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Development of School and Sport Burnout in Adolescent Student-Athletes: A Longitudinal Mixed Methods Study

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Abstract

We investigated the development of school and sport burnout in adolescent student-athletes (*N* Time 1 = 391, *N* Time 2 = 373) during their first year in upper secondary school by using an embedded mixed methods design. The questionnaire-based data were analyzed with growth mixture modeling and four burnout profiles were identified among student-athletes. From the found burnout profiles, two were typical for the interviewed subsample of elite athletes (*n* = 17), that is, burnout risk and non-risk profiles. We generated rich descriptions of well-being and ill-being, showing that elite athletes in two burnout profiles differed in their experienced demands and resources related to individual and environmental factors. The results can be used to generate practical tools for burnout detection in student- athletes' educational path.

Author note

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Recent research has shown that school burnout is increasing worldwide (Ang & Huang, 2006; May, Bauer, & Fincham, 2015; Salmela-Aro, 2016; Yusoff & Khan, 2013). For example, school burnout among Finnish females has increased by 30% over the last two years (Salmela-Aro, Muotka, Hakkarainen, Alho, & Lonka, 2017). Defined as a school-related stress disorder, school burnout can have severe consequences for both adolescents and their local communities, since students who are burned out are four times more likely to drop out of school than their non-burned-out peers (Bask & Salmela-Aro, 2013). Moreover, school burnout predicts gap years and difficulties during the transition to higher education and working life (Upadyaya & Salmela-Aro, 2013). Most prior research concerning burnout as experienced by adolescents has examined the prevalence or development of burnout in one life domain, such as school or sport. However, with respect to athletically talented students who are actively engaged in sports, there is a risk of developing both school-related and sport-related burnout when academic and athletic demands are simultaneously intensified (Ryba et al., 2016; Sorkkila, Aunola, & Ryba, 2017a). Indeed, Sorkkila et al. (2017) recently revealed that upper secondary school athletes who participate in talent development programs are already reporting symptoms of school and sport burnout at the beginning of their freshman year. This issue requires serious consideration, since massive numbers of children and youths participate in organized sports during their formative years (Messner & Musto, 2014; Rubin & Moses, 2017). For example, a Canadian longitudinal survey found that 84% of adolescents aged 10–13 reported participating in sports (Goévremont, Findlay, & Kohen, 2008), while according to the National Association of Academic Advisors for Athletics

(2013), more than 400,000 student-athletes participate annually in intercollegiate athletic programs in the USA.

The present investigation is situated within Smith's (1986) cognitive-affective model of stress and burnout associated with participation in sports, which proposes burnout to be a stress-related phenomenon whereby situational demands exceed the available resources, potentially leading to burnout in the long run. Drawing on Maslach and Jackson's (1984) conceptualization of burnout in occupational settings, we examined burnout as a context-specific phenomenon encompassing three dimensions, namely physical and emotional exhaustion related to sport/school, sport/school devaluation, and a reduced sense of accomplishment in sport/school (see also Raedeke & Smith, 2001; Salmela-Aro & Näätänen, 2005; Sorkkila, Ryba, Aunola, Selänne, & Salmela-Aro, 2017b). In the prior literature, burnout has mainly been investigated using a variable-oriented approach (i.e., examining the relationships between variables), which assumes that the population is homogeneous with respect to the studied phenomenon (for a review, see Mäkikangas & Kinnunen, 2016). However, it has been argued that the variable-oriented approach may only be of limited value in terms of investigating burnout, since a description of variables cannot be translated into the properties of distinct individuals characterized by different functional processes (Gotwalls, 2011; Gustafsson, 2015). Moreover, it is likely that there exist subgroups of individuals who exhibit similar symptomology to one another (Mäkikangas & Kinnunen, 2016). Consequently, in the present study, we adopted a person-oriented approach, which assumes that the population is heterogeneous with respect to the examined phenomenon and, further, that it consists of different subgroups with distinct developmental trajectories.

The present study had two key aims. First, we aimed to extend the cognitive-affective model of Smith (1986) by investigating the simultaneous development of sport and school burnout among student-athletes. To the best of our knowledge, only a few prior studies have

simultaneously investigated the symptoms of sport and school burnout among adolescent athletes (Sorkkila et al., 2017a; Sorkkila, Aunola, Salmela-Aro, Tolvanen, & Ryba, 2018), while none have longitudinally investigated different burnout profiles through the lens of resources and demands. Second, we used an embedded sequential mixed methods approach to investigate the risk and resilience factors related to both school and sport burnout among a subgroup of elite adolescent athletes. More specifically, we examined the quantitative burnout profiles of elite athletes and then used their qualitative descriptions of resources (i.e., subjective vitality, social support) and demands (i.e., high self-expectations, schoolwork/training overload) to generate predictors of sport and school burnout. This integration of longitudinal quantitative data with qualitative data enabled us to arrive at a more comprehensive understanding of the burnout phenomenon, which is particularly useful in the case of novel or under-researched topics (Cameron, 2009; Cresswell & Plano Clark, 2011). Consequently, in the present study, we used a longitudinal mixed methods design to investigate the development of sport and school burnout among adolescent athletes across their first year of upper secondary school.

School and Sport Burnout Within the Cognitive-Affective Model

In prior research, the predictors of school and sport burnout have generally been examined separately. School burnout has been comprehensively examined using the demands-resources model (Salmela-Aro & Upadyaya, 2014), which was originally intended for application in the work context (Demerouti, Bakker, Nachreiner, & Shaufeli, 2001). The model consists of two distinct processes. One is a process of effort-driven overtaxing, in which the study demands first lead to stress, then to burnout, and finally to diminished mental health. The second process is motivational, in which the available resources lead to engagement and foster satisfaction in later life. Demands, such as study overload or challenges, promote burnout, whereas resources, such as high self-efficacy, hinder burnout.

Sport burnout has, in turn, been investigated using a cognitive-affective model (Smith, 1986), which proposes that sport burnout develops as a result of the chronic stress an individual experiences when he or she constantly feels that his or her resources are inadequate to meet the achievement-related demands. According to this model, burnout develops through a four-stage process, whereby burnout and stress evolve in parallel, under the influence of personality and motivational factors. During the first stage, individuals experience situational demands, for example, high expectations, a high training load, or low social support. During the second stage, a cognitive appraisal of the situation takes place, that is, while some individuals may perceive the situation to be challenging, others may interpret it as threatening. If the situation is perceived as threatening, then during the third stage, individuals experience an aversive physiological response, such as anxiety or tension. If the process continues, the fourth and final stage follows, wherein individuals engage in emotional, psychological, and sometimes physical withdrawal from an activity that used to be enjoyable for them. Although not all aspects of the model have been empirically tested (see Gustafsson, Sagar, & Stenling, 2017), it does offer a heuristic understanding of the phenomenon, and it has gained empirical support, particularly with regard to the stress-burnout relationship (e.g., Gustafsson et al., 2013; Gould, Uldry, Tuffey, & Loehr, 1996; Kelley, Erklund, & Ritter-Taylor, 1999; Raedeke & Smith, 2004).

Both similarities and differences appear in the burnout-related models used in relation to sport (the cognitive-affective model; Smith, 1986) and school (the demands-resources model; Salmela-Aro & Upadyaya, 2014). Although both models propose that burnout is a stress-related consequence of situational demands exceeding the available resources, in the demands-resources model, the context of the stress is school, whereas in the cognitive-affective model, the context of the stress is sport. Furthermore, while the demands-resources model focuses on two parallel, individual-related processes (effort-driven overtaxing and

motivation) in relation to burnout, the cognitive-affective model describes the development of burnout as stemming from the complex interaction between personal characteristics (e.g., low self-efficacy or self-confidence) and environmental characteristics (e.g., low social support or high demands). Empirical findings suggest that the development of both school and sport burnout can be well-described within the context of demands and resources. It has previously been shown, for example, that high self-efficacy, intrinsic motivation, parental support, and parental involvement seem to promote students' engagement in their schooling (Siu, Bakker, & Jiang, 2014; Upadyaya & Salmela-Aro, 2013), while high self-efficacy, intrinsic motivation, and social support seem to protect students from experiencing from burnout in sports (Creswell & Eklund, 2005; Readeke & Smith, 2001; Smith, 1986). In contrast, a high study load and low social support in school have both been associated with school burnout (Salmela-Aro, 2016), while a high training load, a lack of motivation, and low social support have been associated with sport-related burnout (Goodger et al., 2007; Gustafsson et al., 2008; Smith, 1986).

Only a few prior studies have simultaneously investigated the predictors of sport and school burnout (Sorkkila et al., 2017a; Sorkkila et al., 2018). In the case of student-athletes, the demands and resources associated with the two domains (sport and school) may constantly interact. For example, a recent study (Sorkkila et al., 2017a) found that high individual or parental expectations of success (i.e., the extent to which one believes the adolescent will succeed in sport or school) protected students from burnout in the same domain (e.g., school), but actually increased the risk of burnout in the other domain (e.g., sport). There is also evidence to suggest that among student-athletes, exhaustion in school may spill over into the sporting context (Sorkkila et al., 2018). In the present study, we used the cognitive-affective model devised by Smith (1986) as a theoretical framework for investigating the burnout-related demands and resources of student-athletes. We chose to use

the cognitive-affective model rather than the demands-resources model because it has received wide empirical support in the context of sport (e.g., Gustafsson et al., 2013; Gould et al., 1996; Kelley, Erklund, & Ritter-Taylor, 1999; Raedeke & Smith, 2004), as well as because it offers a comprehensive framework for differentiating between environmental and individual resources and demands. Furthermore, in the present study, we aimed to expand the cognitive-affective model (Smith, 1986) into both the sport and school contexts by taking into account the demands and resources related to school and sport burnout based on the descriptions provided by elite adolescent student-athletes.

The Finnish Context

The present study was conducted in Finland, where adolescents are required to complete nine years of basic education, after which they decide whether to transition into working life, or continue on to a vocational or academic track, that is, to upper secondary education. Upper secondary education lasts for, on average, three years. The academic track enables individuals to attend university or another form of higher education, and it has been shown to be more challenging and stressful than the comprehensive school or vocational track (Salmela-Aro, Kiuru, & Nurmi, 2008). Adolescents who pursue the academic track often face demanding social norms, unfamiliar academic expectations, and changes in their sources of social support (Salmela-Aro et al., 2008). Consequently, in Finland, school burnout has been shown to be a particular risk for adolescents attending upper secondary school who are pursuing the academic track (Salmela-Aro et al., 2008; Walburg, 2014).

Talented athletes can combine education with high-performance sport while attending upper secondary *sport* schools supported by the Ministry of Education and Culture. Admission to these upper secondary sport schools is highly competitive, and in addition to demonstrating academic success, adolescents must show high potential within their own sport. It has recently been found that, even at the very start of their upper secondary sport

education, around 10% of student-athletes showed symptoms of school burnout, 3% showed severe symptoms of sport burnout, and 30% showed mild symptoms of sport burnout (Sorkkila et al., 2017a). This study was, however, cross-sectional, and it was conducted at the very start of the participants' upper secondary education. Therefore, it remains unknown how school and sport burnout evolve over time.

The Present Study

The primary aim of this study was to examine the development of school and sport burnout over the first year of upper secondary school by using a person-oriented approach in order to glean insights into how elite adolescent athletes with the distinct profiles of burnout risk differ from those with no risk of burnout. The research questions were:

1) What kind of burnout profiles, based on the level and change of sport and school burnout symptoms during the first year of upper secondary school, can be identified among student-athletes?

2) What kinds of themes related to resources and demands emerge from the interviews conducted with a subsample of elite athletes, and to what extent are these themes different among athletes with different burnout profiles?

In order to answer the research questions, we used an embedded, sequential, mixed methods design, in which the qualitative approach was placed within the framework of the quantitative approach (Creswell & Plano Clark, 2011). This type of research design was chosen due to it prioritizing the quantitative approach, which can be used to achieve generalization to a wider population (i.e., student-athletes), while also offering valuable in-depth information regarding the phenomenon at the level of the subsample of elite athletes by including a qualitative approach.

During the quantitative phase of the study, we examined the different kinds of developmental trajectories, in terms of the level and change of sport and school burnout

symptoms student-athletes showed across the first year of upper secondary school, with a sample of 391 student-athletes. During the qualitative phase, we examined the different kinds of themes related to resources and demands that emerged from the interviews conducted with a subsample of elite junior athletes (n = 17), who were drawn from the whole sample prior to the study commencing due to being the most promising athletes. Finally, during the integrative phase (i.e., combining the quantitative and qualitative data), we first examined the kinds of burnout profiles that would be typical in a subsample of elite athletes. We then conducted a comparative analysis, in which we compared the resources- and demands-related themes of athletes who exhibited different burnout profiles. By combining our quantitative and qualitative analyses, we were able to deepen current understandings of the individual differences seen in the development of burnout, as well as to provide a more comprehensive account of the demands-resources transactions that occur within Smith's (1986) cognitive-affective model of stress and burnout in the context of student-athletes.

Method

Participants and Procedures

The present study is based on data collected as part of an ongoing longitudinal mixed methods study examining the risk and resilience factors underpinning the development of a dual career pathway among talented young athletes in Finland (Ryba et al., 2016). Ethical approval was obtained from the relevant university ethics committee prior to participant recruitment. All the participants provided written informed consent prior to us administering a questionnaire and conducting an interview with them. In Finland, informed consent is not required from the parents/guardians of young people aged over 15.

The sample consisted of 391 (51% female) athletes, aged 15–16 years (M = 16, SD = 0.17), from six upper secondary sport schools, who first completed the multi-section questionnaire at the beginning of their freshman year (T1; at the beginning of the first

semester) and then completed it again six month later at the end of the school year (T2; at the end of the second semester; *N* = 373). Some 50% of participants competed in individual sports and 50% in team sports, with all participants reporting that they had competed at least at the regional level for an average of seven years (*SD* = 2.41). Further, 60% of participants expected to compete at either the Olympic Games or the relevant world championships in the future. The participants' grade point average (GPA; possible range from four to ten) was 8.85 (*SD* = 0.62), and 68% of participants expected to obtain a master's degree. At Time 2 (T2), 18 participants dropped out of the study, resulting in a final sample of 373 student-athletes (52% females) with a GPA of 8.24 (*SD* = 0.86).

The qualitative sample consisted of 17 elite junior athletes (ten females) who competed at the international level. The 17 athletes were pre-selected from among the whole sample (*N* = 391) in cooperation with different sport federations due to being the most promising athletes, and they had all transitioned, or were about to transition, into adult sport. The elite junior athletes were interviewed in order to gain a deeper insight into the dual career development and possibilities at the highest level of sport. These elite athletes are required to demonstrate more commitment to their sport (e.g., travelling to international competitions) than athletes who compete at a lower level (e.g., Lemyere, Hall, & Robers, 2008). Thus, the challenges associated with a dual career might also be more evident among them. Members of the subsample were interviewed at Time 2. When the interviews were conducted, the participants were 16–17 years of age. Eleven of the elite athletes participated in individual sports (e.g., swimming, skiing), while six participated in team sports (e.g., ice hockey, soccer). Their average GPA was 7.86 (*SD* = 0.93).

Quantitative Phase

The purpose of the quantitative phase of this study was (1) to investigate the types of burnout profiles in student-athletes based on the level and change of school and sport burnout

symptoms during the first six months of upper secondary school; and (2) to identify the distribution of the burnout profiles within the subsample of elite junior athletes.

Measurements

School burnout. School burnout was measured using the School Burnout Inventory (SBI; Salmela-Aro & Näätänen, 2005). The scale consists of ten items, of which four measure exhaustion at school (e.g., *I often sleep poorly because of matters related to my schoolwork*), three measure cynicism regarding the meaning of school (e.g., *School doesn't interest me anymore*), and three measure feelings of inadequacy as a student (e.g., *I used to achieve more in school*). All the items were rated on a five-point Likert scale (1 = *completely disagree*; 5 = *completely agree*), and the overall mean SBI score was used as an indicator of school burnout. The Cronbach's alpha reliability coefficient for the overall scale in the present sample was .88 at T1 and .89 at T2. The scale has previously demonstrated good scale and item reliability, in addition to good construct, convergent, and discriminant validity (see Salmela-Aro et al., 2009).

Sport burnout. Sport burnout was measured using the Sport Burnout Inventory - Dual Career Form (SpBI-DC; Sorkkila et al., 2017b), which is a modified version of the SBI (Salmela-Aro et al., 2009). The SpBI-DC was developed for the purpose of achieving the equal measurement of sport and school burnout (i.e., having a scale that matches the items of the SBI), and it can thus be considered optimal for investigating sport burnout in a dual career context. The scale consists of ten items, of which four measure exhaustion in sport (e.g., *I often sleep poorly because of matters related to my sport*), three measure cynicism regarding the meaning of one's sport (e.g., *Sport doesn't interest me anymore*), and three measure feelings of inadequacy as an athlete (e.g., *I used to achieve more in my sport*). All the items were rated on a five-point Likert scale (1 = *completely disagree*; 5 = *completely agree*), and the overall mean SpBI-DC score was used as an indicator of sport burnout. The Cronbach's

alpha reliability for the overall scale in the present sample was .85 at T1 and .87 at T2. The scale has previously been shown to exhibit good item and scale reliability, as well as good construct, convergent, and discriminant validity (see Sorkkila et al., 2017b).

Analysis Strategy

In order to identify different burnout profiles among student-athletes based on the level and change of school and sport burnout symptoms, growth mixture modeling (GMM) was used with the M-plus package (Muthén & Muthén, 1999–2016). When compared to more conventional methods (e.g., latent growth modeling), a great advantage of GMM is that, in addition to handling longitudinal data, it allows for the identification of unobserved subpopulations that show different developmental profiles. In the present study, the different burnout profiles were identified based on the following growth factor components: (a) latent level (intercept describing the level of burnout at the first measurement point) of sport burnout, (b) latent change (slope describing the change observed between the two measurement points) in sport burnout, (c) latent level (intercept describing the level of burnout at the first measurement point) of school burnout, and (d) latent change (slope describing the change observed between the two measurement points) in school burnout. In the interests of constructing an identifiable model, the residual variances of the observed burnout variables were fixed to zero. As statistical criteria, the Akaike information criterion (AIC), the Bayesian information criterion (BIC), the Vuong-Lo-Mendell-Rubin likelihood ratio (VLMR), the Lo-Mendell-Rubin adjusted likelihood ratio (LMR), the bootstrap likelihood ratio (BLRT), and the entropy value were all used to choose the best-fitting model. The model with the lowest AIC and BIC values was considered to be a better fit to the data, while the significant *p*-values obtained for the VLMR, the LMR, and the BLRT indicated that the model with one less class should be rejected in favor of the estimated model. Entropy indicates the precision with which the cases are classified into the different latent profiles,

and the larger the value and the closer it is to one, the less classification errors there are in the model. In addition to the statistical criteria, theoretical interpretations of the classes and the class sizes were taken into account when choosing the final model.

In order to identify the typical burnout profiles within the subsample of elite athletes, the variable describing each athlete's latent class membership was first saved to the IMB SPSS Statistics program (Version 24). Then, using this information, the class memberships (i.e., profiles) of the elite athletes (n = 17) were identified.

Results: Quantitative Phase

Growth Mixture Modeling

The fit indices for the series of growth mixture analyses performed as part of this study are shown in Table 1. As can be seen from Table 1, a four-group solution was supported by the BIC value, a five-group solution was supported by the AIC value and the BLRT test, while a three-group solution was supported by the VLMR and LRM tests. Moreover, the entropy value was the highest for the six-group solution. The four-group solution was chosen over all the other possible solutions due to both the theoretical interpretation of the classes and the class sizes (Ram & Grimm, 2009). All the class sizes are presented in Table 1. Furthermore, the four-group solution provided a clear classification, as the individual probabilities belonging to a specific latent class were 0.879, 0.826, 0.867, and 0.797. Based on the mean profile scores, the groups were labeled as (1) *Well-functioning*, (2) *Non-risk*, (3) *Developed burnout*, and (4) *Burnout risk*, respectively (see Figure 1).

The largest profile was the *Non-risk* group (42.1%), in which participants showed a below-average level of sport burnout symptoms (*M level* = 1.71, *SE* = 0.13), as well as no change in the symptoms across the school year (*M slope* = 0.16, *SE* = 0.1, *p* = 0.10). Similarly, the level of school burnout in this group was below average (*M level* = 2.38, *SE* = 0.09), and it did not change over time (*M slope* = 0.08, *SE* = 0.07, *p* = 0.27). The second

largest group (32.5%) was the *Burnout risk* group. When compared to the other profiles, the adolescents in this group showed a relatively high level of symptoms of sport burnout (*M level* = 2.36, *SE* = 0.09), although they experienced a significant decrease in their symptoms over time (*M slope* = -0.23, *SE* = 0.08, $p < .001$). They also showed a relatively high level of school burnout symptoms (*M level* = 2.96, *SE* = 0.13) which did not change over time (*M slope* = -0.05, *SE* = 0.08, $p = 0.56$). The second smallest group (12.8%) was the *Developed burnout* group, in which the level of student-athletes' sport burnout symptoms was found to be low (*M level* = 1.51, *SE* = 0.08), but the symptoms increased significantly over time (*M slope* = 0.66, *SE* = 0.17, $p < .001$). Similarly, the level of school burnout symptoms in this group was low (*M level* = 2.04, *SE* = 0.11), but increased across the school year (*M slope* = 0.95, *SE* = 0.18, $p < 001$). The smallest group (12.7%) was the *Well-functioning* group, in which participants showed only a few symptoms of sport burnout (*M level* = 1.10, *SE* = 0.02), and no change was observed in their symptoms across the school year (*M slope* = 0.05; SE = 0.04; $p = 0.18$). Similarly, this group showed few school burnout symptoms (*M level* = 2.08, *SE* = 0.12), once again without change over time (*M slope* = 0.02, *SE* = 0.09, $p = 0.86$).

Next, the profiles typical of the interviewed athletes were identified. The results showed that nine (five females) of the 17 athletes were characterized by the *Burnout risk* profile, while seven athletes (five females) were characterized by the *Non-risk* profile. One male athlete demonstrated the *Well-functioning* profile, although his interview data were excluded from the comparative qualitative analysis due to his being the only participant showing this profile.

Qualitative Phase

The purpose of this phase was (1) to inductively analyze the interview data for themes associated with demands and resources, and (2) to compare the adolescent athletes' accounts in order to identify the key factors that might explain the distribution of student-athletes in

the *Burnout risk* and *Non-risk* profiles. As stated earlier, the present study is part of an ongoing longitudinal mixed methods study, which is positioned within the philosophical realm of critical realism (Ryba et al. 2016). As critical realism assumes a subjectivist epistemology, the qualitative part of this study draws on interpretive methodological approaches so as to understand individual experiences of dual career construction throughout upper secondary school. Thus, the philosophical underpinning of this study lies in the critical constructivist perspective on experiential data (Braun, Clarke, & Weate, 2006; Riessman, 2008).

Interview Protocol

After the participants had completed the questionnaire, they participated in an individual, low-structured interview with a sports physician, who has extensive experience of working with burned-out athletes. Although the interviewer does have a particular topic in mind during low-structured interviews, there are no predetermined interview questions and, hence, the conversation is allowed to proceed in the direction determined by the respondent (Hesse-Beaber & Leavy, 2011). The interview was designed to elicit the most prominent features of the young people's lives during their first year at upper secondary sport school, including changes in living arrangements and interpersonal relationships, attitudes toward sport and studies, daily challenges, resources and coping strategies, and their overall sense of (dis)satisfaction with their current situation. The interview protocol began by asking the adolescent athletes to reflect on their experiences over the past six months and to describe in rich detail their daily lives and the ways in which they balance school-related tasks with their sport engagement and personal life. All the follow-up questions were derived from the content of the student-athletes' responses, and further attempts were made to probe their dreams and aspirations, their relationships with family, peers, coaches, and teachers, and also their beliefs about their ability to manage the tight timetables associated with the upper

secondary academic curriculum and high-performance sport. The interview lasted for, on average, 40 minutes. All the interviews were conducted in Finnish and then translated into English by the author and research assistant, who are both competent in Finnish and English.

Analysis of the Interviews

The interview data were analyzed using a five-step interpretive thematic analysis (Braun & Clarke, 2006). First, the authors familiarized themselves with the data through the process of transcription. Second, the interview transcripts were read and reread by the first and second authors, who made notes concerning their initial interpretations. Third, the preliminary codes were created, after which the data associated with each code were collated in a systematic fashion. Fourth, the codes were organized into categories and themes, and then they were presented to the research team members, who further checked the logic of each code, category, and theme. Fifth, psychological terminology and more abstract concepts were used to define and label the categories and themes. The thematic analysis was then finalized by means of the construction of a hierarchical structure of themes, as presented in Figure 2.

Next, we performed a comparative analysis of the adolescents' experiences in the *Burnout risk* and *Non-risk* profiles in order to identify the distribution of categories derived from their interview data within the two profiles. The comparison is presented in Figure 3. The athletes who fit the category were included in the comparison as either confirming or disconfirming the particular category. In the figure, each athlete is marked with a square. Furthermore, each square is marked with a different color based on the athletes' burnout profiles (a black square for those showing the *Burnout risk* profile and a white square for those showing the *Non-risk* profile). The total number of athletes either confirming or disconfirming the category is marked at the end of the figure with *n*. We sought to understand the key issues related to the young people's daily lives that might lead to burnout. Therefore,

the seven key categories developed through our thematic analysis rely not only on "quantifiable measures but rather on whether [they] capture[d] something important in relation to the overall research question" (Braun & Clarke, 2006, p. 82).

The final step in the qualitative analysis involved selecting compelling extracts to exemplify the "ideal types" of adolescent athletes included in the *Burnout risk* and *Non-risk* profiles. Two female athletes' accounts were chosen to describe the ideal types because they were most representative of the two groups. We assembled vignettes or short narratives from direct quotes so as to represent the participants' experiences of burnout (*Burnout risk* profile) or lack of burnout (*Non-risk* profile), as well as to show how the derived categories were interconnected and related to one another in the young athletes' lives. Similar to the case of Owton and Allen-Collinson (2016), our "participants, perhaps unsurprisingly, did not always fit neatly and squarely within the categories of the typology" (p. 705). However, communicating findings through vignettes has previously been found to represent a useful and trustworthy means of enhancing readers' understanding of lived experiences (Spalding & Phillips, 2007).

Results: Qualitative Phase

One of our primary aims was to examine how elite-level student-athletes with distinct profiles of burnout risk experientially differ from those with no risk of burnout. Within the interview dataset, there were nine adolescent athletes (labeled with odd numbers, e.g., A1) with a *Burnout risk* profile and seven adolescent athletes (labeled with even numbers, e.g., A2) with a *Non-risk* profile. Our analyses revealed that the at-risk athletes' accounts were likely to be dominated by themes related to demands, which consisted of school-related stress, inadequate recovery, disempowering coaching, and a limited social life outside of sport and school. The adolescents in the non-risk group, however, mainly reported experiential aspects associated with resources, including intrinsic motivation for sport, social

support, and adaptability. The codes and categories of the student-athletes' daily functioning as related to the development of burnout are presented in Figure 2. As an example of the differences in the overall sense of well-being conveyed by the adolescent participants in the *Burnout risk* and *Non-risk* profiles, we present the responses of two male athletes to the question of what the past six months had been like for them. Male A1 (*Burnout risk* profile) stated:

> Um…I don't know, it's pretty hard for me…umm…I didn't pass all the tests so it's pretty stressful 'cause I'm not passing the tests […] Maybe I need to be like more active and be more prepared for the test…it's just…after school I go straight to the rink, so I eat there and then wait for practice to start…and after training I'm so tired, it's not good to start doing schoolwork then.

In contrast, male A2 (*Non-risk* profile) replied:

> It's been pretty much what I expected. Of course, one needs to work harder [at upper secondary level], but the difference hasn't been as big as some teachers said it would be. There are differences, but nothing major…at least not in my experience.

These short quotes demonstrate how the athlete in the *Burnout risk* profile described experiencing school-related stress and a lack of time for school work, whereas the athlete in the *Non-risk* profile reported his school experiences to have been in line with his expectations.

In order to represent the "ideal types" of adolescents in the *Burnout risk* and *Non-risk* profiles, we have chosen to construct vignettes or short narratives grounded in empirical data that, we hope, will move readers toward a more holistic and experientially evocative understanding of the burnout phenomenon in adolescent athletes (Spalding & Phillips, 2007; Sparkes & Smith, 2013). The vignettes that follow are based on representative stories of resources and demands, respectively, and they are drawn verbatim from the participants' transcripts so as to represent the voices and experiences of multiple people (see Owton &

Allen-Collinson, 2016; Ryba, 2008). We first describe the "non-risk" type in Raili's (pseudonym) narrative:

> The school year has gone pretty well. I have been able to adjust to it [studying] with my sport. It has been pretty much what I expected. And then it's really good that this is a sport high school. So you can make your own timetable…like right now I have a bit easier timetable on purpose so that I will have more time for sport. At the moment, we are in a competition season, so we practice a bit more [≈30 hours/week]. I have these morning practices and also evening practices are 30 minutes longer. So then it's really good to set it [school timetable] according to your competition season. But, for example, in the autumn, I don't have many competitions at all, so then I have more time to focus on school.
>
> My grades have remained pretty much the same because I work a lot to achieve that. I always do my homework on the bus. My school is like a one-hour ride from the gym, and if I can't finish it [homework], I continue in the evening [at home]. If school things go wrong, like there have been some subjects that I didn't understand so well, then I go to practices and think about it [school] there too. So it's stressing you out. And you can't take time off because it's a team sport, so everybody has to do the same amount of work. Like, if someone has some problems, it will reflect on others too. We have a good team spirit, of course, so we help each other, and we are all friends and are able to sort things out.
>
> Things are going great at home. They [parents] both like to exercise, so sometimes we go for a run together. They basically understand the athlete's way of life. They give me a lot of support so that I manage with daily things, like giving me rides and such. Coaches give support mostly at training, and friends, of course, support me in their own way. I don't have a boyfriend. I spend so much time at practice that I wouldn't have time. I love my sport and I like the feeling I get in the gym. It's also pleasing to show skills and perform well.

Next, we introduce Paula's (pseudonym) narrative to show the "burnout risk" type:

> To be honest, my school motivation has decreased significantly. It's a lot harder to pass courses and assignments and…it's a lot harder than secondary school. It feels like there is just too much work, one just turns numb, and like it doesn't matter anymore…although it's the wrong attitude because what one does now impacts one's future job and everything… So it just feels like I don't have the energy for school anymore and like who cares if I get to grade six… I know it's wrong and it needs to be changed, and I want to change it, but it feels so insurmountable sometimes.
>
> I am the kind of person who stresses about everything, and particularly since school is so demanding, it has been very hard for me mentally. And now I've had nine slides off the track [skiing slalom] in competitions…and then school on top of it…I cry at almost every practice because I can't get through the track. I am telling myself, "You can do it, you are really better than the others." And if one observes the others, one can tell that they really are a lot slower than me. Of course, it bothers me, but it doesn't matter at this point.
>
> Mum and dad support me, but they…particularly my dad, is like, "If you don't want to do it [sport], you don't have to." So he doesn't say it directly, but he would like me to quit. He does not say it, but I know he is thinking about it because it's such an expensive

> hobby. My mum gets a bit like that too…she doesn't know anything about my sport, but she tells me all sorts of things about technique and it's all nonsense…I would like her to give me some space. And I don't get to see my friends [outside of sport]. Every second week we see each other for half an hour, so that's the time that we try to organize. I don't have time to have a boyfriend because when I come home from school, I need to do homework. Then I eat, go to practice, and then I need to do more homework. Then I go to bed. I don't think about it anymore.

Discussion

The aim of the present study was to integrate longitudinal quantitative data with qualitative data and, by using an embedded mixed methods design, to provide a more comprehensive understanding of the development of sport and school burnout among upper secondary school athletes. Furthermore, by using qualitative descriptions within quantitative burnout profiles, we aimed to extend the cognitive-affective model (Smith, 1986) and identify the demands and resources related to the development of sport and school burnout.

Development of School and Sport Burnout Profiles

Our first aim was to identify different burnout profiles based on the level and change of sport and school burnout symptoms among student-athletes. Four different burnout profiles were identified: (1) *Non-risk* profile, which was shown by 42.1% of the student-athletes; (2) *Burnout risk* profile, which was shown by 32.5% of the student-athletes; (3) *Developed burnout* profile, which was shown by 12.8% of the student-athletes; and (4) *Well-functioning* profile, which was shown by 12.2% of student-athletes. In two of these profiles, namely the *Non-risk* profile and the *Well-functioning* profile, the levels of sport and school burnout symptoms were below average and did not change over time. The athletes in the *Burnout risk* profile showed a relatively high level of sport and school burnout symptoms at the beginning of upper secondary school, and the level of their school burnout symptoms remained relatively steady over six months. However, the level of the sport burnout symptoms in this group decreased over time. In the *Developed burnout* group, the athletes initially showed few sport and school burnout symptoms, although both kinds of symptoms increased significantly

over a six-month period. Previous studies, which were conducted separately in the school and sport domains, mainly investigated the development of sport and school burnout using a variable-oriented approach. Such studies have demonstrated that adolescents' symptoms of school burnout increase across upper secondary school (Salmela-Aro & Tykkynen, 2012), while sport burnout symptoms have been shown to remain relatively stable, at least during a three-month period (Madigan, Stoeber, & Passfield, 2016). To the best of our knowledge, only one prior study has investigated the co-development of sport *and* school burnout symptoms among student-athletes (Sorkkila et al., 2018).[1] In that study, the same sample was used as in the present study, but rather than examining the different burnout profiles, the developmental dynamics of sport and school burnout were examined using a variable-oriented approach. The findings of this previous study (Sorkkila et al., 2018) revealed that student-athletes' school and sport burnout symptoms remained relatively stable across the first school year, although at the mean level, their symptoms increased over time. The findings of the present study suggest that although the majority of student-athletes are not at risk of burnout, a relatively high proportion of them are at risk of experiencing sport and school burnout symptoms, and these symptoms remain stable across the school year. However, among some student-athletes, the symptoms of both school and sport burnout increase significantly across the school year, while among other athletes, the symptoms decrease. Overall, the findings of the present study highlight the importance of using a person-oriented approach to investigate the phenomenon of burnout, since a variable-oriented approach (which focuses on mean-level differences) does not distinguish between different subpopulations and their different developmental trajectories. Being able to identify athletes in the different burnout risk profiles might prove particularly important for health care specialists working with student-athletes due to facilitating both risk-evaluation and treatment.

In our previous study (Sorkkila et al., 2017a), which was conducted among the same student-athletes at the very beginning of their upper secondary education, the largest profile was the *Well-functioning* profile, which was shown by 60% of athletes. In the present study, which was conducted over a six-month period, the *Well-functioning* profile was found to be the smallest profile, being shown by just 12.2% of athletes. This finding suggests that the number of student-athletes who report none or very few burnout symptoms may decrease over time. It is possible that in our previous study, the *Well-functioning* group and the *Non-risk* group represented one profile—in the present study, this would include 55% of student-athletes—although this profile included both those with very few symptoms and those with some symptoms. Interestingly, in our previous study, only *separate* profiles for sport and school burnout were found (i.e., a profile characterized by only sport burnout symptoms, as well as a profile characterized by only school burnout symptoms), while in the present study, those athletes who were at risk of burnout showed school and sport burnout symptoms *simultaneously*. This finding suggests that, in the long run, burnout might generalize into both domains, rather than being domain-specific. The previous variable-oriented findings (Sorkkila et al., 2018) yielded similar results, since it was shown that school and sport burnout were more strongly connected at the end of the first school year than at the beginning. The generalization of burnout has also been supported in clinical settings, since it has been suggested that, in the long run, burnout might overlap with depression and impact on nearly all life domains (Bianchi, Schonfeld, & Laurent, 2015). This was also noted by Smith (1986), who suggested, in relation to the cognitive-affective model, that when burnout occurs, an "increasingly negative attitude toward the activity may generalize to other areas of life as well" (p. 39).

Elite Athletes' Descriptions of Demands and Resources within Different Burnout Profiles

Our second aim was to investigate the qualitative descriptions of demands and resources offered by elite junior athletes showing different burnout profiles, as well as to extend Smith's (1986) cognitive-affective model to the sport and school context. First, we found that 16 out of 17 elite athletes showed two types of burnout profiles: (1) *Non-risk* profile, which was shown by seven of the elite athletes; and (2) *Burnout risk* profile, which was shown by nine of the elite athletes. The thematic analysis revealed that the elite athletes who showed the *Non-risk* profile reported more factors related to resources, namely intrinsic motivation in sport, social support, and adaptability, than those who showed the *Burnout risk* profile (for comparison, see Figure 3). These kinds of factors have also been shown to protect students from sport and school burnout in the prior literature when they were investigated separately in the two domains (for a review, see Goodger et al., 2007; Walburg, 2014).

In relation to the cognitive-affective model (Smith, 1986), the student-athletes in the *Non-risk* profile reported both environmental resources (social support available from several sources) and athlete-related resources (intrinsic motivation for sport and adaptability). These available resources seemed to greatly exceed the student-athletes' situational demands, which may explain why they showed few symptoms of burnout. Interestingly, it was evident that in the *Non-risk* profile, intrinsic motivation was only highlighted in relation to sport and not in relation to school. Although intrinsic motivation for sport has continuously been shown to offer protection from sport burnout (for a review, see Goodger et al., 2007), it has not previously been investigated in relation to school burnout. It may be that the elite athletes in this group are passionate about their sport, although they are still able to find time for school, since they consider it important in relation to their future. Indeed, it has previously been suggested that for student-athletes, the sport domain may be more prominent than school, and school is simply something that must be kept under control (Ryba et al., 2016). It might also be the case that intrinsic motivation for sport is, in fact, also a resource and energizing factor

for school. Consequently, motivation for sport could be a resilience-related factor that protects student-athletes against school and sport burnout. To further support this notion, it should be noted that those in the *Burnout risk* profile mainly reported extrinsic motivation or amotivation toward their sport, as well as problems related to managing their schoolwork.

Overall, the athletes showing the *Burnout risk* profile demonstrated more demands-related factors than resources-related factors (see Figure 3 for a comparison). More specifically, the athletes reported school-related stress, inadequate recovery, disempowering coaching, and little social life outside of sport and school. In the prior literature, school-related stress has been found to be a significant predictor of school burnout (for a review, see Walburg, 2015; Salmela-Aro, 2016), while disempowering coaching has been shown to be a predictor of sport burnout (for a review, see Goodger et al., 2014). Embedded within the cognitive-affective model, the *Burnout risk* profile athletes described more demands than resources, which may explain their elevated burnout symptoms. Interestingly, when the model is expanded to also include educational settings, it can be seen from the student-athletes' descriptions that the two domains, namely sport and school, are intertwined. Although, based on our quantitative findings, the at-risk athletes initially showed both school and sport burnout symptoms, their qualitative accounts were mainly characterized by *school*-related stress. It is hence possible that school burnout generalizes to the sport context. Some support for this conclusion can be found in a recent variable-oriented study (Sorkkila et al., 2018), which showed that school exhaustion spilled over into the sport context during student-athletes' first year of upper secondary school. Similarly, Salmela-Aro and colleagues (2017) found that, among early and late adolescents, school burnout spilled over into other domains, while Li and colleagues (2017) found that, among talented young athletes, school demands predicted sport burnout. Consequently, recent evidence suggests that sport burnout among adolescents may actually originate from school burnout. However, it should to be

noted that, in the present study, the sport burnout symptoms of athletes in the at-risk group actually decreased over time, and it is possible that at the time of the interviews, the elite athletes did, in fact, mainly suffer from school burnout symptoms, which was evident in their stories. It should also be acknowledged that the interviews took place in the student-athletes' schools, which may have influenced the fact that topics pertaining to school were often mentioned during the interviews. The question of whether or not the athletes would mention more topics pertaining to sport if they were being interviewed in sport premises thus requires further investigation.

Another interesting finding was that, in the *Burnout risk* group, some elite athletes also felt socially supported. It has previously been shown that social support is a protective factor against burnout (e.g., Goodger et al., 2014; Walburg, 2014). It is possible that, although the at-risk athletes did consider social support to be an important resource, it was not sufficient to protect them from the symptoms of burnout, since other demands (such as school-related stress and inadequate recovery) still exceeded their available resources. Furthermore, although the at-risk athletes reported receiving social support from their family, at the same time, they reported the lack of a social life outside of sport and school, as well as disempowering coaching. This may indicate that the overall level of social support received by the at-risk athletes was, in fact, still insufficient. The different sources of social support and their meaning for adolescent student-athletes' well-being should be investigated more carefully in future studies.

The present results are interpretable from the perspective of self-determination theory (SDT; Deci & Ryan, 1985; see also Ryan & Deci, 2017). According to SDT, individuals are likely to remain motivated and to exhibit a high level of wellbeing when their basic needs for autonomy (i.e., to be the causal agent of one's own life), competence (i.e., to experience mastery), and relatedness (i.e., to be connected to others) are met. However, the failure to

have one's basic needs met may be associated with maladaptive outcomes, such as sport burnout among athletes (Lonsdale, Hodge, & Rose, 2009). Our results showed that the athletes in the *Burnout risk* profile reported little social life outside of sport and school, which may reflect a lack of relatedness to their peers. Furthermore, their experiences of disempowering coaching and their lack of time for recovery could have compromised their need for autonomy, since the athletes reported being afraid of their coach as well as being unable to manage their time. Finally, the *Burnout risk* profile athletes reported a feeling of inability as a student, which is likely to reflect a perceived lack of competence. The *Non-risk* profile athletes, however, reported intrinsic motivation for sport and adaptability (e.g., resilience and time-management skills), as well as receiving social support from their team, friends, and family, which may reflect the fulfillment of the three basic psychological needs—autonomy, competence, and relatedness.

The cognitive-affective model (Smith, 1986) can be extended by the results of our mixed methods study in two key ways. First, in the context of sport *and* school, it is evident that the two domains intertwine. For example, our results showed that school-related demands (such as work overload) may result in symptoms of sport burnout. Furthermore, sport-related resources (such as intrinsic motivation) may also represent resources for school. Some of the identified themes may be particularly relevant to student-athletes, such as adaptability, which consists of resilience (i.e., ability to recover quickly from setbacks) and time-management skills. The ability to balance the requirements of sport and school through the application of time-management skills and resilience may be required for a successful dual career (i.e., simultaneously pursuing an athletic career and completing one's education; see Ryba et al., 2016). This may also reflect adolescents' sense of control over their lives (Coakley, 1992). The present findings, of course, need to be empirically replicated. It would be interesting to conduct a quantitative study in which the themes arrived at in this study

were operationalized into quantitative predictors in order to test their validity. Second, Smith's (1986) model was developed among elite adult athletes, whereas the present study was conducted among talented and elite adolescent student-athletes. We were able to show that, although many of the burnout-related themes arising among adolescents were similar to those seen among adults, such as social support and intrinsic motivation for sport (e.g., Creswell & Eklund, 2005; Readeke & Smith, 2001), some themes may be particularly relevant for adolescents. In addition to school-related stress, the majority of adolescents who were at risk of burning out talked about their lack of a social life outside of school and sport, including having "no time for dating" and "no time for friends." For adolescents, it may be particularly important be able to spend time with peer networks in order to achieve optimal social development and wellbeing (Brown, 2012; Chu, Saucier, & Hafner, 2010). Indeed, it has previously been shown that friendships and romantic relationships may buffer adolescents against depression and anxiety (La Greca & Harrison, 2010), while a sense of social connectedness may increase adolescents' feeling of wellbeing (Jose, Ryan, & Pryon, 2012). Consequently, having time to socialize may represent an important resource among adolescents, which may promote their wellbeing and buffer them against burning out in both sport and school.

Practical Implications

The findings of the present study may be utilized by upper secondary sport schools as preliminary insights into the demands and resources faced by elite student-athletes. It may prove beneficial, for example, to think about how best to offer student-athletes ongoing social support at school in order to enhance their wellbeing. Moreover, coaches could be encouraged to pay more attention to their athletes' school-related stress and school demands, since these might also be sources of sport burnout. Although it is not possible to derive causation from qualitative analyses, or to apply statistical-probability generalizability to

qualitative findings, readers are encouraged to reflect on how our findings could be transferred to their own actions so as to enhance idiosyncratic generalization (see Smith, 2017). Overall, we recommend greater cooperation between coaches, teachers, parents, and health-care professionals in order to achieve a mutual understanding of adolescents' current demands and resources. It is important for upper secondary sport schools to also acknowledge that there may be different groups among their student-athletes based on the level and change of burnout symptoms. Consequently, in terms of achieving early detection, it may prove beneficial to conduct seasonal screenings for sport and school burnout. Furthermore, the results of this study should be acknowledged on a structural level by upper secondary sport schools, since it was shown that a significant number of student-athletes showed symptoms of sport and school burnout. Certain compulsory courses could be, for example, replaced with courses that teach student-athletes stress- and time-management skills. Finally, the results could also be discussed at a societal level in terms of how an atmosphere in which student-athletes' free time is valued and supported could be created.

Limitations

It must be recognized that this study had a number of limitations. First, due to the study design (i.e., the qualitative sample was pre-selected), we could not derive qualitative information on all four of the identified burnout profiles, since 16 of the 17 elite athletes showed only two of these profiles. Furthermore, it may have proved more comprehensive for the reader, as well as potentially more generalizable to all student-athletes, if the qualitative sample had been post-selected (i.e., first conducting the quantitative analyses and then randomly selecting athletes from each burnout profile). The qualitative part of the study focused on elite athletes, that is, the most promising ones, rather than all athletes. The findings of the present study are nevertheless informative in the sense that the profiles of the elite athletes were the two largest profiles within the whole sample of student-athletes.

Further studies are needed to also investigate post-selected qualitative profiles in order to broaden the understanding of student-athletes' development of burnout. Second, with regard to the quantitative analysis, we had no pre-set cut-off scores for the symptoms of sport and school burnout. Therefore, it is difficult to determine what high and low scores actually mean in real life. However, through our qualitative results, we were able to gain confirmation of our quantitative findings, since the athletes' descriptions revealed that those in the *Non-risk* profile reported more wellbeing-related factors than those in the *Burnout risk* profile, whereas those in the *Burnout risk* profile reported more ill-being-related factors than those in the *Non-risk* profile. Nevertheless, future studies are highly encouraged to generate cut-off scores for student-athletes' burnout symptoms. Third, only two measurement points were investigated in this study, which represents a methodological limitation constraining possible analyses. For example, when using only two measurement points, it is not possible to investigate the shape of development over time, or the extent to which changes in the phenomenon of interest during a particular period are related to changes in the same or different phenomenon at some later period. Future studies should examine the growth trajectories of school and sport burnout across a longer period of time in order to gain more comprehensive knowledge of the development of burnout throughout upper secondary school. Fourth, only self-reported data obtained from adolescents were used in this study. In order to obtain a more comprehensive picture of the phenomenon, data could also have been gathered from parents and coaches. Fifth, the study was only conducted in one cultural context: Finland. More research is hence needed in other cultural contexts, such as the USA, where considerable numbers of adolescents participate in organized sport while pursuing their education (Messner & Musto, 2014; Rubin & Moses, 2017). In the USA, athletes often attend higher education on athletic scholarships and aim to become professionals in their chosen sport, which may cause them to feel more pressure in terms of sport than their Finnish counterparts,

who may in turn experience more pressure in school, since their future career options are mainly built on education. Sixth, the reader should acknowledge that the adolescents in the *Well-functioning* profile were only well-functioning in terms of their burnout symptoms (i.e., having very few symptoms) and we have no information about other variables that may impact on whether this group was well-functioning or not. We chose to use this term in order to be consistent with prior studies (e.g., Sorkkila et al., 2017a), although we acknowledge that the term may speak beyond the present sample. Nevertheless, taking into account the context of the study (i.e., focusing on sport and school burnout symptoms), we considered the term to be informative, as well as to help in distinguishing between those with very few burnout symptoms and those with some symptoms (i.e., *Non-risk* group). Finally, causality cannot be drawn from this study. For example, although the athletes in the *Non-risk* profile reported receiving social support, it is not possible to conclude that social support buffered them from burning out. It is equally possible that their lack of burnout symptoms resulted in them having more people around them, or that some other variable influenced this relationship. Consequently, it is important for future studies to investigate these themes quantitatively over time in order to arrive at assumptions regarding their relationships and directionality.

Conclusion

The present study approached the phenomenon of adolescent burnout in methodologically novel ways. We used an embedded mixed methods design with longitudinal quantitative data, which allowed us to comprehensively address the development of sport and school burnout. To the best of our knowledge, such an analysis has not previously been conducted. During the quantitative phase, we adopted a person-oriented approach, which has been highly encouraged in the burnout literature due to the difficulty associated with translating descriptions of variables into the properties of divergent individuals (for a review, see Mäkikangas & Kinnunen, 2016). During the qualitative phase,

we derived a succinct categorization of the reported experiences, which were then organized to provide a visual representation of the distribution pattern between the *Burnout risk* and *Non-risk* profiles. In addition, we utilized an innovative methodological approach to represent the "ideal types" of adolescents in both profiles through vignettes (short stories) that illustrate the inter-contextual dynamics and fluidities of the daily processes that may lead to burnout.

The present study contributes to the existing literature concerning student-athletes' burnout in two key ways. First, we examined the simultaneous development of sport and school burnout among student-athletes, and thus we extended the cognitive-affective model of Smith (1986) into the contexts of education and sport, which represent the main domains of daily functioning for adolescent student-athletes. Second, we used an embedded, sequential mixed methods approach to investigate the demands and resources related to school and sport burnout among a subgroup of elite adolescent athletes, and by doing so, we have generated a more holistic and comprehensive understanding of the daily lives of student-athletes. The results indicate that burnout becomes more generalized over time, rather than being context-specific. Furthermore, those elite athletes who are at risk of burnout might suffer particularly from school burnout symptoms, which then spill over into the sport context. Our findings provide insights into the possible demands and resources experienced by elite student-athletes, which could be used when thinking about how best to support their wellbeing.

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Footnotes

[1] Some of the quantitative data used in the present study have also been used in three prior studies (*N* time 1 = 391; Sorkkila et al., 2017a; Sorkkila et al., 2017b; Sorkkila et al., 2018). The qualitative burnout data (i.e., interviews; *n* = 17) have not been used previously. Moreover, only one of the three prior studies (Sorkkila et al., 2018) used a longitudinal design (i.e., two measuring points; *N* time 1 = 391; *N* time 2 = 373), and that study adopted a variable-oriented approach investigating exhaustion, cynicism, and inadequacy using structural equation modeling. The present study uses a longitudinal person-oriented approach including a qualitative approach, which, to the best of our knowledge, has not been done before.

Table 1

Information Criteria Values for Different Class Solutions

Number of classes	AIC	BIC	Entropy	VLMR	LMR	BLR	Class sizes
1	2808.146	2839.896					
2	2657.495	2724.927	0.610	0.0738	0.0768	0.0000	88/303
3	2580.026	2683.212	0.676	**0.0076**	**0.0082**	0.0000	100/95/196
4	2517.288	**2656.192**	0.694	0.1087	0.1124	0.0000	127/49/50/165
5	**2493.693**	2668.316	0.696	0.0239	0.0256	**0.0000**	95/92/40/49/115
6	2495.114	2705.456	**0.730**	0.5190	0.5279	0.5000	90/33/116/7/50/95

Note. AIC = Akaike information criterion, BIC = Bayesian information criterion, VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio, LMR = Lo-Mendell-Rubin adjusted likelihood ratio, BLR = bootstrap likelihood ratio.

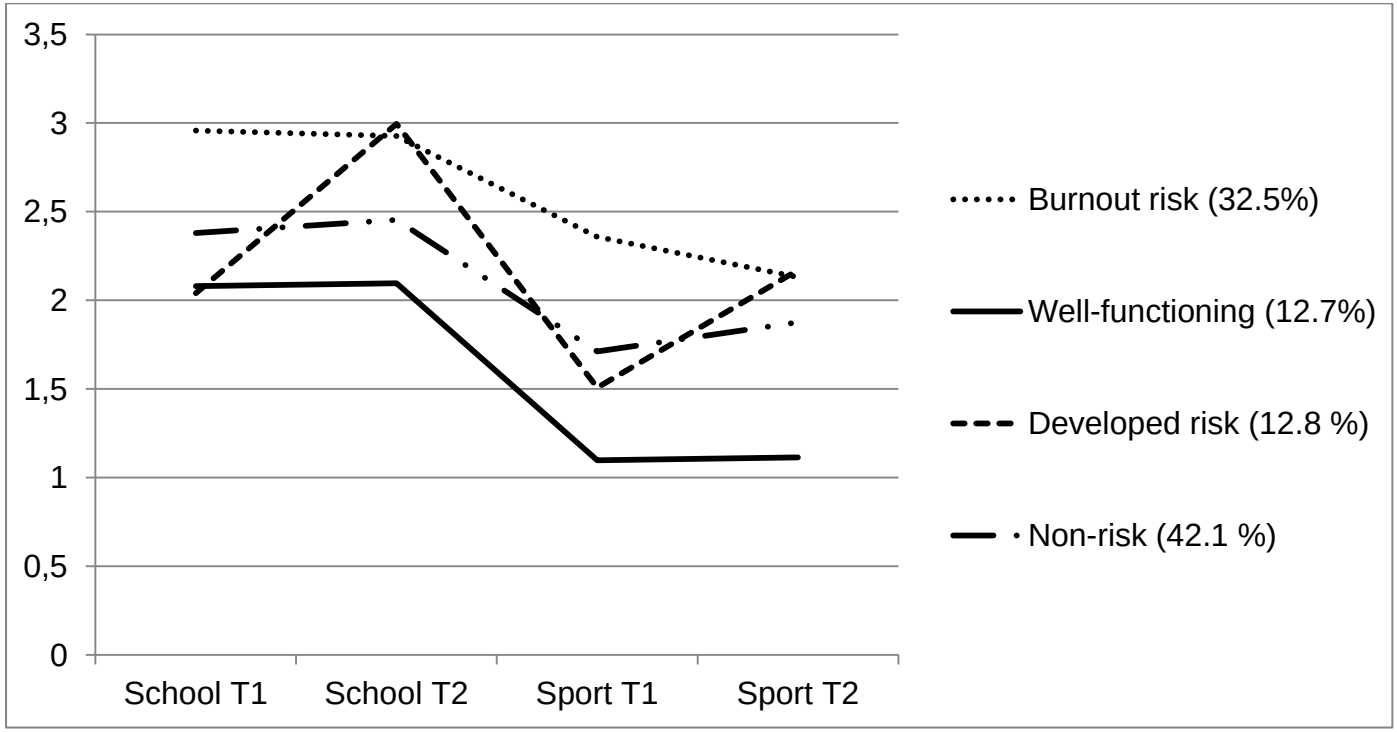
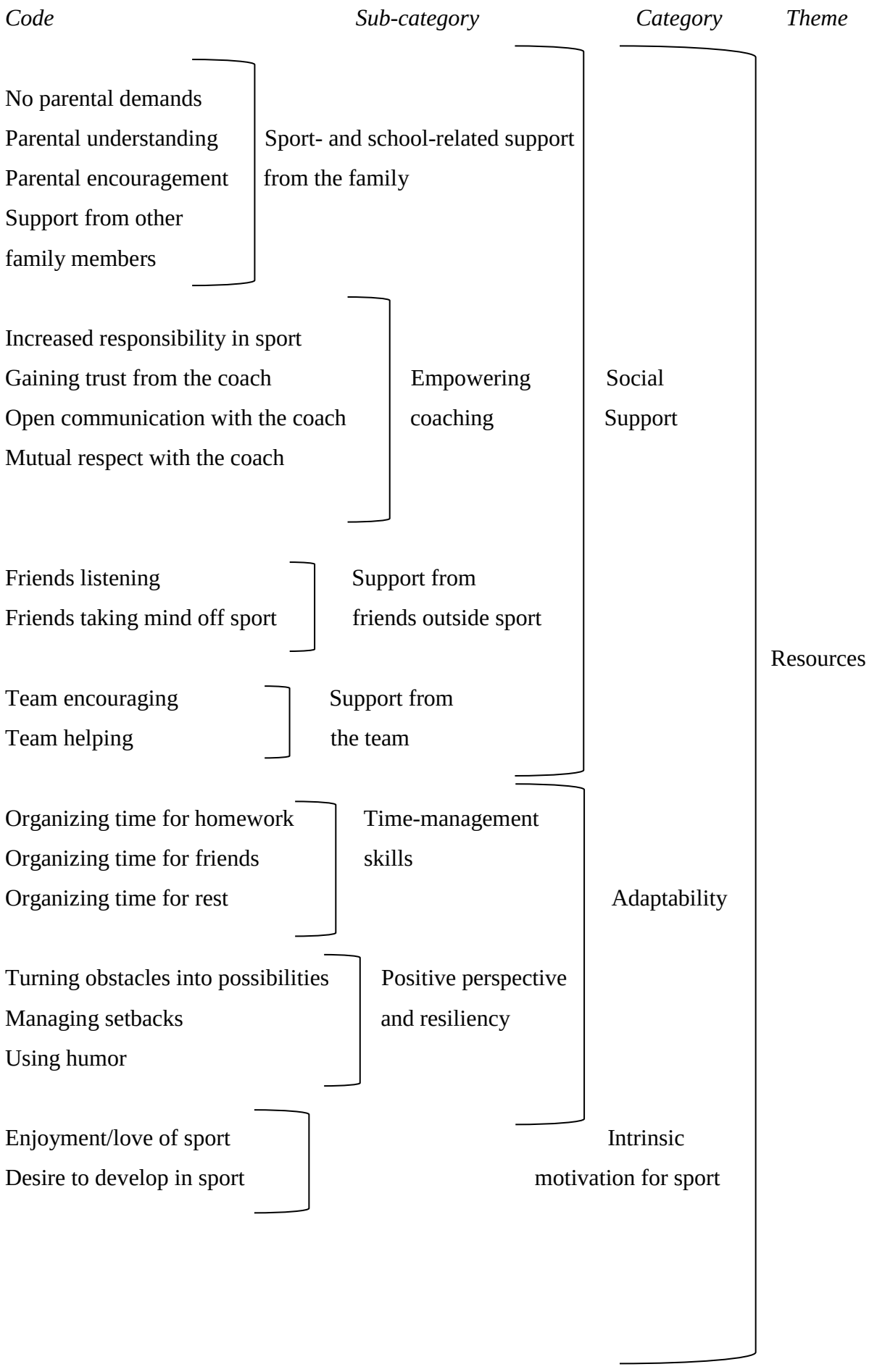


Figure 1. Identified burnout profiles among student-athletes (*N* = 391).


Code
Sub-category
Category
Theme
No parental demands
Parental understanding
Parental encouragement
Support from other family members
Sport- and school-related support from the family
Increased responsibility in sport
Gaining trust from the coach
Open communication with the coach
Mutual respect with the coach
Empowering coaching
Social Support
Friends listening
Friends taking mind off sport
Support from friends outside sport
Team encouraging
Team helping
Support from the team
Organizing time for homework
Organizing time for friends
Organizing time for rest
Time-management skills
Adaptability
Turning obstacles into possibilities
Managing setbacks
Using humor
Positive perspective and resiliency
Enjoyment/love of sport
Desire to develop in sport
Intrinsic motivation for sport
Resources

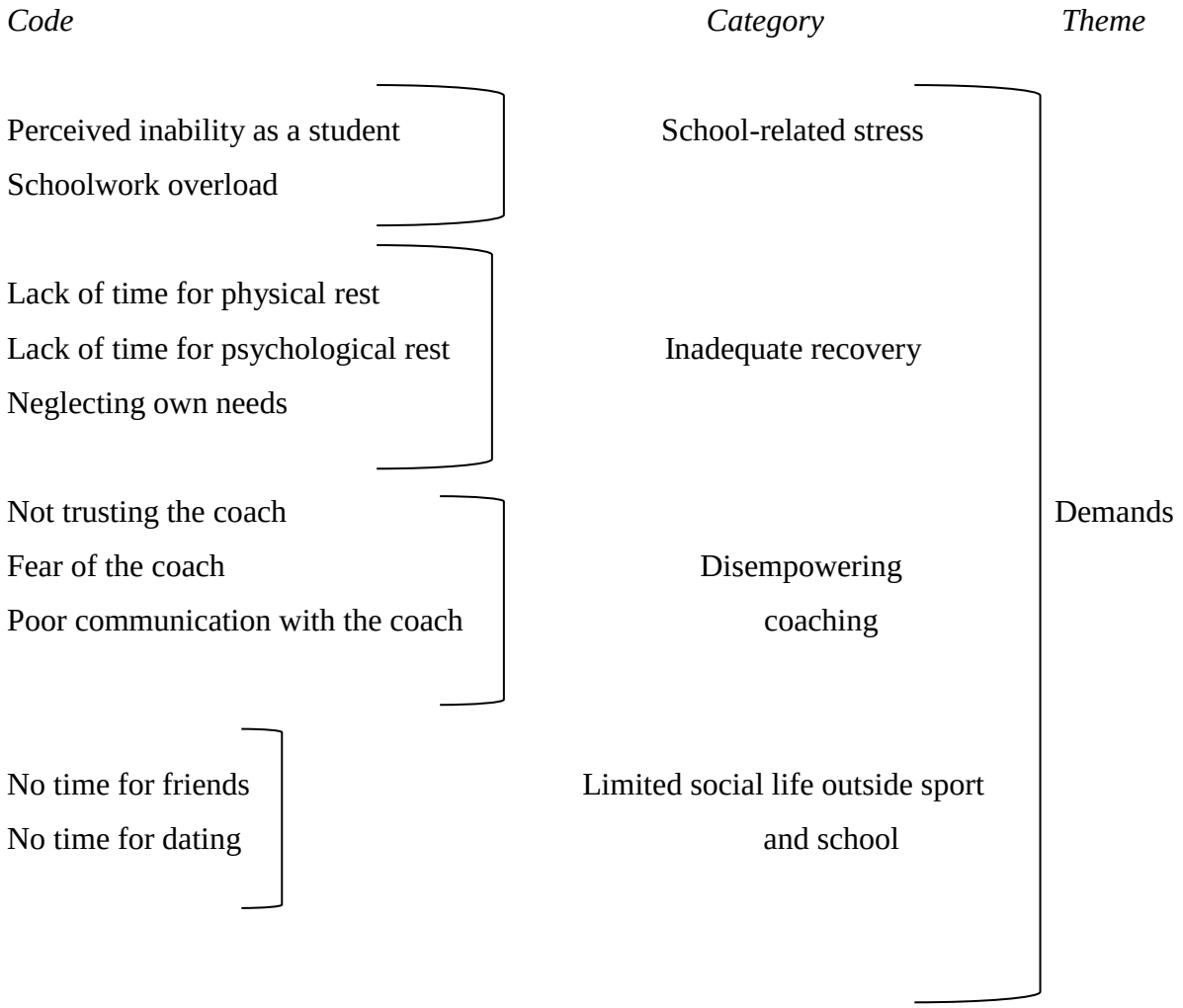


Figure 2. Hierarchical structure of the themes.

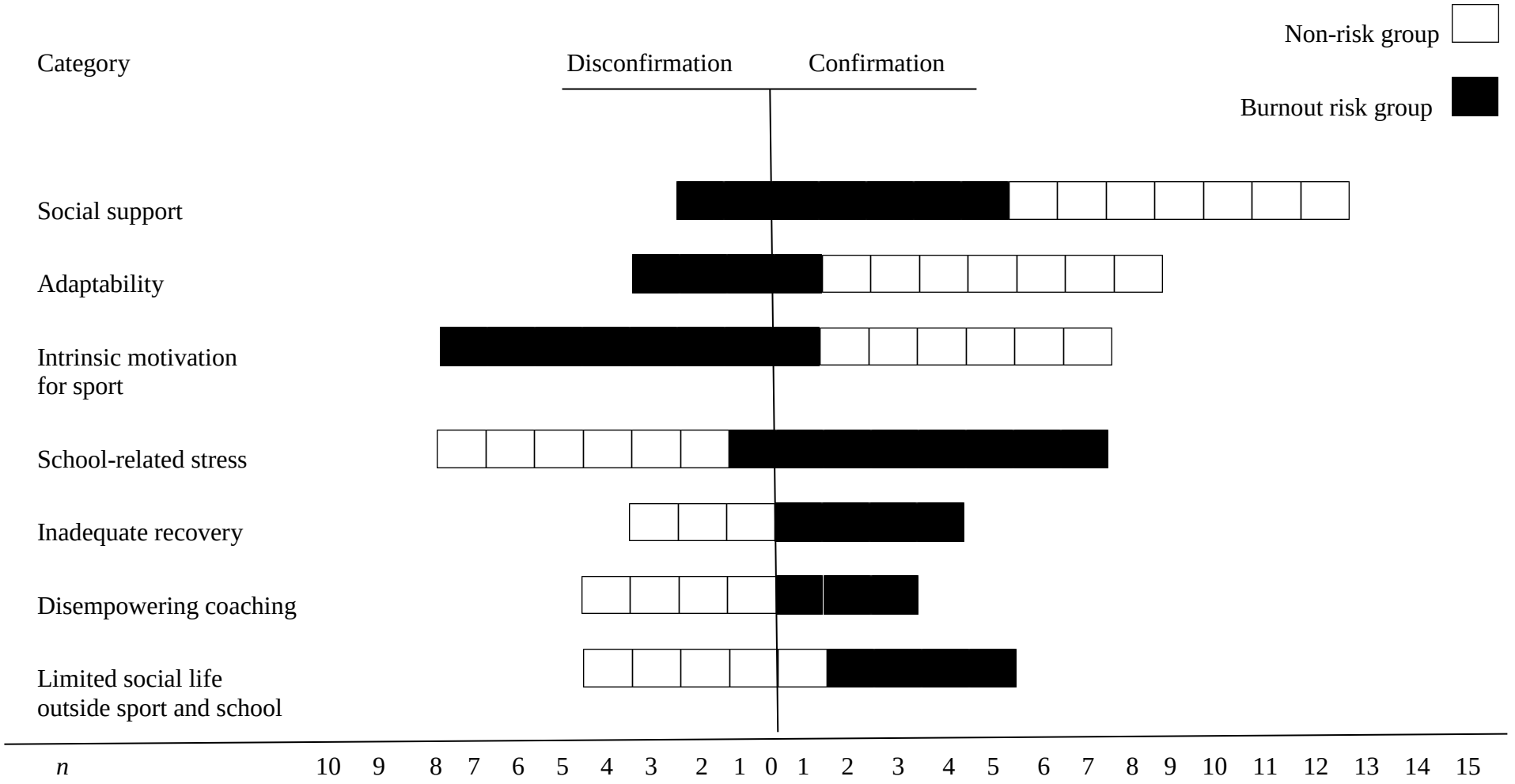


Figure 3. Categorization of descriptions related to demands and resources among elite athletes in the burnout risk group (n = 9) and the non-risk group (n = 7).

Note. Each box represents one individual who has disconfirmed (on the left) or confirmed (on the right) the category. The black boxes represent athletes who were at risk of burnout, while the white boxes represent athletes who were not at risk of burnout. *n* represents the overall number of athletes confirming or disconfirming each category.