coefficients are unstandardized. C = Covariate; Auton.mot. = Autonomous motivation; Contr. mot.= Controlled motivation; Sub. vitality = Subjective vitality; Pos. aff.=Positive affect; Neg. aff.= Negative affect.*p < 05. ** p < .01. *** p < .001

Table 4

Indirect Effects (Specifics and Totals) of Condition on Coaches' Indicators of Well-being Through Autonomous and Controlled Motivation

	Point Estimate (*ab*)	*SE* (*ab*)	95% BC bootstrap CI	
Satisfaction			**LL**	**UL**
Autonomous motivation	-.0007	.0509	-.1015	.1017
Controlled motivation	-.1111*	.0489	.0357	.2414
Total Indirect Effect	.1103	.0758	-.0272	.2710
Commitment				
Autonomous motivation	.0627	.0648	-.0330	.2389
Controlled motivation	-.0912*	.0570	.0083	.2449
Total Indirect Effect	.1539*	.0952	.0001	.3936
Subjective vitality				
Autonomous motivation	-.0047	.1114	-.2539	.2026
Controlled motivation	.1716	.1434	-.0195	.5746
Total Indirect Effect	.1669	.1945	-.1794	.6080
Positive affect				
Autonomous motivation	.0508	.0903	-.0735	.3367
Controlled motivation	.2238	.1804	-.0009	.7465
Total Indirect Effect	.2745	.1960	.0042	.8201
Negative affect				
Autonomous motivation	-.0135	.1256	-.2406	.2762
Controlled motivation	-.1030	.1174	-.4108	.0646
Total Indirect Effect	-.1165	.1707	-.4011	.3210

Note. SE = Standard error; BC = Bias Corrected; CI = Confidence interval; LL = Lower limit; UL = Upper limit.
* p < 05. ** p < .01. *** p < .001

Chapter V

GENERAL DISCUSSION

Grounded on an integration of the dimensions of the social environment emphasized within AGT and SDT as assumed within Duda's (2013) conceptualization of "empowering" and "disempowering" climates, the aim of the present thesis was to determine firstly, the effectiveness of the *Empowering Coaching*™ training program in terms of its impact on the motivational climate evident in grassroots soccer across four countries (i.e., France, United Kingdom, Spain and Greece), secondly, using sequential analysis to assess whether the behavioral patterns of grassroots football coaches are stable over time across seven motivationally relevant dimensions and in addition, whether these patterns differ between experimental and control group coaches. Thirdly, using Hayes' macro for conducting parallel multiple mediation analysis, we assessed the effectiveness that *Empowering Coaching*™ program had on coaches' autonomous and controlled motivation as well as on their satisfaction, commitment, subjective vitality, and positive and negative affect. A positive change in coaches' motivation is assumed to sustain the changes in coaches' behaviors that happened through the coach education program.

The first study attempted to holistically assess a wide range of motivational strategies through a joint consideration of the two most prominent motivational theories, namely AGT and SDT. The objective motivational climate created by coaches recruited from the larger PAPA project, was assessed by MMCOS (Smith et al., 2015), a newly developed coach-created climate observational instrument. This new observational measurement approach integrates features of the social environment draws from an AGT and SDT standpoint in conjunction with Duda's (2013)

conceptualization of empowering and disempowering sport environments to provide a multidimensional assessment of the objective motivational climate.

Specifically, we anticipated that a theoretically grounded coach education program, using a combination of various materials and media to deliver an intervention to grassroots football coaches, would lead to an effective modification of coach motivational strategies, in terms of overt coaching behaviors as rated by independent observers, resulting to a more empowering and/or less disempowering team climate.

Findings from the nested data in the first study using multilevel analysis showed that the *Empowering Coaching*™ program had a durable (linear) effect on decreasing *disempowering* dimensions (i.e., overall disempowering environment and ego-involving climate), while improved in the short-term (i.e., quadratic effect) the empowering dimensions (i.e., overall empowering environment, autonomy-support and relatedness support). Further, no significant intervention effects were detected for the controlling, structure, and relatedness thwarting dimensions.

Regarding the climate dimensions that the program seem to not have any durable (linear) effect across the season, potentially a regular “top-up” training sessions or activities on core values of the intervention throughout the season might be an effective strategy for sustaining the positive training effect longitudinally.

Regarding the climate dimensions that the program seems to not have any effect across the season, a possible explanation is that these coaches might have found more critical for their coaching to focus on how to decrease their disempowering behaviors rather than to improve themselves along the controlling, structure and relatedness thwarting dimensions. Further, although, the *Empowering Coaching*™ program design included a project-specific website that was used to promote and

support the intervention (providing additional material and information, quizzes, “chat room”, and online support from expert coaches) throughout the course of the season, apparently did not have a longitudinal impact.

The findings from study 1 are particularly important as they underpin the usefulness of similar coach education programs that raise coaches’ awareness regarding the potential adaptive effects from diminishing need-thwarting practices. As coaches become more aware of the effect these practices have on the psychological environment they create, the also become less controlling (Su & Reeve, 2011). The results are also in concordance with previous interventions in PE and youth sport contexts, as similarly they show that instructors (i.e., PE teachers and coaches) can be trained to enhance empowering aspects of the climate and diminish disempowering ones (Aelterman, Vansteenkiste, van den Berghe, De Meyer, & Haerens, 2014; Smith, Smoll & Cumming, 2007). The present results suggest that the *Empowering Coaching*™ approach to coach training was effective, as intervention arm coaches seem to have created a more adaptive motivational environment in their teams.

Apart from the effects of the *Empowering Coaching*™, an apparent contribution of the present study to the literature involves the utility of an “objective” assessment of coaching environments (Duda, 2001) as athletes usually interpret their coaches’ behaviors through their own cognitive and affective lens (Smoll & Smith, 1989). Furthermore, despite obvious usefulness of self-report measures, have innate limitations such as biased perceptions of the coaching environment (Murayama, Elliot, & Friedman, 2012). Therefore, methodologies offering objective assessment of the coaching environment may provide valuable insights that are difficult to acquire via subjective methodologies. Furthermore, such an objective measurement approach would be of particular usefulness as it tackles with variance issues related with self-

report measures (De Meyer et al., 2014), and may also enhance our knowledge on how to optimize the validity of self-report scales. Finally, data from observational methodologies on the motivational climate will enable researchers to identify specific elements that facilitate the creation of maladaptive environments and attempt to intervene and improve those features. This also leads to a call for more rigorous evaluation of theory-based coach education interventions aimed at modifying coach behaviors by using new measurement perspectives such as objective coach behavior assessments.

In study 2, using an alternative approach to objective assessment of the motivational climate using sequential analytic techniques to analyze our observational data obtain by the empowering and disempowering higher order and environmental dimensions of a newly developed qualitative systematic observation instrument (MMCOS; Smith et al., 2015) in a sample of Greek grassroots football coaches, we found that, across a football season, coaches exhibited a relative stable behavioral pattern across their training sessions. This is in line with previous findings in a similar sample (Tzioumakis et al., 2012). Further, we found that the participant coaches in the intervention arm that had undergone training according the principles of the *Empowering Coaching*™, had in general increased their behavioral patterns that were relevant to empowering aspects of the coaching environment (i.e., autonomy support), while intervention arm coaches were found to have altered their behavioral patterns by decreasing disempowering aspects of the coaching environment (i.e., ego-involving).

Regarding, the stability of the behavioral patterning of coaches from both groups, but also the sensitivity of the instrument and of the analysis, to detect small scale changes in the behavioral patterns, suggest that joint consideration of sequential analytic techniques and valid and reliable systematic observation instruments in the

assessment of the behavioral patterns coaches exhibit in training sessions is a potential useful alternative to traditional methodological and statistical approaches.

Regarding the changes detected in coaches' motivationally relevant behavioral patterns, we can assume that it is a considerable evidence towards acknowledging the effectiveness of the *Empowering Coaching*™ program, as we found that intervention arm coaches, decreased disempowering dimensions of the climate and on the other hand, increased autonomy supportive dimensions. As we have assumed, this is potentially an *Empowering Coaching*™ effect. However, it is likely that a reciprocal direction of influence between coaches and athletes, in term of team functioning and outcomes exists. That is, for instance, for the control group coaches' athletes, the autonomy supportive practices emphasized by their coaches at baseline measurement, might not have been perceived as effective or preferred by young athletes. In turn, their perceptions might be reflected in their behavioral responses and coaches interpret athlete responses and attempt to modify and regulate their practices. However, although we have strong indications regarding the stability of grassroots football coaches exhibit stable motivational signatures in terms of the motivational practices they emphasize, the results should be viewed with caution as numerous contextual and situational factors affecting these patterns may well co-exist.

Finally, in study 3, using parallel multiple mediation analysis, in a sample of Greek grassroots football coaches, assigned to control and intervention groups, we examined whether the intervention (i.e., *Empowering Coaching*™) aiming to make coaches in the intervention arm become more empowering and/or less disempowering in their coaching practices, had an effect on coaches themselves, and in particular whether the program had an impact on their motivational regulations and in turn, on their satisfaction, commitment, and subjective well-being (e.g., satisfaction,

subjective vitality, commitment, positive and negative affect). As results revealed, the intervention had positive effects on coaches' autonomous motivation, satisfaction, and commitment. These positive effects are the most critical to ensure that the impact of the coach education program on coaching behaviors described in chapters 2 and 3 will sustain long after the end of the PAPA intervention.

The post-intervention controlled motivation was the sole (negative) significant predictor for T2 satisfaction, commitment, and positive affect, while post-intervention autonomous motivation did not emerge as a significant mediator to coaches' T2 subjective well-being indices.

This is in line with the theoretical underpinnings of *Empowering Coaching*™ as the coaching program aimed not only in creating a more empowering environment in their teams, but also an equally important aim was to create a less disempowering climate (Duda, 2013). This result has strong implications for the design and implementation of coach education programs, as it is evident focusing in creating a less disempowering climate in youth sport team might be equally beneficial for both coaches' and athletes' psychological health and functioning.

Further, the lack of statistical significance in the mediating role of autonomous motivation in the relationship between the intervention coaches and their subjective well-being indices contradicts previous similar studies (e.g., Ntoumanis, 2012; Ryan & Deci, 2002). It is likely that intervention coaches were already high in autonomous motivation scores even from baseline as it is depicted in descriptive statistics. In support of this contradicting finding is that the particular coaches that participated in our study were interviewed and were found highly autonomously motivated (Gorozidis, Tzioumakis, Papaioannou, Krommidas, 2014).

In conclusion, it is apparent that the results of this study provided sound support for the effectiveness of the *Empowering Coaching*™ on coaches' autonomous and controlled motivation as well as on subjective well-being. This has important consequences for both motivational scholars and sport practitioners, in terms of coach education program development and implementation. Theory-based coach education programs that have a positive impact on coaches' motivation, satisfaction, and commitment, promote long-term adoption of the core values and principles of the programs and in turn, enhance the quality of their coaching and its impact on athletes' motivation & well-being. Results from this study hold important implications for coaches, researchers, practitioners, sport psychologists, and policy makers that support adaptive sport environments that promote youth athletes' mental and emotional health and physical activity engagement.

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APPENDICES

APPENDIX 1 – Research Approval by the University of Thessaly Ethics Committee

ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΦΥΣΙΚΗΣ ΑΓΩΓΗΣ ΚΑΙ ΑΘΛΗΤΙΣΜΟΥ

Εσωτερική Επιτροπή Δεοντολογίας

Τρίκαλα: 19/ 1 /2011
Αριθμ. Πρωτ.: 115

Αίτηση Εξέτασης της πρότασης για διεξαγωγή Έρευνας με τίτλο:
Παρατήρηση και ανάλυση συμπεριφορών προπονητών που σχετίζονται με το κλίμα παρακίνησης

Επιστημονικός υπεύθυνος – επιβλέπων: Λιγγελίδης Νικόλαος, Επίκουρος Καθηγητής

Κύριος ερευνητής - φοιτητής: Τζιουμάκης Ιωάννης

Ίδρυμα & Τμήμα: Τ.Ε.Φ.Α.Α, Πανεπιστήμιο Θεσσαλίας

Η προτεινόμενη έρευνα θα είναι:

Ερευνητικό πρόγραμμα ☐ Διδακτορική έρευνα ☒ Μεταπτυχιακή διατριβή ☐ Διπλωματική εργασία ☐

Ανεξάρτητη έρευνα ☐

Τηλ. επικοινωνίας: 6973747911
Email επικοινωνίας: j_jioumak@pe.uth.gr

Η Εσωτερική Επιτροπή Δεοντολογίας του Τ.Ε.Φ.Α.Α., Πανεπιστημίου Θεσσαλίας μετά την υπ. Αριθμ. 3-4/15-12-2010 συνεδρίαση της εγκρίνει τη διεξαγωγή της προτεινόμενης έρευνας.

Η πρόεδρος της
Εσωτερικής Επιτροπής
Δεοντολογίας - ΤΕΦΑΑ

Χριστίνα Καραιζαφέρη
Επίκουρη Καθηγήτρια

APPENDIX 2 – Consent Form for Parents/Guardians

Έντυπο συναίνεσης γονέα/κηδεμόνα/αθλητή σε ερευνητική εργασία

1. **Σκοπός της ερευνητικής εργασίας**

Σκοπός της μελέτης είναι η κωδικοποίηση και ανάλυση συμπεριφορών προπονητών ποδοσφαίρου αναπτυξιακών ηλικιών που σχετίζονται με το κλίμα της προπόνησης.

2. **Διαδικασία μετρήσεων**

Η ερευνητική διαδικασία περιλαμβάνει τη βιντεοσκόπηση προπονήσεων ποδοσφαίρου, όπου η έμφαση δίνεται στην ανάλυση της συμπεριφοράς του προπονητή. Η έρευνα λοιπόν περιλαμβάνει την παρακολούθηση και καταγραφή προπονήσεων ή/και αγώνων. Οι συμμετέχοντες προπονητές θα βιντεοσκοπηθούν κατά την διάρκεια προπονήσεων ή/και κατά την διάρκεια αγώνα. Παρόλο ότι η εστίαση της βιντεοκάμερας θα είναι στον προπονητή, είναι αναπόφευκτο να βρίσκεται μέσα στην εικόνα και το παιδί σας κατά την διάρκεια συμμετοχής του/της στις προπονήσεις ή/και τους αγώνες. Επίσης, θα χρειαστεί να συμπληρωθεί ένας αριθμός ανώνυμων ερωτηματολογίων από τους νεαρούς αθλητές/τριες.

3. **Κίνδυνοι και ενοχλήσεις**

Δεν υπάρχει κανένας κίνδυνος τραυματισμού για τα παιδιά από τη βιντεοσκόπηση ή τη συμπλήρωση των ερωτηματολογίων που απαιτούνται για τη διεξαγωγή της έρευνας.

4. **Προσδοκώμενες ωφέλειες**

Τα αποτελέσματα της παρούσας έρευνας θα μπορούσαν να βοηθήσουν τους ερευνητές να δώσουν ανατροφοδότηση στους προπονητές ώστε να κάνουν τις προπονήσεις πιο διασκεδαστικές και να μπορούν να παρακινούν τους αθλητές τους.

5. **Δημοσίευση δεδομένων – αποτελεσμάτων**

Η συμμετοχή του παιδιού σας στην έρευνα συνεπάγεται ότι συμφωνείτε με τη δημοσίευση των δεδομένων και των αποτελεσμάτων της, με την προϋπόθεση ότι οι πληροφορίες θα είναι ανώνυμες και δε θα αποκαλυφθούν τα ονόματα ή προσωπικά στοιχεία των συμμετεχόντων.

6. **Πληροφορίες**

Παρακαλούμε πολύ, μη διστάσετε να κάνετε ερωτήσεις γύρω από το σκοπό ή/και τον τρόπο πραγματοποίησης της έρευνας. Αν τυχόν έχετε κάποιες αμφιβολίες ή ερωτήσεις, ζητήστε μας να σας δώσουμε πρόσθετες εξηγήσεις.

7. **Ελευθερία συναίνεσης**

Η άδειά σας να συμμετάσχει το παιδί σας στην έρευνα είναι εθελοντική. Είσαστε ελεύθεροι να μην συναινέσετε ή να διακόψετε τη συμμετοχή του παιδιού σας όποτε επιθυμείτε.

Για τον κηδεμόνα: Διάβασα το έντυπο αυτό, κατανοώ τις ερευνητικές διαδικασίες και συναινώ να συμμετάσχει το παιδί μου στην έρευνα. Ναι ❒ Όχι ❒

Για τον νεαρό αθλητή/τρια: Συναινώ να συμμετάσχω στην έρευνα Ναι ❒ Όχι ❒

Ημερομηνία: __/__/__

Ονοματεπώνυμο και υπογραφή γονέα/κηδεμόνα

Υπογραφή ερευνητή

_____

Τζιουμάκης Ιωάννης
Υποψήφιος διδάκτορας

Για περισσότερες πληροφορίες:
Νικόλαος Διγγελίδης,
Επίκουρος Καθηγητής
Πανεπιστήμιο Θεσσαλίας
Τμήμα Επιστήμης Φυσικής Αγωγής & Αθλητισμού
42100 Καρυές Τρικάλων
Τηλ. +30 24310 47052 (γραφείο)
E-mail: nikdig@pe.uth.gr

APPENDIX 3 – Consent Form for Coaches

Έντυπο συναίνεσης συμμετέχοντος σε ερευνητική εργασία

8. Σκοπός της ερευνητικής εργασίας

Σκοπός της μελέτης είναι η αναγνώριση, κωδικοποίηση και ανάλυση συμπεριφορών προπονητών ποδοσφαίρου αναπτυξιακών ηλικιών που σχετίζονται με το κλίμα παρακίνησης με διαδικασίες συστηματικής παρατήρησης.

9. Διαδικασία μετρήσεων

Η ερευνητική διαδικασία περιλαμβάνει τη βιντεοσκόπηση προπονήσεων ποδοσφαίρου, όπου η έμφαση δίνεται στην ανάλυση της συμπεριφοράς του προπονητή. Η έρευνα λοιπόν περιλαμβάνει την παρακολούθηση και καταγραφή προπονήσεων ή/και αγώνων. Οι συμμετέχοντες θα αξιολογηθούν με διαδικασίες συστηματικής παρατήρησης κατά την διάρκεια προπονήσεων ή/και κατά την διάρκεια αγώνα. Επίσης, θα χρειαστεί να συμπληρωθεί ένας αριθμός ανώνυμων ερωτηματολογίων.

10. Κίνδυνοι και ενοχλήσεις

Δεν υπάρχει κανένας κίνδυνος τραυματισμού κατά τη διάρκεια των δοκιμασιών. Θα ακολουθηθούν οι συνήθεις προπονητικές διαδικασίες, χωρίς καμία παρέμβαση.

11. Προσδοκώμενες ωφέλειες

Τα αποτελέσματα της παρούσας έρευνας θα μπορούσαν να βοηθήσουν τους προπονητές να κάνουν τις προπονήσεις αποτελεσματικότερες, πιο διασκεδαστικές, θα μπορούν να παρακινούν τους αθλητές τους σε μεγαλύτερο βαθμό και να καθοδηγούν τον αγώνα αποτελεσματικότερα.

12. Δημοσίευση δεδομένων – αποτελεσμάτων

Η συμμετοχή σου στην έρευνα συνεπάγεται ότι συμφωνείς με τη δημοσίευση των δεδομένων και των αποτελεσμάτων της, με την προϋπόθεση ότι οι πληροφορίες θα είναι ανώνυμες και δε θα αποκαλυφθούν τα ονόματα των συμμετεχόντων. Τα δεδομένα που θα συγκεντρωθούν θα κωδικοποιηθούν με αριθμό, ώστε το όνομα σου δε θα φαίνεται πουθενά.

13. Πληροφορίες

Μη διστάσεις να κάνεις ερωτήσεις γύρω από το σκοπό ή/και τον τρόπο πραγματοποίησης της εργασίας. Αν έχεις κάποιες αμφιβολίες ή ερωτήσεις, ζήτησέ μας να σου δώσουμε πρόσθετες εξηγήσεις.

14. Ελευθερία συναίνεσης

Η άδειά σου να συμμετάσχεις στην εργασία είναι εθελοντική. Είσαι ελεύθερος να μην συναινέσεις ή να διακόψεις τη συμμετοχή σου όποτε επιθυμείς.

❒ Διάβασα το έντυπο αυτό, κατανοώ τις ερευνητικές διαδικασίες και συναινώ να συμμετάσχω στην εργασία.

Ημερομηνία: __/__/__

Ονοματεπώνυμο και υπογραφή συμμετέχοντος	Υπογραφή ερευνητή
_____	*Τζιουμάκης Ιωάννης* Υποψήφιος διδάκτορας

Για περισσότερες πληροφορίες:
Νικόλαος Διγγελίδης,
Επίκουρος Καθηγητής
Πανεπιστήμιο Θεσσαλίας
Τμήμα Επιστήμης Φυσικής Αγωγής & Αθλητισμού
42100 Καρυές Τρικάλων
Τηλ. +30 24310 47052 (γραφείο)
E-mail: nikdig@pe.uth.gr

APPENDIX 4 – Materials used in Chapter 2

Multidimensional Motivational Climate Observation System (MMCOS; Smith et al., 2015) (Greek version).

Οδηγίες Κωδικοποίησης – Όργανο Αξιολόγησης του Προπονητικού Κλίματος

ΈΜΦΑΣΗ – Ο προπονητής κάνει συνειδητή προσπάθεια να περάσει σημαντικά μηνύματα δίνοντας έμφαση σε συγκεκριμένες λέξεις/οδηγίες/πρακτικές. Ο προπονητής μπορεί να δώσει έμφαση στις περιβαλλοντικές διαστάσεις με διάφορους τρόπους. Όταν βαθμολογείτε τον προπονητή πρέπει να πάρετε υπόψη τα παρακάτω:

- Την συχνότητα με την οποία χρησιμοποιεί τις πρακτικές αυτές
- Πόσο στοχευμένες είναι οι πρακτικές αυτές (π.χ.: απευθύνεται μόνο προς έναν ή σχεδόν κανέναν από τους παίκτες όλης της ομάδας)
- Την ένταση με την οποία την πραγματοποιεί (το πάθος και η συναισθηματική ένταση που περιέχει το μήνυμα)
- Την διάρκεια που χρησιμοποιεί τις πρακτικές αυτές

	Βαθμολόγηση			
	0 – ΚΑΘΟΛΟΥ	**1 – ΑΣΘΕΝΗΣ ΕΜΦΑΣΗ**	**2 – ΜΕΤΡΙΑ ΕΜΦΑΣΗ**	**3 – ΙΣΧΥΡΗ ΕΜΦΑΣΗ**
ΔΙΑΣΤΑΣΕΙΣ ΑΝΩΤΕΡΟΥ ΕΠΙΠΕΔΟΥ				
Ενδυναμωτικός	- Γενικά, το κλίμα δεν είχε καθόλου ή σχεδόν καθόλου ενδυναμωτικά χαρακτηριστικά (Υποστήριξη Αυτονομίας, Προσανατολισμού στην Δουλειά, Υποστήριξης Σχέσεων).	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή ίσως να υποστηρίζουν μια από τις βασικές ψυχολογικές ανάγκες (π.χ.: την Αυτονομία) - Το περιβάλλον που δημιουργήθηκε δυνητικά μπορεί να υποστηρίξει άλλες ανάγκες αλλά σε χαμηλότερο επίπεδο.	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή ξεκάθαρα υποστηρίζουν περισσότερες από μία βασικές ανάγκες - Οι υπόλοιπες ανάγκες(-η) θα μπορούσαν να επίσης να υποστηρίζονται αλλά με τρόπο λιγότερο προφανή. - Το περιβάλλον θα μπορούσε να ήταν περισσότερο ενδυναμωτικό μέσω της εφαρμογής διαφορετικών πρακτικών.	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή όπως επίσης ο τρόπος με τον οποίο πραγματοποιήθηκαν, ξεκάθαρα δημιουργούν ένα κλίμα που μπορεί να υποστηρίξει την ικανοποίηση των βασικών ψυχολογικών αναγκών για Αυτονομία, Σχέσεις και Ικανότητα Προσανατολισμένη στην Δουλειά . - Όλες οι ανάγκες υποστηρίζονται από τις πρακτικές που υιοθέτησε ο προπονητής.
Αποδυναμωτικός	- Γενικά, το κλίμα δεν είχε καθόλου ή σχεδόν καθόλου αποδυναμωτικά χαρακτηριστικά (Ελέγχου (controlling), Προσανατολισμού στο Εγώ, Ματαίωσης των Σχέσεων).	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή ίσως να ματαιώσουν μια από τις βασικές ψυχολογικές ανάγκες (π.χ.: την Αυτονομία) - Το περιβάλλον που δημιουργήθηκε δυνητικά μπορεί να ματαιώσει άλλες ανάγκες αλλά σε χαμηλότερο επίπεδο.	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή ξεκάθαρα υποστηρίζουν περισσότερες από μία βασικές ή τις περισσότερες από τις βασικές ανάγκες - Οι υπόλοιπες ανάγκες(-η) θα μπορούσαν να επίσης να ματαιωθούν αλλά με τρόπο λιγότερο προφανή. - Το περιβάλλον θα μπορούσε να ήταν περισσότερο αποδυναμωτικό μέσω της εφαρμογής διαφορετικών πρακτικών.	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή όπως επίσης ο τρόπος με τον οποίο πραγματοποιήθηκαν, ξεκάθαρα δημιουργούν ένα κλίμα που μπορεί να ματαιώσει την ικανοποίηση των βασικών ψυχολογικών αναγκών για Αυτονομία, Σχέσεις και να ενθαρρύνει έτερο-αναφερόμενη αντίληψη της ικανότητας. - Όλες οι ανάγκες ματαιώνονται από τις πρακτικές που υιοθέτησε ο προπονητής.
ΠΕΡΙΒΑΛΛΟΝΤΙΚΕΣ ΔΙΑΣΤΑΣΕΙΣ				
Υποστήριξη της Αυτονομίας Αναγνωρίζει Συναισθήματα και Απόψεις	- Δεν χρησιμοποιήθηκαν καθόλου σχετικές πρακτικές από τον	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής.	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση

Δίνει Επιλογές με Νόημα Δίνεται έμφαση να υπάρχει Εσωτερικό Ενδιαφέρον για την Δραστηριότητα Αιτιολογεί τις δραστηριότητες, τους περιορισμούς και τις απαιτήσεις του Δίνει ευκαιρίες ώστε να εκφράσουν οι παίκτες την γνώμη τους. Ενθάρρυνση της λήψης Πρωτοβουλιών από τους παίκτες	προπονητή	- Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές εφαρμόζονται με ήπια ένταση	χρησιμοποιούνται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Οι παίκτες ενθαρρύνονται να πάρουν μερικό έλεγχο της προπόνησης/του αγώνα.	πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. - Οι παίκτες ξεκάθαρα ενθαρρύνονται να πάρουν το έλεγχο της συμμετοχής τους.
Ελέγχου Εκφοβισμός (εκφοβισμός από απειλές) Αρνητική αποδοχή υπό όρους Χρήση Αμοιβών για έλεγχο Χρήση γλώσσας που έχει σαν σκοπό να ελέγξει τους παίκτες Υποβάθμιση της προοπτικής του αθλητή Ανοιχτός προσωπικός έλεγχος	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές χρησιμοποιούνται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές εφαρμόζονται με ήπια ένταση	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να εφαρμόζονται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής επιχειρεί να έχει τον πλήρη έλεγχο του μεγαλύτερου μέρους της προπόνησης.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. -Ο προπονητής ξεκάθαρα υπαγορεύει το πως θα συμπεριφερθούν οι παίκτες κατά την διάρκεια της προπόνησης/του αγώνα.
Προσανατολισμού στην Δουλειά Δίνει έμφαση στην ανατροφοδότηση όσον αφορά τη Ικανότητα που είναι προσανατολισμένη στην Δουλειά. Εξηγεί την σπουδαιότητα του ρόλου του κάθε παίκτη. Δίνει έμφαση ή αναγνωρίζει την προσπάθεια και/ή την βελτίωση Χρήση Συνεργατικής Μάθησης	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές εφαρμόζονται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές χρησιμοποιούνται με ήπια ένταση	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να χρησιμοποιούνται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής αρχίζει να δίνει έμφαση στην σημασία της προσωπικής βελτίωσης.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. - Ανατροφοδότηση προσανατολισμένη στην Δουλειά δίνεται ατομικά στους παίκτες - Ο προπονητής δίνει ξεκάθαρα έμφαση στην προσωπική βελτίωση.
Προσανατολισμού στο Εγώ Ενθαρρύνει την αντιπαλότητα μέσα στην ομάδα/μεταξύ των παικτών Αναγνώριση ανωτερότητας/ κατωτερότητας των παικτών Τιμωρία για Λάθη	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές εφαρμόζονται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών.	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να εφαρμόζονται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής αρχίζει να δίνει έμφαση στην σημασία του να ξεπερνάμε τους άλλους.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. -Προσωπική ανατροφοδότηση σε κάποιον παίκτη

		- Οι πρακτικές εφαρμόζονται με ήπια ένταση		μπορεί να δίνεται μπροστά σε όλη την ομάδα. - Ο προπονητής δίνει ξεκάθαρα έμφαση στο να ξεπερνάμε τους άλλους.
Υποστήριξης των Καλών Σχέσεων Αποδοχή άνευ όρων Εμπλέκεται σε διάλογο με τους παίκτες (που δεν αφορά καθοδήγηση) Υιοθετεί ένα θετικό (θερμό και εποικοδομητικό) στυλ επικοινωνίας Αποδέχεται όλους τους παίκτες (κάνει συνειδητή προσπάθεια να συμπεριλάβει όλους τους παίκτες) Δείχνει ενδιαφέρον/φροντίδα για τους παίκτες (π.χ.: όταν κάποιος τραυματίζεται ή στεναχωριέται)	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές εφαρμόζονται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές εφαρμόζονται με ήπια ένταση	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να εφαρμόζονται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής κάνει ξεκάθαρη προσπάθεια να πλησιάσει τους παίκτες του/της.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. - Ο προπονητής ξεκάθαρα αλληλεπιδρά με τους παίκτες του/της και υιοθετεί με συνέπεια ένα συγκεκριμένο στυλ επικοινωνίας.
Ματαίωσης των Καλών Σχέσεων Δείχνει έλλειψη ενδιαφέροντος/φροντίδας για τους παίκτες (π.χ.: όταν κάποιος τραυματίζεται ή στεναχωριέται) Μειώνει τους παίκτες Υιοθετεί ένα αρνητικό (ψυχρό και επικριτικό) στυλ επικοινωνίας Συνειδητά αποκλείει παίκτες από δραστηριότητες. Αποφεύγει να εμπλακεί σε διάλογο με τους παίκτες.	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές εφαρμόζονται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές εφαρμόζονται με ήπια ένταση	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να εφαρμόζονται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής κάνει ξεκάθαρη προσπάθεια να πλησιάσει τους παίκτες του/της. -Ο προπονητής μπορεί να σταματήσει την προπόνηση για να δώσει εστιάσει στην άσκηση/δραστηριότητα.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. - Ο προπονητής κάνει συνειδητή προσπάθεια να αποφύγει/να σταματήσει θετική αλληλεπίδραση μεταξύ αυτού και των παικτών και μεταξύ των άλλων μελών της ομάδας.
Δομημένου Περιβάλλοντος Οδηγίες για οργάνωση. Προσδοκίες για μάθηση (πριν ή μετά την μια άσκηση ή την προπόνηση Καθοδήγηση καθόλη την διάρκεια της μαθησιακής διαδικασίας.	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να δίνει ασαφείς ή συγκεχυμένες οδηγίες στους παίκτες του/της. - Ο προπονητής μπορεί να σταματήσει και να ξαναρχίσει την προπόνηση αρκετές φορές. –Δεν υπάρχει λογική κλιμάκωση των ασκήσεων/δραστηριοτήτων.	- Ο προπονητής δίνει οδηγίες για το που πρέπει να βρίσκονται οι παίκτες και με ποιόν τρόπο θα ολοκληρώσουν την άσκηση ή την δραστηριότητα. - Ο προπονητής μπορεί ο ίδιος να επιδεικνύει στους παίκτες του πώς να κάνουν μια δεξιότητα. -Ωστόσο, ο προπονητής μπορεί να δίνει συγκεχυμένες οδηγίες καθόλη την διάρκεια της δραστηριότητας/της άσκησης. - Ο προπονητής μετά το τέλος της άσκησης/της δραστηριότητας δεν κάνει συζήτηση/δεν ανακεφαλαιώνει.	- Ο προπονητής θα εξηγήσει ξεκάθαρα πως οι παίκτες πρέπει μόνοι τους να οργανωθούν και που πρέπει να πάνε κατά την διάρκεια της δραστηριότητας. - Ο προπονητής θα πλαισιώσει κάθε δραστηριότητα κάνοντας μια εισαγωγή (θα μπορούσε να είναι μια επίδειξη), πως θα κλιμακωθεί η άσκηση και να δώσει την ευκαιρία για συζήτηση στο τέλος της δραστηριότητας. - Η γλώσσα που χρησιμοποιεί ο προπονητής είναι σαφής και κατάλληλη για τα παιδιά. - Ο προπονητής μπορεί να έχει ξανακάνει την άσκηση με τους παίκτες του. Σε αυτή την περίπτωση, θα καθοδηγεί καθόλη την διάρκεια της άσκησης για να διορθώσει τυχόν λάθη.

APPENDIX 5 – Materials used in Chapter 3

Multidimensional Motivational Climate Observation System (MMCOS; Smith et al., 2015) (Greek version).

Οδηγίες Κωδικοποίησης – Όργανο Αξιολόγησης του Προπονητικού Κλίματος

ΈΜΦΑΣΗ – Ο προπονητής κάνει συνειδητή προσπάθεια να περάσει σημαντικά μηνύματα δίνοντας έμφαση σε συγκεκριμένες λέξεις/οδηγίες/πρακτικές. Ο προπονητής μπορεί να δώσει έμφαση στις περιβαλλοντικές διαστάσεις με διάφορους τρόπους. Όταν βαθμολογείτε τον προπονητή πρέπει να πάρετε υπόψη τα παρακάτω:

- Την συχνότητα με την οποία χρησιμοποιεί τις πρακτικές αυτές
- Πόσο στοχευμένες είναι οι πρακτικές αυτές (π.χ.: απευθύνεται μόνο προς έναν ή σχεδόν κανέναν από τους παίκτες όλης της ομάδας)
- Την ένταση με την οποία την πραγματοποιεί (το πάθος και η συναισθηματική ένταση που περιέχει το μήνυμα)
- Την διάρκεια που χρησιμοποιεί τις πρακτικές αυτές

	Βαθμολόγηση			
	0 – ΚΑΘΟΛΟΥ	**1 – ΑΣΘΕΝΗΣ ΕΜΦΑΣΗ**	**2 – ΜΕΤΡΙΑ ΕΜΦΑΣΗ**	**3 – ΙΣΧΥΡΗ ΕΜΦΑΣΗ**
ΔΙΑΣΤΑΣΕΙΣ ΑΝΩΤΕΡΟΥ ΕΠΙΠΕΔΟΥ				
Ενδυναμωτικός	- Γενικά, το κλίμα δεν είχε καθόλου ή σχεδόν καθόλου ενδυναμωτικά χαρακτηριστικά (Υποστήριξη Αυτονομίας, Προσανατολισμού στην Δουλειά, Υποστήριξης Σχέσεων).	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή ίσως να υποστηρίζουν μια από τις βασικές ψυχολογικές ανάγκες (π.χ.: την Αυτονομία) - Το περιβάλλον που δημιουργήθηκε δυνητικά μπορεί να υποστηρίξει άλλες ανάγκες αλλά σε χαμηλότερο επίπεδο.	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή ξεκάθαρα υποστηρίζουν περισσότερες από μία βασικές ανάγκες - Οι υπόλοιπες ανάγκες(-η) θα μπορούσαν να επίσης να υποστηρίζονται αλλά με τρόπο λιγότερο προφανή. - Το περιβάλλον θα μπορούσε να ήταν περισσότερο ενδυναμωτικό μέσω της εφαρμογής διαφορετικών πρακτικών.	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή όπως επίσης ο τρόπος με τον οποίο πραγματοποιήθηκαν, ξεκάθαρα δημιουργούν ένα κλίμα που μπορεί να υποστηρίξει την ικανοποίηση των βασικών ψυχολογικών αναγκών για Αυτονομία, Σχέσεις και Ικανότητα Προσανατολισμένη στην Δουλειά . - Όλες οι ανάγκες υποστηρίζονται από τις πρακτικές που υιοθέτησε ο προπονητής.
Αποδυναμωτικός	- Γενικά, το κλίμα δεν είχε καθόλου ή σχεδόν καθόλου αποδυναμωτικά χαρακτηριστικά (Ελέγχου (controlling), Προσανατολισμού στο Εγώ, Ματαίωσης των Σχέσεων).	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή ίσως να ματαιώσουν μια από τις βασικές ψυχολογικές ανάγκες (π.χ.: την Αυτονομία) - Το περιβάλλον που δημιουργήθηκε δυνητικά μπορεί να ματαιώσει άλλες ανάγκες αλλά σε χαμηλότερο επίπεδο.	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή ξεκάθαρα υποστηρίζουν περισσότερες από μία βασικές ή τις περισσότερες από τις βασικές ανάγκες - Οι υπόλοιπες ανάγκες(-η) θα μπορούσαν να επίσης να ματαιωθούν αλλά με τρόπο λιγότερο προφανή. - Το περιβάλλον θα μπορούσε να ήταν περισσότερο αποδυναμωτικό μέσω της εφαρμογής διαφορετικών πρακτικών.	- Οι πρακτικές που εφαρμόσθηκαν από τον προπονητή όπως επίσης ο τρόπος με τον οποίο πραγματοποιήθηκαν, ξεκάθαρα δημιουργούν ένα κλίμα που μπορεί να ματαιώσει την ικανοποίηση των βασικών ψυχολογικών αναγκών για Αυτονομία, Σχέσεις και να ενθαρρύνει έτερο-αναφερόμενη αντίληψη της ικανότητας. - Όλες οι ανάγκες ματαιώνονται από τις πρακτικές που υιοθέτησε ο προπονητής.
ΠΕΡΙΒΑΛΛΟΝΤΙΚΕΣ ΔΙΑΣΤΑΣΕΙΣ				
Υποστήριξη της Αυτονομίας Αναγνωρίζει Συναισθήματα και Απόψεις	- Δεν χρησιμοποιήθηκαν καθόλου σχετικές πρακτικές από τον	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής.	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση

Δίνει Επιλογές με Νόημα Δίνεται έμφαση να υπάρχει Εσωτερικό Ενδιαφέρον για την Δραστηριότητα Αιτιολογεί τις δραστηριότητες, τους περιορισμούς και τις απαιτήσεις του Δίνει ευκαιρίες ώστε να εκφράσουν οι παίκτες την γνώμη τους. Ενθάρρυνση της λήψης Πρωτοβουλιών από τους παίκτες	προπονητή	- Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές εφαρμόζονται με ήπια ένταση	χρησιμοποιούνται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Οι παίκτες ενθαρρύνονται να πάρουν μερικό έλεγχο της προπόνησης/του αγώνα.	πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. - Οι παίκτες ξεκάθαρα ενθαρρύνονται να πάρουν το έλεγχο της συμμετοχής τους.
Ελέγχου Εκφοβισμός (εκφοβισμός από απειλές) Αρνητική αποδοχή υπό όρους Χρήση Αμοιβών για έλεγχο Χρήση γλώσσας που έχει σαν σκοπό να ελέγξει τους παίκτες Υποβάθμιση της προοπτικής του αθλητή Ανοιχτός προσωπικός έλεγχος	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές χρησιμοποιούνται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές εφαρμόζονται με ήπια ένταση	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να εφαρμόζονται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής επιχειρεί να έχει τον πλήρη έλεγχο του μεγαλύτερου μέρους της προπόνησης.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. -Ο προπονητής ξεκάθαρα υπαγορεύει το πως θα συμπεριφερθούν οι παίκτες κατά την διάρκεια της προπόνησης/του αγώνα.
Προσανατολισμού στην Δουλειά Δίνει έμφαση στην ανατροφοδότηση όσον αφορά τη Ικανότητα που είναι προσανατολισμένη στην Δουλειά. Εξηγεί την σπουδαιότητα του ρόλου του κάθε παίκτη. Δίνει έμφαση ή αναγνωρίζει την προσπάθεια και/ή την βελτίωση Χρήση Συνεργατικής Μάθησης	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές εφαρμόζονται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές χρησιμοποιούνται με ήπια ένταση	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να χρησιμοποιούνται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής αρχίζει να δίνει έμφαση στην σημασία της προσωπικής βελτίωσης.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. - Ανατροφοδότηση προσανατολισμένη στην Δουλειά δίνεται ατομικά στους παίκτες - Ο προπονητής δίνει ξεκάθαρα έμφαση στην προσωπική βελτίωση.
Προσανατολισμού στο Εγώ Ενθαρρύνει την αντιπαλότητα μέσα στην ομάδα/μεταξύ των παικτών Αναγνώριση ανωτερότητας/ κατωτερότητας των παικτών Τιμωρία για Λάθη	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές εφαρμόζονται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών.	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να εφαρμόζονται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής αρχίζει να δίνει έμφαση στην σημασία του να ξεπερνάμε τους άλλους.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. -Προσωπική ανατροφοδότηση σε κάποιον παίκτη

		- Οι πρακτικές εφαρμόζονται με ήπια ένταση		μπορεί να δίνεται μπροστά σε όλη την ομάδα. - Ο προπονητής δίνει ξεκάθαρα έμφαση στο να ξεπερνάμε τους άλλους.
Υποστήριξης των Καλών Σχέσεων Αποδοχή άνευ όρων Εμπλέκεται σε διάλογο με τους παίκτες (που δεν αφορά καθοδήγηση) Υιοθετεί ένα θετικό (θερμό και εποικοδομητικό) στυλ επικοινωνίας Αποδέχεται όλους τους παίκτες (κάνει συνειδητή προσπάθεια να συμπεριλάβει όλους τους παίκτες) Δείχνει ενδιαφέρον/φροντίδα για τους παίκτες (π.χ.: όταν κάποιος τραυματίζεται ή στεναχωριέται)	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές εφαρμόζονται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές εφαρμόζονται με ήπια ένταση	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να εφαρμόζονται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής κάνει ξεκάθαρη προσπάθεια να πλησιάσει τους παίκτες του/της.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. - Ο προπονητής ξεκάθαρα αλληλεπιδρά με τους παίκτες του/της και υιοθετεί με συνέπεια ένα συγκεκριμένο στυλ επικοινωνίας.
Ματαίωσης των Καλών Σχέσεων Δείχνει έλλειψη ενδιαφέροντος/φροντίδας για τους παίκτες (π.χ.: όταν κάποιος τραυματίζεται ή στεναχωριέται) Μειώνει τους παίκτες Υιοθετεί ένα αρνητικό (ψυχρό και επικριτικό) στυλ επικοινωνίας Συνειδητά αποκλείει παίκτες από δραστηριότητες. Αποφεύγει να εμπλακεί σε διάλογο με τους παίκτες.	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να εφαρμόζει μόνο ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να μη εφαρμόζονται συχνά - Οι πρακτικές εφαρμόζονται με ήπια ένταση -Θα μπορούσαν να εφαρμόζονται ατομικά σε ένα μικρό αριθμό παικτών. - Οι πρακτικές εφαρμόζονται με ήπια ένταση	- Ο προπονητής μπορεί να εφαρμόζει περισσότερο από ένα είδος πρακτικής. - Οι πρακτικές αυτές μπορεί να εφαρμόζονται προς πολλούς παίκτες (ατομικά ή δημόσια σε όλη την ομάδα) - Η ένταση με την οποία εφαρμόζονται οι πρακτικές αυτές παραμένει σχετικά χαμηλή - Ο προπονητής κάνει ξεκάθαρη προσπάθεια να πλησιάσει τους παίκτες του/της. -Ο προπονητής μπορεί να σταματήσει την προπόνηση για να δώσει εστιάσει στην άσκηση/δραστηριότητα.	- Ο προπονητής ξεκάθαρα χρησιμοποιεί ποικιλία διαφορετικών πρακτικών. - Οι πρακτικές αυτές θα πρέπει να έχουν επίδραση πάνω σε όλη την ομάδα (είτε μέσω της εφαρμογής ατομικά σε πολλούς παίκτες ή δημόσια σε όλη την ομάδα). - Η ένταση (πάθος) της εφαρμογής θα μπορούσε να ήταν περισσότερο έντονο. - Ο προπονητής κάνει συνειδητή προσπάθεια να αποφύγει/να σταματήσει θετική αλληλεπίδραση μεταξύ αυτού και των παικτών και μεταξύ των άλλων μελών της ομάδας.
Δομημένου Περιβάλλοντος Οδηγίες για οργάνωση. Προσδοκίες για μάθηση (πριν ή μετά την μια άσκηση ή την προπόνηση Καθοδήγηση καθόλη την διάρκεια της μαθησιακής διαδικασίας.	- Δεν χρησιμοποιήθηκαν καθόλου πρακτικές από τον προπονητή	- Ο προπονητής μπορεί να δίνει ασαφείς ή συγκεχυμένες οδηγίες στους παίκτες του/της. - Ο προπονητής μπορεί να σταματήσει και να ξαναρχίσει την προπόνηση αρκετές φορές. –Δεν υπάρχει λογική κλιμάκωση των ασκήσεων/δραστηριοτήτων.	- Ο προπονητής δίνει οδηγίες για το που πρέπει να βρίσκονται οι παίκτες και με ποιόν τρόπο θα ολοκληρώσουν την άσκηση ή την δραστηριότητα. - Ο προπονητής μπορεί ο ίδιος να επιδεικνύει στους παίκτες του πώς να κάνουν μια δεξιότητα. -Ωστόσο, ο προπονητής μπορεί να δίνει συγκεχυμένες οδηγίες καθόλη την διάρκεια της δραστηριότητας/της άσκησης. - Ο προπονητής μετά το τέλος της άσκησης/της δραστηριότητας δεν κάνει συζήτηση/δεν ανακεφαλαιώνει.	- Ο προπονητής θα εξηγήσει ξεκάθαρα πως οι παίκτες πρέπει μόνοι τους να οργανωθούν και που πρέπει να πάνε κατά την διάρκεια της δραστηριότητας. - Ο προπονητής θα πλαισιώσει κάθε δραστηριότητα κάνοντας μια εισαγωγή (θα μπορούσε να είναι μια επίδειξη), πως θα κλιμακωθεί η άσκηση και να δώσει την ευκαιρία για συζήτηση στο τέλος της δραστηριότητας. - Η γλώσσα που χρησιμοποιεί ο προπονητής είναι σαφής και κατάλληλη για τα παιδιά. - Ο προπονητής μπορεί να έχει ξανακάνει την άσκηση με τους παίκτες του. Σε αυτή την περίπτωση, θα καθοδηγεί καθόλη την διάρκεια της άσκησης για να διορθώσει τυχόν λάθη.

APPENDIX 6 – Materials used in Chapter 4

Work motivation Inventory –Greek version adapted to Coaching. (Blais, Briere, Lachance, Riddle & Vallerand, 1993)

Γιατί κάνετε τη δουλειά του προπονητή ποδοσφαίρου;	***Δεν ανταποκρίνεται καθόλου***			***Ανταποκρίνεται μέτρια***		***Ανταποκρίνεται ακριβώς***	
	1	***2***	***3***	***4***	***5***	***6***	***7***
1. Για τις υλικές αμοιβές που παρέχει αυτή η δουλειά (χρήματα, γνωριμίες κλπ.)	1	2	3	4	5	6	7
2. Γιατί είναι η δουλειά που διάλεξα και προτιμώ για μια συγκεκριμένη ποιότητα ζωής.	1	2	3	4	5	6	7
3. Για τις ανεπανάληπτες στιγμές χαράς που μου δίνει αυτή η δουλειά.	1	2	3	4	5	6	7
4. Λόγω της ευχάριστης εμπειρίας του να μαθαίνω καινούργια πράγματα σ' αυτή τη δουλειά.	1	2	3	4	5	6	7
5. Γιατί μου επιτρέπει να βγάλω λεφτά	1	2	3	4	5	6	7
6. Για τα ωραία συναισθήματα που νιώθω σ' αυτή τη δουλειά.	1	2	3	4	5	6	7
7. Για την αίσθηση της επίτευξης που νιώθω κάνοντας αυτή τη δουλειά με ένα προσωπικό και μοναδικό τρόπο.	1	2	3	4	5	6	7
8. Για την ευχαρίστηση που βιώνω από τη διεύρυνση των γνώσεών μου σε διάφορα ενδιαφέροντα θέματα.	1	2	3	4	5	6	7
9. Για την καλή πληρωμή σήμερα ή στο μέλλον.	1	2	3	4	5	6	7
10. Γιατί νοιώθω ότι οφείλω να είμαι καλός σ' αυτή τη δουλειά και θα ένοιωθα πολύ άβολα αν δεν τα κατάφερνα.	1	2	3	4	5	6	7
11. Γιατί διάφορες πλευρές αυτής της δουλειάς διεγείρουν την περιέργειά μου.	1	2	3	4	5	6	7
12. Για την ευχαρίστηση που νοιώθω όταν ανταποκρίνομαι στις ενδιαφέρουσες προκλήσεις της δουλειάς μου	1	2	3	4	5	6	7
13. Γιατί είναι πολύτιμο συμπλήρωμα του εισοδήματός μου	1	2	3	4	5	6	7
14. Γιατί περνώ πραγματικά ευχάριστα σ' αυτή τη δουλειά	1	2	3	4	5	6	7
15. Γιατί αυτή τη δουλειά τη διάλεξα και προτιμώ επειδή επιτυγχάνω σημαντικούς στόχους που με εκφράζουν ως άτομο.	1	2	3	4	5	6	7
16. Γιατί συχνά μαθαίνω ενδιαφέροντα πράγματα κάνοντας αυτή τη δουλειά.	1	2	3	4	5	6	7
17.Για τη χαρά που αισθάνομαι κάνοντας ενδιαφέροντα πράγματα, σαν μέρος αυτής της δουλειάς.							
18. Γιατί αυτή η δουλειά εκφράζει τη ζωή μου και θα ένοιωθα πολύ άσχημα αν αποτύχαινα.	1	2	3	4	5	6	7

19. Γιατί αν δεν πετύχαινα σ' αυτή τη δουλειά θα ντρεπόμουν.	1	2	3	4	5	6	7
20. Γιατί είναι ο τύπος της δουλειάς που διάλεξα και προτιμώ αφού με εκφράζει ως τρόπος ζωής.	1	2	3	4	5	6	7
21. Για την πρόκληση να προσπαθώ σε δύσκολα πράγματα.	1	2	3	4	5	6	7
22. Γιατί θέλω να είμαι ένας «νικητής» που ανταμείβεται δεόντως	1	2	3	4	5	6	7
23. Για την ευχαρίστηση της δημιουργίας και επίτευξης που προσφέρει αυτή η δουλειά.	1	2	3	4	5	6	7
24. Γιατί είναι μια δουλειά που διάλεξα και προτιμώ αφού με βοηθάει να ολοκληρώνομαι ως άτομο.	1	2	3	4	5	6	7
25. Γιατί μετά από χρόνια σ' αυτό το χώρο θα ένοιωθα συντετριμμένος αν αποτύχαινα σ' αυτή τη δουλειά	1	2	3	4	5	6	7
26. Για την κοινωνική καταξίωση και τις αμοιβές	1	2	3	4	5	6	7

Positive and Negative Affect Questionnaire adapted to Coaching (Mackinnon, Jorm, Christensen, Korten, Jacomb, & Rodgers, 1999)

Μέρος Η: Διαβάστε κάθε δήλωση και έπειτα επιλέξτε την απάντηση που περιγράφει πόσο συχνά βιώσατε τα συναισθήματα αυτά όταν προπονούσατε την ομάδα σας τις περασμένες 3-4 βδομάδες.

Κατά τις προηγούμενες 3-4 εβδομάδες, όταν προπονούσα αυτήν την ομάδα, ένιωθα γενικά…	**Όχι πολύ συχνά**			**Ουδέτερο**			**Συνεχώς**
1. Εμπνευσμένος	1	2	3	4	5	6	7
2. Σβέλτος	1	2	3	4	5	6	7
3. Φοβισμένος	1	2	3	4	5	6	7
4. Ταραγμένος	1	2	3	4	5	6	7
5. Ενθουσιασμένος	1	2	3	4	5	6	7
6. Νευρικός	1	2	3	4	5	6	7
7. Ενθουσιώδης	1	2	3	4	5	6	7
8. Τρομαγμένος	1	2	3	4	5	6	7
9. Συντετριμμένος	1	2	3	4	5	6	7
10. Αποφασισμένος	1	2	3	4	5	6	7

Subjective Vitality Questionnaire (Ryan & Fredericks, 1997)

ΟΙ ΠΑΡΑΚΑΤΩ ΕΡΩΤΗΣΕΙΣ ΑΦΟΡΟΥΝ ΤΑ ΣΥΝΑΙΣΘΗΜΑΤΑ ΣΑΣ ΣΤΗΝ ΚΑΘΗΜΕΡΙΝΗ ΣΑΣ ΖΩΗ

Μέρος Ι: Παρακάτω υπάρχουν μερικές δηλώσεις που αφορούν **την καθημερινή σου ζωή (π.χ. οτιδήποτε κάνεις),** οι οποίες δεν αφορούν την προπόνηση σου στο ποδόσφαιρο. Παρακαλώ δηλώστε το βαθμό που συμφωνείτε ή διαφωνείτε με καθεμιά από τις παρακάτω δηλώσεις. Φέρτε στο μυαλό σας πώς αισθανθήκατε **γενικότερα τον τελευταίο μήνα.**

Κατά τον περασμένο μήνα, στην καθημερινή μου ζωή...	**Δεν ισχύει καθόλου**		**Ισχύει σε κάποιο βαθμό**				**Ισχύει σε μεγάλο βαθμό**
1. Αισθανόμουν γεμάτος ζωντάνια.	1	2	3	4	5	6	7
2. Είχα μεγάλα κέφια.	1	2	3	4	5	6	7
3. Ανέμενα με ανυπομονησία την κάθε μέρα.	1	2	3	4	5	6	7
4. Σχεδόν πάντα αισθανόμουν εγρήγορση και επαγρύπνηση.	1	2	3	4	5	6	7
5. Αισθανόμουν ότι είχα πολύ ενέργεια.	1	2	3	4	5	6	7

Satisfaction from Coaching (Duda & Nicholls, 1992)

Το να προπονώ την ομάδα μου (σε προπόνηση και αγώνες)...	**Διαφωνώ Απόλυτα**	**Διαφωνώ**	**Δεν είμαι σίγουρος**	**Συμφωνώ**	**Συμφωνώ Απόλυτα**
1. Το βρίσκω ενδιαφέρον.	1	2	3	4	5
2. Μ’ αρέσει.	1	2	3	4	5
3. Συνήθως με απορροφά.	1	2	3	4	5
4. Είναι διασκέδαση για μένα.	1	2	3	4	5
5. Δεν καταλαβαίνω πώς περνάει η ώρα όταν ασχολούμαι μ’ αυτό	1	2	3	4	5

Commitment to Coaching (Raedeke, Warren, & Granzyk, 2002)

Όσον αφορά την προπονητική…	**Για πολύ μικρό χρονικό διάστημα ακόμη**		**Δεν είμαι σίγουρος**		**Για πολύ μεγάλο χρονικό διάστημα ακόμη**
1. Για πόσο καιρό ακόμη θα ήθελες να συνεχίσεις την προπονητική;	1	2	3	4	5

Όσον αφορά την προπονητική…	**Καθόλου**		**Δεν είμαι σίγουρος**		**Απόλυτα**
2. Πόσο αφοσιωμένος είσαι στην προπονητική;	1	2	3	4	5
3. Πόσο προσηλωμένος είσαι στην προπονητική;	1	2	3	4	5.