

Dual career pathway: relationship between coaching climates and student-athletes' symptoms of burnout in school and sports

Sonja Into

Veli-Matti Perttula

Master's thesis

Department of Psychology

University of Jyväskylä

JYVÄSKYLÄN YLIOPISTO

Psykologian laitos

INTO, SONJA & PERTTULA, VELI-MATTI: Kaksoisurapolku: Valmennusilmastojen yhteys opiskelija-urheilijoiden uupumusoireisiin koulussa ja urheilussa

Pro gradu- tutkielma, 38s

Ohjaajat: Kaisa Aunola, Tatiana V. Ryba

Psykologia

Toukokuu 2018

Tiivistelmä

Valmentajilla on tärkeä rooli nuorten urheilijoiden psykologisessa hyvinvoinnissa (Bartholomew, Ntoumanis, & Thogersen-Ntoumanis, 2010; Kipp & Weiss, 2013). Tämän tutkimuksen ensimmäisenä tavoitteena oli tutkia, minkälaisia valmennusilmastoja on löydettävissä suomalaisista urheilulukioista, ja toisena, kuinka löydetty valmennusilmastot ovat yhteydessä urheilijoiden uupumukseen niin koulussa kuin urheilussa. Lisäksi mahdollisia yhdysvaikutuksia uupumukseen tutkittiin löydettyjen valmennusilmastojen ja taustamuuttujien välillä. Yhteensä 414 17-18-vuotiasta opiskelija-urheilijaa seitsemästä eri urheilulukioista osallistui tutkimukseen. Taustatietojen lisäksi opiskelija-urheilijat täyttivät Empowering and Disempowering Motivational Climate Questionnaire—Coach (EDMCQ-C; Appleton, Ntoumanis, Quested, Viladrich, & Duda, 2016)- kyselyn, joka mittaa heidän kokemuksiaan valmennusilmastosta ja School Burnout Inventory (SBI, Salmela-Aro & Näätänen, 2005)-kyselyn sekä Sport Burnout Inventory-Dual Career Form (Sorkkila, Ryba, Aunola, Selänne, & Salmela-Aro, 2017b)- kyselyn, jotka mittaavat opiskelija-urheilijoiden uupumusoireita (väsymystä, kyynisyyttä ja riittämättömyyden tunteita) koulussa ja urheilussa. Aineiston analysointiin käytettiin klusterianalyysiä (k-means cluster) ja monisuuntaista varianssianalyysiä (MANOVA). Aineistosta löytyi kolme erilaista valmennusilmastoa: epävoimaannuttava, voimaannuttava ja keskimääräinen valmennusilmasto. Opiskelija-urheilijat epävoimaannuttavassa valmennusilmastossa kokivat enemmän uupumusoireita kuin kahdessa muussa valmennusilmastossa olevat opiskelija-urheilijat, kun taas voimaannuttavassa valmennusilmastossa olevat opiskelija-urheilijat kokivat vähemmän uupumusoireita sekä koulussa että urheilussa. Keskimääräisessä valmennusilmastossa olevat opiskelija-urheilijat kokivat vähemmän koulu- ja urheilu-uupumusoireita verrattuna tutkittaviin epävoimaannuttavassa valmennusilmastossa, mutta enemmän kuin tutkittavat voimaannuttavassa valmennusilmastossa. Tulokset osoittivat myös, että kouluaineiden keskiarvo vaikutti valmennusilmastojen ja koulu-uupumuksen väliseen suhteeseen. Tämä tutkimus tukee aiempaa tutkimustietoa valmennusilmastojen ja urheilijoiden hyvinvoinnin yhteydestä. Lisäksi tämä tutkimus tarjoaa ajankohtaista tietoa siitä, kuinka lukiovalmentajat voivat mahdollisesti vaikuttaa opiskelija-urheilijoiden uupumukseen paitsi urheilussa myös koulussa.

Avainsanat

Valmennusilmasto, urheilu-uupumus, koulu-uupumus, kaksoisura

UNIVERSITY OF JYVÄSKYLÄ

Department of psychology

INTO, SONJA & PERTTULA, VELI-MATTI: Dual career pathway: Relationships between coaching climates and student-athletes' symptoms of burnout in school and sports

Master's Thesis, 38pp

Supervisors: Kaisa Aunola, Tatiana V. Ryba

Psychology

May 2018

Abstract

Coaches are important socializing agents for youth athletes (Horn, 2008) and coach-created motivational climates have been found to be associated with athletes' well- and ill-being (Bartholomew, Ntoumanis, & Thogersen-Ntoumani, 2010; Kipp & Weiss, 2013). The purpose of this study was to investigate (1) what kind of coaching climates can be found in sport high schools in Finland; and (2) how these coaching climates are related to student-athletes' burnout in school and in sports. Moreover, interaction effects between the coaching climates and background variables in burnout were investigated. A total of 414 student-athletes, aged 17-18, from seven sport high schools participated in this study. In addition to background information, the participants filled in Empowering and Disempowering Motivational Climate Questionnaire—Coach (EDMCQ-C; Appleton, Ntoumanis, Quested, Viladrich, & Duda, 2016) to measure their perceived coaching climate; and School Burnout Inventory (SBI, Salmela-Aro & Näätänen, 2005) and Sport Burnout Inventory-Dual Career Form (Sorkkila, Ryba, Aunola, Selänne, & Salmela-Aro, 2017b) to assess athletes' burnout symptoms (inadequacy, cynicism and exhaustion) in school and sport, respectively. K-means cluster analysis and multivariate analysis of variance (MANOVA) were used to analyze the data. Three coaching climates were identified: disempowering, empowering and intermediate. Student-athletes in disempowering coaching climate experienced higher levels of school and sport burnout than student-athletes in other two coaching climates' groups, whereas participants in empowering coaching climate had lower levels of school and sport burnout. Student-athletes in intermediate group experienced lower levels of school and sport burnout compared to student-athletes in disempowering group, but higher levels than student-athletes in empowering group. Finally, grade point average (GPA) was found to interact with the coaching climates in school burnout. The study findings support previous research on associations between coaching climates and athletes' well-being. In addition, it offers timely insights into the ways high school coaches may play a role in student-athletes' burnout not only within but also across domains of sport and school.

Keywords

Coaching climate, sport burnout, school burnout, dual career

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INTRODUCTION

In most sports, the transition from junior level to senior level begins at ages 16-18, which has been reported as highly stressful time for athletes (Stambulova & Wylleman, 2015). At the same time, the athlete's educational transition into high school takes place, which, in turn, has been shown to be a critical period in terms of burning out in school (Salmela-Aro & Näätänen, 2005). These two critical transitions combined might bring extra load to the adolescents' lives. Recently, the dual career pathway, where elite sport and education is combined, has received increasing attention (EU Guidelines, 2012; e.g. Ryba, Aunola, Kalaja, Selänne, Ronkainen, & Nurmi, 2016; Stambulova, Engström, Franck, Linner, & Lindahl, 2015). Since dual career pathway brings extra challenge for student-athletes' educational and athletic careers, it is necessary to get more information on the factors associated with athletes' well-being, on the one hand, and symptoms of burnout, on the other to find ways to lighten student-athletes' educational and athletic demands in their dual career pathway.

One important factor that can play a role in student-athletes' well-being during dual career is coaching (Appleton & Duda, 2016). The coach and the coach-created motivational climate have, for example, been found to be strongly associated with athletes' perceived sport experiences (Smith & Smoll, 1997), as well as to affect athletes' well-being and burnout in sports: autonomy-supportive coaching has found to be related to higher psychological well-being, whereas a controlling coaching style has been related to more negative outcomes (Balaguer et al., 2012). However, earlier research on the role of coaches has focused on sport context and less is known about the coaches' role in the student-athletes' well-being in school. To achieve a better understanding in overall well-being among student-athletes, both sport and school domains should be taken into consideration. This study aims to explore how different coaching climates relate to one aspect of student-athletes' well-being, namely burnout in sports and in school. Moreover, the role of gender, type of sport (team or individual) and school achievement (grade point average, GPA) in these associations is also examined. The study is a part of an ongoing Finnish longitudinal study, *Winning in the Long Run* (Ryba, et al., 2016). The present study is based on data gathered in the Spring semester of 2nd grade in high school.

Burnout

Maslach defines burnout as an extended response to chronic interpersonal and emotional stressors on the job (Maslach, Schaufeli, & Leiter, 2001). Generally, burnout is seen as a negative outcome when one is working too much or one's working load becomes too heavy to bear. At worst, it may lead to leaving one's work (Maslach & Goldberg 1998). Although burnout has initially been considered as work-related phenomenon (Maslach & Goldberg, 1998; Maslach, Schaufeli, & Leiter 2001), burnout as a phenomenon has been shown to be evident also in school context (Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009) or in a sports environment (Caccese & Mayberg, 1984; Sorkkila et al., 2017a).

School burnout and school-related stress can be defined in many ways (Ang & Huan, 2006; Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008; Lazarus & Folkman, 1984; Silvar, 2001; Yusoff, 2010; for a review, see Walburg 2014). In our study we defined school burnout as a phenomenon consisting of three dimensions as suggested by Salmela-Aro, Kiuru, Leskinen and Nurmi (2009a; see also, Sorkkila, Ryba, Aunola, Selänne, & Salmela-Aro, 2017b): exhaustion at school, cynical attitude towards school and feelings of inadequacy at school. Exhaustion at school is a consequence of overtaxing schoolwork that causes tiredness or chronic fatigue (Salmela-Aro, Savolainen, & Holopainen, 2009b; Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). Cynicism towards school, in turn, is a result of distant attitude toward school assignments and lack of interest in one's schoolwork. Feelings of inadequacy refers to one's lower level of perceived competence and lower achievement goals, as well as reduced accomplishment in one's academic work (Salmela-Aro et al., 2009a; Schaufeli et al., 2002).

School burnout has been shown to be a severe problem among adolescents. For example, the school health survey in Finland showed that from high school students (first and second grade) as many as 14% of the girls and 9% of the boys reported that they have experienced burnout in school (Luopa, Lommi, Kinnunen, & Jokela, 2010). Studies have also shown that burnout in school increases once adolescents enter high school (Salmela-Aro & Tynkkynen, 2012) and that school burnout levels are quite stable over time (Salmela-Aro et al., 2009b; Tuominen-Soini & Salmela-Aro, 2014). It has been suggested that transition into high school, in particular, can cause feelings of stress and therefore also increase the burnout levels (Salmela-Aro & Tynkkynen, 2012). Furthermore, Bask and Salmela-Aro (2013) found a

relationship between burnout and school dropout, and in their study especially cynicism has been a substantial factor explaining dropout.

Perceived school burnout has been shown to vary between girls and boys. For example, in the study by Kiuru et al. (2008) girls experienced more school burnout compared to boys. Recent studies have also revealed that girls on the academic track show higher burnout levels compared to boys on the academic track and compared to boys or girls on the vocational track (Salmela-Aro, Kiuru, & Nurmi, 2008; Salmela-Aro & Tynkkynen, 2012). Besides gender, academic achievement (Kiuru et al., 2008; Salmela-Aro et al., 2009b), school engagement (Salmela-Aro et al., 2009a) and achievement goals (Vasalampi, Salmela-Aro, & Nurmi, 2009) are also connected to school burnout levels. For example, Kiuru et al. (2008) found out that high academic achievement protected students from school burnout. Similar results were reported by Salmela-Aro et al. (2009b). Lower school engagement, in turn, has been connected to higher levels of cynicism and sense of inadequacy at school (Salmela-Aro et al., 2009a). In the study by Vasalampi et al. (2009), self-concordant achievement-related goals were related to high goal progress, which, in turn, predicted lower levels of school burnout. However, this connection was significant only for girls.

Also, in the context of sport, burnout has been defined with three dimensions similar to school burnout, which are exhaustion at sports, cynical attitude towards sport and feelings of inadequacy at sport (Sorkkila et al., 2017a). Burnout research in sports has traditionally focused on the burnout of coaches (Goodger, Gorely, Lavalley, & Harwood, 2007) but recently there has been a lot of studies on burnout experienced by athletes (e.g., Cohn, 1990; Cresswell & Eklund, 2005; Gustafsson, Kenttä, Hassmén, & Lundqvist, 2007; Lonsdale, Hodge, & Rose, 2009). In our study, sport burnout is examined with the three dimensions described earlier in school context, that is, exhaustion, cynicism and inadequacy in sport (Ryba et al., 2016; Sorkkila et al., 2017b). Exhaustion in sport can be physical or emotional and it refers to intense training and competition, cynicism is related to negative attitude towards training and competition, and feelings of inadequacy occur as a reduced sense of accomplishment and a lack of competence in one's sport performance (Sorkkila et al., 2017a).

It has been suggested that athletes may experience burnout in sport because there is a high pressure to succeed (DiFiori et al., 2014) and, therefore, training hours may be too high and there is not enough time for recovery (Gustafsson, Hassmen, Kenttä, & Johansson, 2008). The empirical evidence, however, is somewhat mixed. For example, Gustafsson et al. (2007) did not find correlation between average time with sport and burnout, whereas Cohn (1990) found some sources for stress and burnout in sport including, for example, too much practice,

lack of enjoyment and pressure from self and others (see also, DiFiori et al., 2014; Gustafsson et al., 2008). Sport burnout has not only been shown to be an indicator of athletes' ill-being but also correlate negatively with training, motivation (Cresswell & Eklund, 2005; Gould, Tuffey, Udry, & Loehr, 1996), accomplishment and professional efficacy (Cresswell & Eklund, 2006).

In Gustafsson et al. (2007) study the prevalence of severe sport burnout in athletes was between one and nine percent among youth Swedish athletes. It has been shown, however, that the burnout levels may vary a lot, even in short period of time (Cresswell & Eklund, 2005). Studies about gender differences in experienced burnout varies between different studies. For example, in the study by Harris and Smith (2009) women experienced higher sport burnout levels compared to men, whereas some studies have not found differences between male and female athletes' burnout levels (Lai & Wiggins, 2003; Sorkkila et al., 2017b; Vitali, Bortoli, Bertinato, Robazza, & Schena, 2015). According to Gustafsson et al. (2007), females and males may interpret the burnout subscales differently, which may also affect the reported gender differences in sport burnout.

Motivational coaching climate

Coaches play a significant role in young athletes' lives (Goodger et al. 2007) and it has been suggested that coaching climate created by the coach is particularly important (Alvarez, Balaguer, Castillo, & Duda, 2012; Scanlan & Lewthwaite, 1986). Coaching climate refers to the psychosocial environment that the coach creates for the athletes (Appleton, Ntoumanis, Quested, Viladrich, & Duda, 2016). During the last decades, coaching climate research has been guided mainly by motivational theories (Cronin & Allen, 2015). The two predominant theories have been Achievement Goal Theory (AGT) and Self-Determination Theory (SDT).

Achievement Goal Theory (AGT) is a theoretical approach that emphasizes the role of the social situation in motivational processes and analyzes human behavior. Achievement goals refer to competence-based goals that individuals, i.e. athletes, aims (Nicholls, 1989). In AGT framework, the coach-created motivational climate includes what the coach says and does, as well as how the environment is structured by the coach in training and competitions (Duda, 2001). AGT divides the coaching climates into two situation-focused climates: a task-involving climate (or mastery climate) and an ego-involving climate (or performance climate). Task-involving climate is characterized as a situation where athletes perceive that trying hard

and cooperative learning are valued by the coach and that every athlete in the team has an important role. In an ego-involving environment, athletes compare themselves to others (e.g. team-mates) and they feel that they will be punished if they make mistakes, the coach tends to favour the better players, and that intra-team member competition is present on the team. Moreover, an individual feels successful when he or she achieves more with equal or less effort compared to others to produce an equal performance. (Newton, Duda, & Yin, 2000)

According to Self-Determination Theory (SDT; Deci & Ryan, 2000), in turn, coaching styles can be divided into two different styles—autonomy-supportive and controlling coaching—both of which lead to qualitatively different outcomes (Isoard-Gauthier et al., 2012). In an autonomy-supportive coaching environment, the coach takes into account athletes' preferences and listens to their feelings and thoughts (Mageau & Vallerand, 2003). Furthermore, the coach encourages the athletes to participate in decision-making and tries to minimize external pressures on the athletes (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010). This kind of coaching has been assumed to support athletes' well-being and intrinsic motivation, the latter referring to an athlete's behavior that is driven by internal rewards (Deci & Ryan, 2000). In contrast, a controlling coaching climate refers to an environment where the coach is perceived as coercive and authoritarian, and he or she does not take into account athletes' opinions in terms of sport related decision-making (Isoard-Gauthier et al., 2012). Controlling coaching is presumed to be harmful for athletes and lead to more extrinsic motivation and ill-being in sports (Deci & Ryan, 2000).

According to SDT, a human has innate psychological needs for competence, autonomy and relatedness, which play an important role in understanding human motivation and well-being (Deci & Ryan, 2000; Ryan & Deci, 2000). Autonomy involves that the individual voluntarily makes decisions regarding his or her actions and is having the experience of choice (Deci, 1975; Gagné & Deci, 2005). Competence implies the feeling of being important and effective in one's social and physical environment (Deci, 1975). The third component of psychological needs, relatedness, involves that the significant others (e.g., coach or parent) are interested in one's life (Mageau & Vallerand, 2003) and the level and the quality of social support, i.e. the feeling of being connected to others and a sense of belonging to a group (Baumeister & Leary, 1995). According to the SDT, satisfaction of the three innate psychological needs is related to greater intrinsic motivation and well-being. Furthermore, social environment that thwarts the three psychological needs is associated with poorer motivation and ill-being (Deci & Ryan, 2000).

Recently, Duda (2013) encapsulated the major social environmental elements of both the AGT and the SDT and created a new multidimensional and hierarchical conceptualization of the motivational climate. According to Duda (2013), motivational climate can be more or less empowering and/or disempowering environment. An empowering motivational climate is marked by task-involving, autonomy-supportive and relatedness-supportive environment, whereas a disempowering climate is characterized by ego-involving and more controlling environment (Appleton et al., 2016; Duda, 2013). Thus far, there are only few studies that have investigated the relation between empowering/disempowering coaching climate and well-being. For example, Appleton and Duda (2016) found empowering coaching climate to be related to lower devaluation and reduce accomplishment whereas disempowering coaching climate was found to be associated with higher levels of devaluation, emotional and physical exhaustion and reduced feelings of accomplishment. Considering this and based on the theories and previous studies within SDT and AGT framework, empowering coaching climate can be expected to promote one's well-being, whereas disempowering coaching climate can be expected to be more harmful to athlete's motivation and well-being.

Coaching climate and burnout

Coaches, team members and family play an important role in athletes' lives and, therefore, are important social support in promoting athletes' well-being (Cosh & Tully, 2015; Goodger et al., 2007; Raedeke, Lunney, & Venables, 2002). In addition, coach-created motivational coaching climate has been shown to be associated with athletes' psychological well-being (Vanorsby, 2017). For example, coaches' positive and informational feedback has been shown to be related to greater enjoyment and intrinsic motivation (Weiss, Amorose, & Wilko, 2009), while autonomy-supportive coaching climate has been associated with athletes' life satisfaction, positive affect and self-esteem (Cronin & Allen, 2015; see also Kipp & Weiss, 2013).

According to SDT, the association between athletes' psychological well-being and coaching climate can be explained through the satisfaction of the three basic psychological needs (autonomy, competence and relatedness) that are functionally crucial to ongoing personal growth and well-being (Deci & Ryan, 2000). Thus, the factors that increase the satisfaction of the three psychological needs are expected to enhance one's well-being (Vansteenkiste & Ryan, 2013), which is also confirmed by several empirical studies (e.g.

Amorose, Anderson-Butcher and Cooper, 2009; Kipp & Weiss, 2013; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Wilson, Longley, Muon, Rodgers, & Murray, 2006). Thwarting the three needs, on the other hand, is expected to contribute to one's psychological ill-being (e.g., Balaguer et al., 2012; González, García-Merita, Castillo, & Balaguer, 2016).

Although most of the previous research has focused on the connection between psychological well-being and coaching climate, there are also some studies connecting coaching climate to athletes' burnout in sports. For example, research conducted within the Self-Determination Theory (SDT) framework focusing on young soccer players revealed that autonomy-supportive coaching was related to lower burnout scores, whereas controlling coaching climate was associated with increased burnout scores (Balaguer et al., 2012). A similar result was found among collegiate athletes in South-Korea, when the relationship between perceived coaching behaviors and athletes' burnout was examined (Cho, 2015). Results revealed that autonomy-supportive coaching climate was related to lower sport burnout scores and higher levels of need satisfaction on all three psychological needs while controlling coaching behavior was related to higher burnout scores and lower satisfaction on the psychological needs. Similarly, Isoard-Gauthier et al., (2012) demonstrated that thwarting the three basic psychological needs may expose athletes to burnout, while Amorose et al., (2009) found a connection between psychological need satisfaction and negative burnout scores. Vealey, Armstrong, Comar and Greenleaf (1998), however, found out that perceived coaching behavior predicted athletes' sport burnout, but did not significantly predict athletes' level of anxiety, although athletes' burnout and anxiety levels were related.

After assessing sport burnout and coaching climate within the Achievement Goal Theory (AGT) framework, Harris and Smith (2009) found that ego-involving climate was related to higher burnout scores among student-athletes from a mid-Atlantic university in the USA. Vitali et al. (2015) also examined sport burnout using the AGT framework and found out that task-involving climate correlated negatively and ego-involving climate positively with different dimensions of sport burnout (exhaustion, reduced sense of accomplishment and sport devaluation). Furthermore, Gano-Overway, Steele, Boyce and Whaley (2017) revealed that task-involving coaching climate also promoted the athletes' psychological coping skills, which are important in order to protect athletes from burning out.

Overall, in previous literature autonomy-supportive coaching and task-involving climate has been related to lower levels of sport burnout, whereas controlling coaching climate and ego-involving climate seem to be related to increased levels of sport burnout. However, previous literature on the topic is limited in the sense that it has mainly focused on the role of

coaches in sport burnout and coach's role in school burnout is still unknown. In dual career pathway, where elite sport and education is combined, young athletes are encouraged to achieve success both in school and sport domain. Since student-athletes spent a lot of time interacting with their coaches, it is important to better understand the coaches' influence on young athletes' successful dual-career and well-being in both contexts, that is sport and school. The other limitation of the previous research on the topic is that most of the previous studies have used either the AGT or the SDT framework in assessing the association between burnout and coaching climate, and therefore, only few of them have used the theoretical framework on empowering/disempowering coaching climate recently suggested by Duda (2013). Duda's (2013) theory of empowering and disempowering coaching climate merged two theories (SDT & AGT) into one and thus brings more comprehensive conceptualization of the coaching climate environment. Finally, there is no previous research examining the relation of coaching climate to burnout in sports and in school in Finland. Since the education systems vary between different countries and cultures, it is important to get more information about the topic from different cultures. Consequently, the aim of the present study is to examine the extent to which the perceived coaching climate is associated with the symptoms of sport burnout, on the one hand, and school burnout, on the other among Finnish high school athletes.

The interactions of motivational climates and other factors in burnout

In earlier literature, various background characteristics including, for example, gender (Harris & Smith, 2009; Kiuru et al., 2008), type of sport (Gustafsson et al., 2008; Heidari, 2013), and level of GPA (e.g., Nikodijević, Labrovič, & Dokovič, 2012; Salmela-Aro et al., 2009b) have been associated with adolescents' levels of burnout in both school and sport contexts. For example, symptoms of school burnout have been shown to be more typical for girls than for boys (Kiuru et al., 2008), whereas symptoms of sport burnout have been shown to be more common among female athletes (Cremades & Wiggins, 2008; Harris & Smith, 2009; Sorkkila et al., 2017a). However, in some studies no differences were found between male and female athletes' burnout (Lai & Wiggins, 2003; Sorkkila et al., 2017b; Vitali et al., 2015). Results concerning the role of type of sport, in turn, have been somewhat contradictory. Although previous literature hypothesized that athletes in individual sports are more likely to experience sport burnout compared to those in team sports (Coakley, 1992; Smith, 1986), in the study by Gustafsson et al. (2007) male athletes in team sports reported higher levels of sport burnout

compared to individual male athletes on the exhaustion and devaluation subscales. In contrast, in the case of female athletes, no differences were found between team and individual sports. On the contrary, Cremades and Wiggins (2008) revealed that athletes in individual sports experienced higher levels of burnout compared to athletes on team sports. Finally, school achievement has been shown to be related to symptoms of school burnout: the higher the level of school achievement, the lower the level of school burnout (Kiuru et al., 2008; Salmela-Aro et al., 2009b).

The fact that gender, type of sport and school achievement are all related with the symptoms of burnout awakens question whether these factors might interact with coaching climate when explaining symptoms of burnout. In previous literature the assumption has mainly been that the connection of coaching climate with sport burnout is similar for all athletes. To our knowledge, the only study thus far that has even nearly investigated the interactive impact of coaching climate and gender in athletes' sport burnout is a study conducted by Harris and Smith (2009). In this study, regression analysis revealed that the model of motivational climate (task climate and ego climate) and gender predicted sport devaluation but not exhaustion or reduced sense of sport accomplishment among student-athletes from mid-Atlantic university. Because the sample in many studies examining the relationship between coaching and well-being have consisted of all-male (e.g., Alvarez et al., 2012) or all-female participants (e.g., Vealey et al., 1998), the interactive effect of gender and coaching climate has still, however, been rarely tested. The same limitation concerns the role of type of sport: most studies have focused either on team sports (e.g., Vitali et al., 2015) or, alternatively, on individual sports (e.g., Heidari, 2013).

Although there are no previous studies examining the interaction between coaching climate and school achievement in athletes' levels of burnout, the fact that high school achievement protects against symptoms of burnout (Kiuru et al., 2008; Salmela-Aro et al., 2009b) arises assumption whether high school achievement can protect against school burnout even more in situations which in otherwise may make adolescents prone to school burnout, such as disempowering coaching. Equally interesting question is whether empowering coaching climate can protect against the negative impacts of low academic achievement for one's well-being. Consequently, the final aim of this study was to investigate whether gender, type of sport, or level of school achievement in terms of grade point average (GPA) interact with coaching climates in sport and school burnout.

The aims of the study

The current study examined the associations of different coaching styles with student athletes' well-being, especially symptoms of burnout, in sports and in school. First, we wanted to examine how Duda's (2013) theory of empowering/disempowering coaching climate fit to the data, that is, whether the coaching climates suggested by the theory can be identified among the sample of Finnish high school student-athletes and how these are distributed throughout the data. Second, we wanted to explore to what extent there are gender differences, or differences between individual and team sports, in the perceived coaching climates. Third, we wanted to examine to what extent the perceived coach-created climate (empowering/disempowering) is related to athletes' symptoms of burnout (exhaustion, cynicism and inadequacy) in sports. Fourth, we explored to what extent the experienced coaching climate is related to athletes' symptoms of burnout in school. Finally, we investigated if gender, type of sport (individual or team), and school achievement interact with coaching climate in the symptoms of school and sport burnout.

Based on the theoretical background, we assumed that we can identify two coaching climate groups: disempowering and empowering coaching climates (Duda, 2013). Further, based on the previous studies (Smith, Cumming, & Smoll, 2008), we assumed that boys are over represented in disempowering group and girls are over represented in empowering group. Furthermore, we assumed individual and team sport student-athletes to be distributed equally in different coaching climate groups. Based on the previous studies within SDT and AGT framework, we hypothesized that disempowering climate would be positively related to athletes' symptoms of burnout in sports (e.g., Harris & Smith, 2009; Vitali et al., 2015), whereas empowering coaching climate would be negatively associated with these symptoms (e.g., Amorose et al., 2009, Balaguer et al., 2012). We also expected that perceived coaching climate would be related to symptoms of burnout in school. However, because of lack of previous research, we did not set any specific hypothesis on our fourth research question. Finally, we hypothesized that empowering coaching climate would protect against the negative impacts of low academic achievement for one's well-being and disempowering climate combined with low academic achievement would increase the risk of burnout. Furthermore, due to the contradictory results of the impact of gender or type of sport on burnout, we did not set any specific hypothesis in terms of the interaction between coaching climates and gender or type of sport.

METHODS

Participants and procedure

This study is part of an ongoing longitudinal research project, Winning in the Long Run study in Finland (Ryba et al., 2016). In the research project, student athletes have thus far been followed up from the beginning of the first grade of high school (time 1) to the end of third grade (time 5). The current study took place when the adolescents were on the second grade (time 3). The sample consisted of 490 student athletes (238 girls and 249 boys), born mostly in 1999, from seven different sport high schools in Finland. In the sample, 47.3% of the adolescents represented individual sports and 52.4% represented team sports. Almost half of the students (49.2%) reported that their goal is to become professional athletes, while 35.7% did not aim for a career as a professional athlete and the rest did not answer the question. A total of 76 participants were excluded from the final analysis due to missing information of the variables used in this study. The excluded participants were randomly distributed in terms of the measured variables ($\chi^2(14) = 7.207, p = .926$). Participants filled in surveys online via MrInterview software during their school hours or on their free time.

Participants' average time spent with their sport weekly (e.g., travels, training, competitions, mental training) was 25 hours (varying from 5 to 70 hours), time spent in school studying weekly was 22 hours (varying from 0 to 40) and time spent outside school studying weekly was 5 hours (from 0 to 57). Reported grade point average of the student athletes was, on average, 8.01 ($SD = 0.922$; range 4-10) in scale 4 to 10.

Measures

School Burnout. School burnout was measured with School Burnout Inventory (SBI, Salmela-Aro & Näätänen, 2005; Salmela-Aro et al., 2009a). Originally SBI was developed from the Bergen Burnout Indicator 15 (BBI-15), and Salmela-Aro and Näätänen (2005) modified it to suit for the school environment. The SBI consists of three subscales measuring burnout in school: 1) exhaustion at school (four items, e.g., "I brood over matters related to my school work a lot during my free time"), 2) cynical attitude towards school (three items, e.g., "I feel like I am losing interest in my school work") and 3) feelings of inadequacy at school (three items, e.g., "I often have feelings of inadequacy in my school work"). The items were each rated on 5-point Likert-scale (1 means "strongly disagree" and 5 means "strongly agree"). The

Cronbach's alpha reliabilities for the three subscales were for exhaustion .855, for cynicism .854 and for inadequacy .803. For the overall school burnout scale Cronbach's α reliability was .881.

Sport burnout. Sport burnout was measured with the Sport Burnout Inventory Dual Career form –scale (SpBI-DC) developed on the basis of on the basis of SBI (Sorkkila et al., 2017a). The scale consisted of 10 items measuring 3 dimension of sport burnout: 1) exhaustion at one's sport includes 4 items (e.g., "I feel overwhelmed by my sport), 2) cynicism towards the meaning of one's sport, includes 3 items (e.g., "sport doesn't interest me anymore) and 3) feelings of inadequacy as an athlete includes 3 items (e.g., "I often have feelings that I'm not doing well in my sport). The items were each rated on 5-point Likert-scale (1 means "strongly disagree" and 5 means "strongly agree"). The Cronbach α reliabilities for the three subscales were .752, .834 and .794, respectively. For the overall sport burnout scale Cronbach's α reliability was .874.

Coaching climate. Empowering and Disempowering Motivational Climate Questionnaire (EDMCQ-C) was used to measure athletes' experiences on coaching climate (Appleton, Ntoumanis, Quested, Viladrich, & Duda, 2016). The questionnaire consisted of 32 items that were rated on 5-point Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire consisted of five subscales measuring different aspects of coaching climates. Task-involving coaching consisted of 9 items (e.g., "My coach encouraged players to try new skills"), autonomy-supportive coaching consisted of 5 items (e.g., "My coach gave players choices and options"), socially-supportive coaching consisted of 3 items (e.g., "My coach really appreciated players as people, not just as athletes"), ego-involving coaching of 7 items (e.g., "My coach substituted players when they made a mistake") and controlling coaching of 8 items (e.g., "My coach paid less attention to players if they displeased him or her"). Cronbach's alphas reliabilities for the five subscales were .875, .784, .789, .855 and .732, respectively.

Analysis strategy

Before the statistical analyses, mean scores for burnout subscales (i.e., exhaustion, cynicism and inadequacy) in school and in sports, and for coaching climate subscales (i.e., task-involving, autonomy-supportive, socially-supportive, ego-involving and controlling coaching), were created by calculating the mean of item scores comprising the respective subscale dimensions. In addition, data was inspected for normality and possible outliers.

The analyses were carried out according to the following steps. First, K-means Cluster analysis was used to identify different coaching climates using task-involving coaching, ego-involving coaching, autonomy supporting coaching, socially supportive coaching and controlling coaching as criteria variables. Second, cross-tabulation was used to investigate gender and type of sport distributions within different coaching climate groups. Third, Multivariate Analysis of Variance (MANOVA) was used to examine the extent to which coaching climates are related to different burnout subscales on the sport domain. Fourth, MANOVA was conducted to examine the extent to which coaching climates are related to different burnout subscales on the school domain. Finally, to test the interaction effects of gender, type of sport, and school achievement with coaching climates in burnout, these variables were included into the analyses and interaction effects tested, separately. All statistical analyses were conducted using IBM SPSS Statistics 24.

RESULTS

Coaching climates

The first research question was what kind of coaching climates can be identified among the sample and how these climates are distributed throughout the data. To answer the research question, K-means cluster analysis was conducted using standardized mean scores for the coaching climate subscales (task-involving, autonomy-supportive, socially-supportive, ego-involving and controlling coaching) as criteria variables. Based on the theory on motivational climate (Duda, 2013), two-cluster solution was expected to best fit the data. However, in the interest of fully assessing the data, solutions from two to six clusters were investigated. The

results showed that when four, five or six clusters were specified, cluster sizes of some clusters were very small ($n < 20$) and, thus, these solutions were not considered to be representative of the data. When two clusters were specified, coaching climate subscales formed groups that represented Dudas' (2013) empowering and disempowering motivational climates. When three clusters were specified, empowering and disempowering climates also emerged. In addition, three-cluster solution formed third cluster that was something between these two coaching climates and participants were divided into groups quite evenly. Therefore three-cluster solution was chosen over two-cluster solution. The groups means (M) and standard deviations (SD) for the coaching climate variables and the result of the analysis of variance (ANOVA) comparing the three clusters according to the criteria variables are presented in Table 1. The cluster groups and subscales are presented in Fig 1.

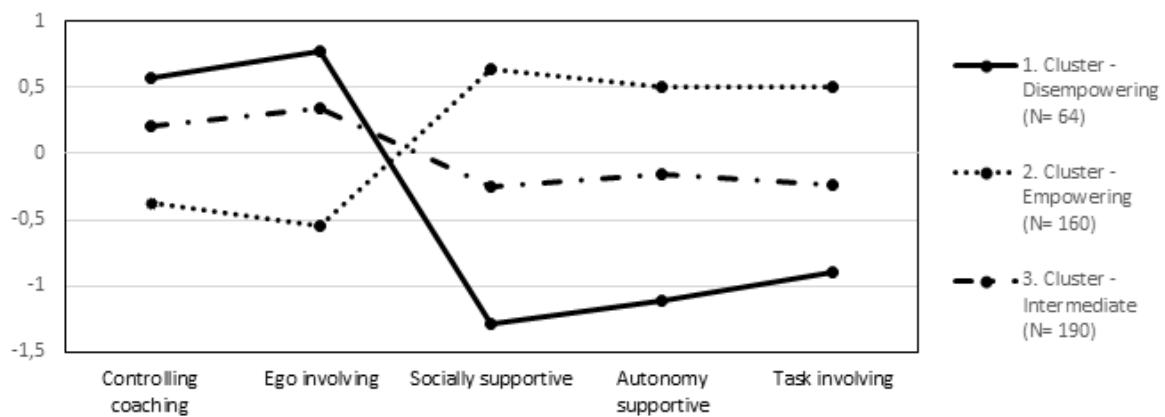


Fig. 1. Coaching climate cluster profiles

The results of ANOVA (see Table 1) showed that the first cluster consisted of participants whose coaches used significantly ($p < .05$) more ego-involving and controlling coaching and significantly ($p < .05$) less autonomy-supportive coaching, socially supportive coaching and task-involving compared to clusters two and three, thus we named it disempowering group. The second cluster, labeled as empowering group, consisted of participants experiencing significantly ($p < .05$) more autonomy-supportive, socially-supportive and task-involving coaching and significantly ($p < .05$) less ego-involving and controlling coaching compared to clusters one and three. Third cluster, labeled as intermediate group, consisted of participants who experienced significantly ($p < .05$) higher levels of socially supportive, task-involving and autonomy-supportive coaching compared to disempowering group but significantly ($p < .05$) lower levels than participants in empowering group. Moreover, participants in intermediate group experienced significantly lower levels of ego-involving and

controlling coaching compared to disempowering group, but significantly ($p < .05$) higher levels compared to empowering group.

Table 1. Means (M) and standard deviations (S.D.) of coaching variables for the three coaching climate groups

		Coaching climate			<i>F</i>
		Disempowering	Intermediate	Empowering	
Controlling coaching	<i>M</i>	0.566	0.209	-0.367	120,39***
	<i>S.D</i>	0.514	0.464	0.459	
Ego-involving	<i>M</i>	0.772	0.336	-0.543	212,46***
	<i>S.D</i>	0.578	0.483	0.517	
Socially-supportive	<i>M</i>	-1.290	-0.247	0.643	417,74***
	<i>S.D</i>	0.566	0.471	0.461	
Autonomy-supportive	<i>M</i>	-1.108	-0.146	0.496	284,72***
	<i>S.D</i>	0.665	0.402	0.456	
Task-involving	<i>M</i>	-0.903	-0.241	0.508	237,14***
	<i>S.D</i>	0.575	0.450	0.475	
<i>N</i>		64	160	190	

Note 1. *** $p < .001$, ** $p < .01$, * $p < .05$. Note 2. All groups showed statistically significant difference ($p < .05$) in all criteria variables.

Gender and type of sport differences in the perceived coaching climates

The second aim was to examine if there are differences between gender or type of sport in the perceived coaching climate groups. A chi-square analysis showed a statistically significant association between cluster membership and gender ($\chi^2(2, N = 411) = 6.99, p < .05$): girls were over represented among those who reported empowering climate (adj.res = 2.6, $p < .05$), whereas boys were underrepresented among this group (adj.res = -2.6, $p < .05$). Furthermore, there was also significant association between cluster membership and type of sport ($\chi^2(2, N = 413) = 12.43, p < .01$): individual athletes were over represented among those who reported empowering climate (adj.res = 3.5, $p < .01$), whereas team sport athletes were underrepresented among this group (adj.res = -3.5, $p < .01$). Also, individual athletes were underrepresented among those who reported intermediate climate (adj.res = -2.6, $p < .01$), whereas team sport athletes were over represented among this group (adj.res = 2.6, $p < .01$). Adjusted residual between disempowering group and type of sport did not reach statistical significance (adj.res = 1.3).

Coaching climate and burnout in sports

The third aim was to find out to what extent the experienced coaching climate (empowering/disempowering) is related to athletes' burnout (exhaustion, cynicism and inadequacy) in sports. First, a Multivariate Analysis of Variance (MANOVA) was conducted to test for differences between the three cluster groups on the three burnout subscales. In the analysis, dependent variables were exhaustion, cynicism and inadequacy whereas independent variable was the motivational climate group (i.e., class membership). Significant differences were found between the clusters in terms of the sport burnout subscales (Wilks' $\lambda = 0.898$, $F(6, 818) = 7.527$, $p < .001$, $\eta_p^2 = 0.052$). The test of between-subjects effects revealed that there were significant differences between the clusters in all three sport burnout subscales ($p < .001$). We continued the analysis to pairwise comparisons to examine how the coaching climate groups vary in sport burnout subscales' scores. Based on Levene's test of equal variances, we used either Bonferroni (for feelings of inadequacy, $p > 0.05$, exhaustion, $p > .05$) or Dunnett's T3 (for cynical attitude, $p < .001$).

The results revealed that athletes in disempowering group had significantly ($p < .001$) higher levels of inadequacy, cynicism and exhaustion in comparison with athletes in empowering group. The analysis also showed that athletes in intermediate group had significantly lower ($p < .01$) levels of inadequacy than athletes in disempowering group. Empowering coaching climate group had significantly lower scores in cynicism ($p < .05$) than intermediate group. Finally, athletes in disempowering group had significantly ($p < .001$) higher levels of exhaustion compared to athletes in intermediate group. Also, athletes in empowering group had significantly ($p < .05$) lower levels of exhaustion than athletes in intermediate group. The results are displayed in Table 2.

Table 2. Standardized group means (M) and standard deviations (S.D.) of sport burnout subscales in different coaching climate groups and pairwise comparisons between the groups.

	Coaching climate	M	S. D	Pairwise comparisons, <i>p</i> -values	
				Disempowering	Empowering
Feelings of inadequacy at sports ^a	Disempowering	.411	.966	-	
	Empowering	-.162	.808	< .001	-
	Intermediate	.026	.770	.005	.099
Cynical attitude towards sports ^b	Disempowering	.390	1.151	-	
	Empowering	-.183	.724	.001	-
	Intermediate	.065	.848	.125	.011
Exhaustion in sports ^a	Disempowering	.488	.871	-	
	Empowering	-.182	.703	< .001	-
	Intermediate	.024	.680	< .001	.025

Notes: a. Bonferroni b. Dunnett's T3
Box's M- test $p < .001$

Coaching climate and burnout in school

Next, we conducted one-way MANOVA, similarly to the previous research question, to find out to what extent the experienced coaching climate is related to athletes' burnout in school. The results showed that there were significant differences between the clusters in terms of the school burnout subscales (Wilk's $\lambda = 0.943$, $F(6, 806) = 4.026$, $p < .01$, $\eta_p^2 = 0.029$). The test of between-subjects effects revealed that there were significant differences between the clusters in all three school burnout subscales ($p < .01$). In follow-up analysis, based on Levene's test of equal variances, we used either Bonferroni (for cynical attitude, $p > .05$) or Dunnett's T3 (for feelings of inadequacy, $p < .01$ and exhaustion, $p < .05$) to examine if different coaching climate groups vary in school burnout subscales scores. The analysis showed that feelings of inadequacy at school were significantly lower in empowering coaching climate group compared to disempowering coaching climate ($p < .01$) and intermediate group ($p < .01$). Empowering coaching climate group had significantly lower scores also in cynical attitude towards school in comparison with intermediate group ($p < .01$). Moreover, the difference between disempowering and empowering coaching climate groups in cynicism was nonsignificant, but nonetheless it approached statistical significance ($p < .10$). Finally, adolescents in empowering coaching climate group had significantly lower scores on exhaustion at school compared to disempowering coaching climate group ($p < .01$) and to

intermediate group ($p < .01$). The groups means and standard deviations for the burnout subscales in coaching climate groups are presented in Table 3.

Table 3. Standardized group means (M) and standard deviations (S.D.) of school burnout subscales in different coaching climate groups and pairwise comparisons between the groups.

	Coaching climate	M	S. D.	Pairwise comparisons, p -values	
				Disempowering	Empowering
Feelings of inadequacy at school ^a	Disempowering	.267	.775	-	
	Empowering	-.188	.909	.001	-
	Intermediate	.149	.752	.666	.001
Cynical attitude towards school ^b	Disempowering	.144	.844	-	
	Empowering	-.148	.930	.064	-
	Intermediate	.146	.798	1.000	.006
Exhaustion in school ^a	Disempowering	.222	.821	-	
	Empowering	-.159	.888	.007	-
	Intermediate	.126	.758	.808	.004

Notes: a. Dunnett T3 b. Bonferroni, Box's M test $p > .05$

Interaction effects in burnout

The aim of the final research question was to investigate whether gender, type of sport and GPA would interact with the coaching climates in school and sport burnout. To examine this, GPA, gender and type of sport were added as independent variables (each in separate analysis) to the multivariate analysis of variance (MANOVA) previously carried out and their interaction terms with the coaching climate groups was tested.

The results concerning sport burnout demonstrated that the interaction terms coaching climate \times gender (Wilks' $\lambda = 0.992$, $F(6,806) = 0.560$, $p > .10$, $\eta_p^2 = 0.004$) and coaching climate \times type of sport (Wilks' $\lambda = 0.989$, $F(6,810) = 0.774$, $p > .10$, $\eta_p^2 = 0.006$) were not statistically significant. Also, the interaction term coaching climate \times GPA (Wilks' $\lambda = 0.982$, $F(6,810) = 1.246$, $p = .280$, $\eta_p^2 = 0.009$) was non-significant.

The results concerning school burnout demonstrated that the interaction terms coaching climate \times gender (Wilks' $\lambda = 0.993$, $F(6,794) = 0.479$, $p > .10$, $\eta_p^2 = 0.004$), and coaching climate \times type of sport (Wilks' $\lambda = 0.990$, $F(6,798) = 0.673$, $p > .10$, $\eta_p^2 = 0.005$), were non-significant. In turn, the interaction term coaching climate \times GPA was statistically significant (Wilks' $\lambda = 0.953$, $F(6,800) = 3.250$, $p = .004$, $\eta_p^2 = 0.024$). To investigate this effect further, Pearson Correlations between GPA and school burnout subscales were calculated separately

within each motivational climate group (see Table 4) and compared using Fisher's Z-test. The results revealed that GPA was negatively associated with inadequacy in empowering and intermediate coaching climates, but not in disempowering coaching climate. The difference between empowering and intermediate coaching climates was statistically significant ($Z = 1.98$, $p < .05$). GPA was negatively and significantly associated with cynicism in each coaching climate groups and there were no differences between the groups in the strength of this association (comparison of disempowering and empowering groups $Z = 0.09$, $p > .05$; empowering and intermediate groups $Z = 0.24$, $p > .05$; disempowering and intermediate group $Z = 1.05$, $p > .05$). Exhaustion correlated significantly and negatively and negatively with GPA only in empowering group.

Table 4. Correlations between GPA and school burnout subscales in different coaching climate groups.

	GPA		
	Disempowering	Intermediate	Empowering
Inadequacy at school	-.102 ^a	-.295 ^{***a}	-.478 ^{***b}
Cynical attitude towards school	-.278 ^a	-.418 ^{***a}	-.396 ^{***a}
Exhaustion at school	.141 ^b	.117 ^b	-.260 ^{***a}
<i>N</i>	63	157	188

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$. Group correlations with different superscripts show a statistically significant difference ($p < .05$) when tested with Fisher's Z-test.

DISCUSSION

The purpose of this study was to investigate what kind of perceived coaching climates can be found in the sport high schools in Finland based on student-athletes' experiences and how these identified coaching climates are related to student-athletes' symptoms of burnout in school and in sport. Three coaching climates were identified: disempowering, empowering and intermediate coaching climate groups. The results revealed further that the coaching climate groups were related to student-athletes burnout scores both in school and in sport context: student-athletes in disempowering coaching climate group experienced higher levels of burnout compared to intermediate and empowering coaching climate groups in sport context. In school context, on the other hand, student-athletes in empowering coaching climate group

experienced lower levels of burnout compared to intermediate and disempowering coaching climate groups. Although gender and type of sport were not found to interact with coaching climate, grade point average (GPA) interacted with coaching climate when explaining school burnout: the higher was GPA, the lower were the symptoms of school burnout (inadequacy, cynicism, exhaustion) particularly in the empowering coaching climate group.

Coaching climates

The first aim of this study was to test how Dudas (2013) motivational climate theory fit to the data. Duda's (2013) theory suggest that motivational climates in sport context can be divided into two different types: empowering coaching climate and disempowering coaching climate. Former is typified by high levels of task-involving, socially-supportive and autonomy-supportive coaching and low levels of ego-involving and controlling coaching, and the latter is characterized by high levels of ego-involving and controlling coaching and low levels of task-involving, socially-supportive and autonomy-supportive coaching. Thus far, no previous studies have been carried out to test this theory in empirical samples. The results of the present study revealed three motivational climates among Finnish high school student-athletes: empowering, disempowering and intermediate coaching climate group. A total of 15% of student-athletes reported disempowering coaching climate whereas the empowering coaching climate was typical for 39% of the student-athletes. Overall, these two climates were in accordance with our hypotheses and fit well with Duda's (2013) theory. In the present study there were, however, also third type of climate, namely intermediate coaching climate in which student-athletes scored between the empowering and disempowering coaching climates in all of the coaching climate subscales. This climate was reported by 46% of student-athletes. This finding suggests that the coaching climate is not necessarily either disempowering or empowering but can also be something between these two. It is noteworthy that the intermediate group represented the biggest group in our study. One possible explanation for this result is that the coaching climate is somewhat unclear from the student-athletes point of view and therefore they are not able to rate their coaches either disempowering or empowering. It may be also that the coaches really use this kind of coaching that combines different methods from both, disempowering and empowering climates. It might also be that due to 5-point Likert-scale student-athletes had tendency to avoid extreme answers and therefore they scored in between. This finding needs to be taken under consideration and take into account in the future investigations.

None of the previous studies have particularly tested Dudas (2013) theory. Consequently, the findings of the present study provide some important support for the theory by showing that empowering and disempowering coaching climates can be identified based on student-athletes' perceptions on coaching climates. Empowering coaching climate group was bigger compared to disempowering group, which seems to be favorable finding based on the research conducted in Self-Determination Theory (e.g. Balaguer et al., 2012; Isoard-Gauthier et al., 2012) and Achievement-Goal Theory (e.g. Harris & Smith, 2009; Vitali et al., 2015) frameworks. Also, in a study conducted by Appleton and Duda (2016) athletes reported more empowering coaching compared to disempowering coaching.

Gender and type of sport differences in the perceived coaching climates

Second aim of this study was to explore the distribution of the coaching climates in terms of gender and type of sport. Interestingly and in line with our hypothesis, girls were over represented in empowering coaching climate group whereas gender differences were not found in other two groups. Indicating that either girls' coaches use more autonomy-supportive, socially-supportive and task-involving coaching than that of boys, or, alternatively, girls experience coaching in more empowering way compared to boys. Overall, this finding is in line with the previous research suggesting that female athletes report higher levels of task-involving coach behaviors and male athletes report higher levels of ego-involving coaching behaviors (Smith et al., 2008; Vazou, Ntoumanis, & Duda, 2006; White, Kavussanu, & Guest, 1998). This result could be explained by male athletes' greater number in competitive sports (Turpeinen, Jaako, Kankaanpää, & Hakamäki, 2011) which leads to more competitive environment and ego-involving coaching. Nonetheless, more research is needed to achieve better understanding on empowering/disempowering coaching climate differences between girls and boys. Another noteworthy finding was, however, that student-athletes from individual sports were over represented in empowering group and underrepresented in intermediate group, whereas student-athletes in team sports were underrepresented in empowering group and over represented in intermediate group. The result suggest that individual sports' coaches may use more autonomy-supportive, socially-supportive and task-involving coaching compared to team student-athletes' coaches. Another possibility is that individual student-athletes' relationship to their coaches is closer compared to team sport student-athletes and, therefore, they experience the coaching climate more empowering than disempowering. However, no previous

research was found in terms of these findings. Consequently, more research is needed to find out the differences between team and individual sports in terms of perceived coaching climates.

Coaching climate and sport burnout

The third aim of the present study was to find out to what extent the experienced coaching climates (disempowering, intermediate, empowering) are related to student-athletes' symptoms of burnout (exhaustion, cynicism and inadequacy) in sports. The results were in line with our hypothesis as the student-athletes in disempowering group experienced significantly higher sport burnout scores in all burnout subscales than student-athletes in empowering group and higher levels of inadequacy and exhaustion than student-athletes in intermediate group. The difference between intermediate and empowering group was significantly different in terms of cynicism and exhaustion but not in inadequacy. In other words, the experience of burnout among student-athletes in intermediate group was lower than in disempowering group but higher than in empowering group.

Our results are consistent with previous research using Duda's (2013) theory of empowering/disempowering coaching climates as the findings of Appleton and Duda (2016) revealed that empowering coaching climate was negatively related to devaluation and reduced accomplishment whereas disempowering coaching climate was positively related to all burnout subscales (devaluation, reduced accomplishment, emotional and physical exhaustion). The previous research on this area approached burnout mainly from SDT or AGT perspectives. These results, however, are in line with our hypothesis and in agreement with previous studies within SDT and AGT framework, which have showed that high ego-involving and low task-involving coaching climate is related to higher burnout scores (e.g., Vitali et al., 2015). Furthermore, high controlling coaching and low autonomy-supportive coaching is associated with higher burnout scores, whereas high autonomy supportive coaching and low controlling coaching is related to lower burnout scores (Balaguer et al., 2012). These results indicate that athletes, whose coaches emphasize that everyone has important role on the team, values every athlete as a person, takes into account athletes' preferences, listens to their thoughts and feelings, and encourages athletes to participate in decision-making, are expected to experience lower symptoms of burnout. On the contrary, more controlling coaching, intra-team member competition on the team and athletes' feelings that they will be punished if they make mistakes is associated with higher levels of burnout. It is noteworthy though, that athletes' experience

of burnout in intermediate group was different from the other two coaching climate groups and, therefore, it is necessary to take this group into further inspection in order to clarify, what kind of coaching they implement in practice. In overall, the results underline coaches' important role on the team in order to protect student-athletes from burning out.

Coaching climates and school burnout

This study is the first to investigate the relationship between coaching climates and burnout in school and therefore, previous studies on the topic does not exist. The results concerning the role of coaching climate in school burnout revealed that student-athletes in disempowering coaching climate group experienced higher levels of school burnout according to all burnout subscales (inadequacy and cynicism, and marginally ($p < .10$) also exhaustion) than student-athletes in empowering coaching climate group. Interestingly and contrary to sport burnout results, disempowering group and intermediate group did not differ from each other in any school burnout subscales, whereas empowering and intermediate coaching climate groups did have significant difference in all burnout subscales. Thus, it seems that disempowering and intermediate coaching climates have the same effect for school burnout. In other words, the results suggest that the coaching climate has to be empowering rather than intermediate or disempowering in order to protect student-athletes from burning out in school. There may be a couple of reasons behind this result. Firstly, it may be that the coach really needs to be interested in the student-athletes' wellness and really show the interest in the student-athletes lives. For example, Ntoumanis et al. (2012) suggests that coach using ego-involving coaching might have a lack of concern for his or her athletes' well-being, and thus in dual career context it could also extend to athletes' well-being in school. Secondly, in the current study the data is collected by asking student-athletes' perspective on the coaching climate and therefore it might be that the intermediate group represents some kind of inconsistent coaching climate from the student-athletes' point of view. Therefore, it may be difficult to determine what the coach really considers to be important and valuable. This insecurity might lead to athletes' extra investment in sport, and as a consequence, generate burnout in school context but not in sport context. Thus, if the coaching climate is somewhat inconsistent from the student-athletes' point of view, it has a greater risk to lead to burnout in school. Thirdly, it may be that the coach doesn't know her/himself what she or he really values and therefore is inconsistent with her or his actions. Fourthly, according to SDT (Deci & Ryan, 2000), human has innate need for competence, relatedness and autonomy. It may be thought, that the intermediate coaching climate does not

fulfil the three needs well enough in order to protect student-athletes from burning out in school. In literature, coaches' role in the student-athletes lives have been seen as an important factor (e.g. Cosh & Tully, 2015), and this result confirms the fact that coaches do have an impact on student-athletes' well-being also across domains and not just in the context they are working with student-athletes.

The interactions of motivational climates and gender, type of sport and GPA in burnout

The final aim of the present study was to investigate, does gender, type of sport, and school achievement in terms of GPA impact on burnout in school and/or in sport interactively with coaching climate. Contrary to our hypothesis, the results showed that only GPA interacted with the coaching climates in school burnout and none of the variables did reach significant interaction in sport burnout.

Against to what expected, gender or type of sport interactions with coaching climate groups were not found either in school or sport context. Although the results showed that student-athletes in disempowering group experienced more burnout symptoms compared to empowering group, it seems that coaching climate and gender or type of sport do not have an interactive effect on burnout. Thereby, according to our sample, the impact of coaching climate is not dependent on gender or type of sport and thus, disempowering coaching climate is as harmful for both, girls and boys as well as for individual and team sport student-athletes.

There are no previous studies investigating the interactions of coaching climates and GPA in school burnout. However, in previous studies examining the main effects between GPA and school burnout, low GPA has been related with higher levels of burnout (Salmela-Aro et al., 2009a), whereas high achievement has been shown to be associated with lower levels of cynicism (Cadime et al., 2016) and to protect against increase in school burnout among ninth graders (Kiuru et al., 2008). On the contrary, Wang, Chow, Hofkens and Salmela-Aro (2015) did not find significant correlation between GPA and school burnout in Finnish adolescents in grades 9 to 11. The results of the present study showed that this negative association of GPA with the symptoms of school burnout was strongest in the empowering coaching climate group: the lower the GPA, the higher the school burnout scores in terms of inadequacy, cynicism or exhaustion, and vice versa. Similar kind of association—although only for inadequacy and cynical attitude—was found in the intermediate group. In disempowering group, in turn, GPA was negatively related only with cynicism, which is noteworthy, since it seems that GPA has a greater impact on school burnout symptoms in empowering group than in other two groups.

Overall, the findings were surprising and in contrast to our hypotheses according to which empowering coaching climate would protect against the negative impact of low academic achievement for one's well-being and disempowering coaching climate combined with low academic achievement increase the risk of burnout. Thus, the results showed that although empowering coaching climate protected student-athletes with high GPA from burning out, it did not manage to protect student-athletes with low GPA, as expected. One possible explanation for this result is, that low academic achievement is a result of burnout symptoms rather than vice versa, as also suggested by Salmela-Aro et al. (2009a). It is also possible, that there are some other underlying factors explaining this interaction, for example low school motivation or dual career style (see Ryba, Stambulova, Selänne, Aunola, & Nurmi, 2017). The connection between high GPA and low levels of school burnout in empowering group can be explained via more social supportive, autonomy-supportive and task-involving coaching, which in turn, leads to lower levels of school burnout. For example, the coach can encourage student-athletes to also invest in their studies and give them more freedom in order to success in school. It also has to be taken into account that the average GPA among student-athletes was relatively high (8.01), and therefore, these kinds of causalities cannot be made without further investigations.

Some previous studies have shown that high academic achievement can protect students against school burnout (Kiuru et al., 2008; Salmela-Aro et al., 2009a). According to our study, in dual career environment the negative impact of disempowering coaching climate on the student-athletes well-being seems to be so powerful that high academic achievement is not enough to protect against the symptoms of school burnout. To summarize, the results indicate that the protective effect of high academic achievement occurs only in empowering group, whereas in disempowering group high academic achievement does not protect student-athletes from burning out.

Limitations and strengths

The present study had some strengths. First, the study provided new information about the relationship between coaching climates and burnout in school and sport in dual career context. Especially, based on previous research, coaching climates relation to school burnout was unknown. Also, interaction effects between coaching climates and other variables in burnout provided more extensive view to factors explaining student-athletes' burnout. Second, the sample was large and representative, furthermore the schools selected were located in different

cities from different parts of Finland. Third, the sample consisted of different kind of sports, both individual and team sports, thus the results can be generalized for both. In addition, reliabilities for the used scales were relatively high.

This study had also some limitations that should be taken account before generalizing the results. First, the study was cross-sectional and therefore we cannot assume causality between the variables: it is well possible that burnout impacts on the ways in which coaching climate is perceived rather than vice versa. It is also possible that there is reciprocal relationship between these variables. Because of cross-sectional data, it was not possible to examine the stability and changes of coaching climates either. It is important in future studies to get longitudinal research to find out if the athletes stay on the same coaching climate groups over time. Second, coaching climates were measured only from student-athletes' point of views. In future research also, coaches' perceptions should be taken into account. In addition, comparison between coaches' and student-athletes' perceptions on coaching climates would provide wider picture about the phenomenon, especially if coaches' and athletes' views differ from each other (see Smith et al., 2016). For example, in the study by Smith et al. (2016) coaches' and athletes' perceptions were close to each other in terms of the disempowering coaching climate but differed more when they evaluated empowering coaching climate dimensions. Moreover, also peer motivational climate has received more attention as one of the explanatory factors explaining athletes' burnout (Ntoumanis, Taylor, & Ntoumani, 2011; Smith, Gustafsson, & Hassmén, 2010). Thus, more information is needed about the motivational climates athlete encounters. Thirdly, this study consisted of Finnish sport high school student-athletes. Thus, the relationship between coaching climates and burnout in sports and school in other countries may differ from the results of this study. Finally, the scales used were part of a longer questionnaire, therefore student-athletes might have skipped some questions and it explains why some participants had to be left out of the analysis. Moreover, in our analyses we excluded questions about the athletes' thoughts on coaches' thoughts toward school. In future it would be interesting to take also those questions into account to find out if it would change the coaching climate groups, or as alone, would those questions be related to the coaching styles.

Future directions

These findings of the present study highlight the need to investigate coaching climates and burnout in school and in sport longitudinally. In future research, it would be important to find out if coaches' gender is related to the coaching styles he or she uses. This would give more information about the coaching climates, if girls/women and boys/men perceive coaching differently or if the gender differences are caused by the coach. Further, it would be interesting to figure out whether the athletes under the same coach were consistent with the reported coaching climate they belonged or does the coach use more or less disempowering or empowering coaching in training compared to competitions (see Smith, Quested, Appleton, & Duda, 2017). Therefore, it would be interesting to follow the same athletes if their burnout levels stay the same, decreases or even increases over time in different coaching climates. It would be also meaningful to study more about the athletes, if the same athletes experience burnout both in school and in sport or only in other context. Sorkkila et al. (2017a) investigated student-athletes' burnout profiles and athletes' and their parents' success expectations as predicting factors determining student-athletes membership in burnout profiles. Perhaps this kind of profiling would work also with burnout and coaching climates.

In school context, one important aspect to burnout could be drop out and how these variables are connected to each other. Moreover, dual career environment brings more challenge to this equation. Also, in sport context, considering drop out from sport would give a lot of useful information if a specific coaching climate more likely leads to ending one's athletic career. Also studies about coaching climates' benefits, for example, if empowering coaching climate would reduce burnout in the long-term or if athletes in one coaching climate perform better compared to athletes in other coaching climates. Future research suggestions, for example, are studies comparing coaching climates and parenting styles or athletes' and coaches' perceptions on coaching climates. Furthermore, parents' views on their adolescents' sport or athletic careers may also be influential to burnout (Sorkkila et al., 2017a). Overall, more research is needed about relationships between the coaching climates and burnout in school and sport. Additionally, it would be interesting to see if athletes who work alongside their sport have same kind of relationship between coaching climates and burnout in work. Especially information about the direction in this relationship: does coaches modify coaching climates depending on the athletes' situation or is coaching climate possible source for student-athletes burnout in school or in sport.

Practical implications

This study offers information about how perceived coaching climate in sports can have an impact on adolescent student-athletes' well-being, who are challenged to combine school and sport in a dual career pathway. These findings offer more information for coaches for how the created coaching climate can impact athletes' psychological well-being within and also across domains of sport and school. In addition, intermediate coaching climate group turned out to be the largest coaching climate group in this study, which indicates that most of the coaches are rated between the disempowering and empowering coaching climates. As the empowering coaching climate was found to be the most favorable coaching climate in order to protect athletes from burning out, in the future coach education this finding should be taken into account to inform and instruct coaches how they can create empowering rather than disempowering coaching climate for their athletes.

Conclusion

In dual career pathway, coach has an important role in student-athletes psychological well-being in sport, but also in school. The present study provided more information about coaching climates and how different coaching climates are related to burnout symptoms in school and sport. Contrary to previous literature by Dudas (2013) empowering and disempowering coaching, in addition to empowering and disempowering coaching climate groups, third coaching climate group, named as intermediate, was identified. In terms of school and sport burnout, empowering coaching climate group was most favorable as the student-athletes in this group experienced lowest levels of burnout. These findings support previous research within the field. Furthermore, student-athletes in intermediate coaching climate group experienced lower levels of sport burnout compared to student-athletes in disempowering group, but in school context student-athletes' experienced burnout scores were closer to disempowering group than empowering group. Further, based on these findings it is important to educate coaches to use more empowering coaching and less disempowering coaching in order to promote student-athletes' psychological well-being.

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