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Life domain conflicts in elite sport

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Life domain conflicts in elite sport

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Summary of Thesis

Elite athletes have to contend with potential conflicts between the demands of their sport and other aspects of their lives. However, the impact of such conflicts has been under-investigated. This thesis adopts concepts from organisational research into life domain conflicts and applies them to elite sport. The thesis comprises a general introduction, four empirical chapters, and a general discussion. The main goals were to: extend life-sport conflicts research by developing sound measures for both directions of conflict (i.e., life to sport and sport to life); examine a self-determination theory-based model where life-sport conflicts are conceptualised as social contexts that influence motivation towards sport, and how perfectionism moderates this relationship; and explore prospectively whether life domain conflicts and perfectionism predict the extent to which international athletes' remain within the elite level of sport across a two year period. Advanced statistical procedures (e.g., Bayesian structural equation modelling) are deployed to rigorously achieve these goals.

Findings from the studies provide evidence that: life-sport conflicts and sport-life conflicts can be problematic for elite athletes; life domain conflicts are bi-directional and distinct, so only by examining conflicts in both directions can they be adequately represented; life-sport conflicts can be conceptualised as antecedents to self-determined motivation; adaptive perfectionism can attenuate, whereas maladaptive perfectionism can amplify the negative motivational impact of life-sport conflicts; and that sport-free time conflict, a combination of family-sport conflict and adaptive perfectionism, and maladaptive perfectionism prospectively predict international standing at two years.

The focus of the thesis is innovative, being the first research to demonstrate that conflicts between life domains exist in elite sports. It contributes to motivation research by showing that life-sport conflicts are negatively associated with self-determined motivation. Findings also highlight that perfectionism plays an important role in the relationship between life-sport conflicts and athlete motivation and maintaining elite performance levels.

Contents

List of Tables

List of Figures

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Chapter One:

General Introduction

Introduction

Athletes, like everyone, have to allocate their resources to multiple life domains. For example, an athlete in his/her final year at university and a candidate for the Olympic Games needs to invest time and energy in both studying and training. As both life domains absorb significant resources, they might be perceived to be in conflict by the athlete. Most research into life domain conflicts (e.g., work-family) provides support for the idea there is a dynamic interplay between the various domains in an individual's life (e.g., Greenhaus & Beutell, 1985; Kopelman, Greenhaus, & Connolly, 1983). Such research has demonstrated that this interplay can be significant and can lead to conflict between the domains, resulting in a negative effect on the individual's life through reduced life satisfaction (Carlson & Kacmar, 2000). Despite a great deal of research on the benefits of social support for athletes (e.g., Rosenfeld, Richman, & Hardy, 1989) the literature has almost entirely ignored conflicts between the life domains of elite sports performers outside their sport with their pursuit of sport. Athletes have been viewed in isolation from the rest of their world. This is problematic as athletes have other life domains (such as family, education, work, leisure time, and friends) that sit to a greater or lesser extent alongside their engagement with sport. These domains can be a source of conflict and stress for an athlete, interfering with the athlete's sport involvement (Boiché & Sarrazin, 2007).

Juggling the demands of life domains is likely to be commonplace for elite athletes (English Institution of Sport, n.d.). As such it is somewhat surprising that, to the best of my knowledge, only two articles have been published investigating conflicts between sport and life domains. The two investigations of the consequences of domain conflicts in a sports related context, specifically leisure time sport activities of high school pupils, were conducted by Boiché and Sarrazin (2007) and Boiché, Sarrazin, and Chanal (2015). In the first study they explored conflicting and facilitating relationships between sport and two other life domains: education and friendship, utilising a self-determination theory (SDT) framework. Their model presumed that self-determined motivation for sport, education and friendship would be associated with lower levels of conflict and higher levels of instrumentality between sport and the other domains. Facilitation/instrumentality occurs when the pursuit of a goal in a domain is perceived as beneficial to another domain. In other words, they posited that if individuals have high levels of self-determined motivation for sport, education and friendships, they would perceive education and/or friendship as not time and energy

consuming with regard to participating in sport, because these domains would be harmoniously integrated into their self-structure. In contrast, low levels of self-determined motivation for the three domains would be associated with higher levels of conflicts among the domains. Correspondingly, higher levels of conflict and lower levels of instrumentality would undermine sport participation.

To test their model, Boiché and Sarrazin created a unidirectional conflict questionnaire for a relatively restricted set of domains: sport, education and friendship, enabling assessment of the impact of education and friendship on sport. In other words, their questionnaire only measured how education and friendship conflict with participating in sport and not how the participation in sport conflicts with doing schoolwork or meeting friends. Self-determined motivation for sport, education and friendship was assessed with established measures. Structural equation modelling provided support for some of their hypotheses, although there was one anomaly. In particular, the observed relationship between self-determined motivation for sport and the education-sport conflict was positive, whereas it was expected to be negative. Boiché and Sarrazin (2007) reasoned this anomaly related to the specificity and uni-directionality of the conflict measure and the sample used in their study. They suggested that one might argue that the relationship between self-determined motivation for sport and education-sport conflicts would be negative if the conflict measure would have been global or assessed the opposite direction of conflict (i.e., sport undermining the individual's functioning in other contexts). They pointed out further research would be needed to validate this hypothesis. An additional explanation is that the sample had a much higher self-determined motivation for sport than for education. In summary, they found that self-determined motivation towards education and friendship were negatively associated with education-sport and friendship-sport conflicts and that self-determined motivation for sport, education and friendship were positively related to the instrumentality between sport and the other domains.

Boiché and colleagues' (2015) second study was a longitudinal three-year follow-up of the 2007 study and had two purposes. The first was to examine the developmental trends of the perceived conflicting or instrumental relationships between sport and education contexts and sport and friendship contexts. They expected that perceptions of conflicts related to sport would increase over the period studied. The second purpose was to investigate the correlations between self-determined motivation towards sport, education, and friendship and the perceived conflicting or instrumental education-sport and friendship-sport relationships. They anticipated that self-determined motivation toward sport, education, and friendship

would relate negatively to perceived conflicts but positively to perceived instrumentality. Further they expected that because of their 2007 findings, adolescents with high self-determined motivation towards sport but not towards education and friendship would be more disposed to experiencing those contexts being in conflict with sport. This would be shown by an interaction effect between contextual motivations.

Boiché et al. (2015) found that education-sport conflict increased through the high school years, suggesting that the resources devoted to education steadily increase as students move from grade to grade. The developmental data did not confirm expectations that relationships with friends can undermine sport involvement. However, a trend was observable: school pupils perceived friendship and sport conflicts reducing during the initial high school years but increasing during the later ones.

Regarding the second purpose of their study, they found as expected that self-determined motivation for friendship was negatively related to friendship-sport conflict, but self-determined motivation for sport was not related to friendship-sport conflict. Concerning education, the analysis did not show a statistically significant relationship between self-determined motivation for school and school-sport conflict throughout the entire period studied. Conversely, a positive association between sport motivation and school-sport conflict emerged, as it was the case in the 2007 study. Further they found that adolescents with high self-determined motivation towards sport but not towards education scored the highest levels of school-to-sport conflict. Concerning friendship-sport conflict, no interaction effect emerged.

While informative, unfortunately the Boiché and Sarrazin study (2007) and the Boiché, Sarrazin, and Chanal study (2015) were limited to *uni-directional* conflicts of education to sport and friendship to sport domains. This chapter turns to the literature on *bi-directional* work-family and family-work conflicts to determine whether there are findings from other contexts relevant to life-sport and sport-life conflicts.

Theoretical background of life domains conflicts

Researchers have focused extensively on the connection between work and family during the last thirty years or so (e.g., Burke & Greenglass, 1987; Qu & Zhao, 2012; Zedeck, 1992). This research has revealed that an individual's work and family spheres of life are not independent but rather closely related domains. Although research into the overlap between

work and family domains has identified numerous mechanisms linking the two (Burke & Greenglass, 1987; Evans & Bartolome, 1986; Lambert, 1990; Payton-Miyazaki & Brayfield, 1976; Zedeck, 1992), Edwards and Rothbard (2000) identified two shortcomings with this research. First, different terms have been used for essentially similar mechanisms and common themes across mechanisms have been ignored. This proliferation of terminology suggests distinctions among linking mechanisms that are not conceptually meaningful and hinder gaining knowledge concerning a core set of linking mechanisms. Second, metaphoric descriptions of the linking mechanisms (e.g., spillover, compensation) offer no clear translation into propositions regarding the relationship between specific work and family constructs. Such a development is necessary so as to move beyond simply describing the work-family interface in order to examine causal pathways between the two domains. To address these shortcomings, Edwards and Rothbard (2000) reviewed and analysed linking mechanisms that had been studied in work-family and family-work conflict research. Six work-family domain linking mechanisms were highlighted; spillover, compensation, segmentation, congruence, work-family conflict, and resource drain. All are reviewed here to identify their relevance to the present thesis as determined by their potential for domain conflicts in the context of sport.

Spillover as a linking mechanism arises when one domain affects another domain increasing the similarity of the two domains. Similarity means that a positive relationship between work and family constructs exists. The causal structures of spillover relationships are positive and can be direct or indirect. This means that an increase of a behaviour pattern in one domain is associated with an increase of the same behaviour pattern in the other domain. So for instance, research has revealed that teachers develop interaction patterns with their students that shape their behaviour as parents (Ispa, Gray, & Thornburg, 1984). Additionally, a spillover linkage can be intentional or unintentional, depending on the work and family constructs involved.

Despite this positive relationship, spillover between two domains can be either beneficial or harmful for the individual (cf. Lambert, 1990; Zedeck, 1992). According to Edwards and Rothbard (2000) researchers have explored the constructs of mood, values, skills, and behaviours in the context of spillover research. A mood spillover occurs when a mood in one domain can facilitate role performance in another. For example, in the context of sport, performing well at a sporting competition could enhance an athlete's school performance. An explanation for this effect could be that positive moods enhance cognitive

functioning, increase task activity and persistence, and promote positive interactions with others, so facilitating role performance (Staw, Sutton, & Pelled, 1994). In contrast, experiencing a disappointment at home (e.g., argument with parent) could inhibit a youth athlete's sport performance. According to Edwards and Rothbard (2000) spillover linking mechanisms do not necessarily induce conflicts between two domains; they actually increase the similarity of the two domains. Accepting this point, spillover relationships are not seen as relevant to the present project and will not be explored further in this chapter.

The *compensation* linking mechanism arises when dissatisfaction in one domain prompts a person to increase involvement or seek rewards in another (Edwards & Rothbard, 2000). For instance, if schoolwork is not rewarding and so dissatisfying, an athlete may devote less time, attention and/or importance to schoolwork and more to sport, potentially offsetting schoolwork dissatisfaction by compensatory sport rewards through enhanced sport role engagement. In this case the causal relationship between the domains is negative and direct, such that dissatisfaction in one domain increases the involvement in the other domain. Further, the compensation is always intentional, because it corresponds to active efforts to reallocate involvement or seek rewards (Burk & Greenglass, 1987; Lambert, 1990; Zedeck, 1992). The compensation linking mechanism appears to explain shifting time, attention, and importance between the domains but not the cause of conflict between them. For this reason this thesis will not focus on compensation linking mechanisms.

Segmentation refers to the active separation of domains so that any two domains do not influence each other. Segmentation signifies attempts to decrease the relationship between for example work and family by suppressing work behaviours that are inappropriate at home; as such it represents a moderating or buffering effect. Segmentation entails that all direct and indirect effects between the domains sum to zero, thus showing a true lack of causal relationship between them (Edwards & Rothbard, 2000). Moreover, segmentation is always intentional because conscious efforts are needed to inhibit unwanted interference between domains or to maintain a chosen degree of relationship between domains. Ashforth, Kreiner and Fugate (2000) suggest that the boundary between work and family roles can be aligned on a continuum, ranging from high segmentation to high integration. This linkage mechanism is mostly achieved through suppressing feelings, thoughts, and behaviours. For example, the suppression of negative school/work related moods while training might reduce the direct effect of an athlete's school/work oriented mood on performance in a training session. However, my assertion is that the segmentation linking mechanism does not represent a

dynamic interplay between the domains that may lead to conflicting relationship between domains and therefore is not of interest for the thesis.

The *congruence* linking mechanism between domains occurs when a third variable links the domains together by having a congruent effect on both (Edwards & Rothbard, 2000). Common causes include personality traits, genetic factors, general behavioural styles, and social and cultural forces (Frone, Russell, & Cooper, 1994; Morf, 1989; Staines, 1980; Zedeck, 1992). Congruence is comparable to the spillover mechanism, in that both lead to similarities between work and family domains. However, while the spillover mechanism attributes these similarities to the effect of one domain on the other, the congruence mechanism attributes these similarities to a third variable that affects both domains. For example, general behavioural style may influence both coping skills at sport and work and thereby induce a positive relationship between the two domains. Nevertheless, neither positive relationships nor the third variable appear to have a conflicting interplay between the domains. As a result congruence as a linking mechanism is not relevant to this thesis.

Work-family conflict as a linking mechanism can be viewed as an inter-role conflict in which work and family role demands are incompatible, so that meeting demands in one domain makes it difficult to meet demands in the other (Burke & Greenglass, 1987; Greenhaus & Beutell, 1985). Greenhaus and Beutell (1985, p.77) define work-family conflict as "a form of inter-role conflict in which the role pressure from work and family domains are mutually incompatible in some respect". Role pressures can be bi-directional (i.e., work-to-family or family-to-work) with one domain creating negative effects in the other (Carlson & Frone, 2003). Conceivably the same is true for other domains and sport. Work-family conflict is aversive, because intrinsic and extrinsic rewards are often reliant upon meeting role demands, and when the domains are in conflict, receiving rewards in one domain entails missing rewards in the other (Edwards & Rothbard, 2000; Zedeck, 1992). Greenhaus and Beutell (1985) identify three forms of work-family conflicts: behaviour-based, strain-based and time-based.

First, *behaviour-based conflict* arises when behaviours acquired in one domain are unsuited to role demands in another domain, and the person is unable to adjust behaviour when switching domains (e.g., being aggressive in competitive sport can be a desired behaviour whereas at home it is unacceptable). Behaviour-based conflicts signify a form of *spillover* in which behaviours acquired in one domain influence behaviours in another, with

the added stipulation that the transferred behaviours inhibit role performance in this other domain. Behaviour-based conflict does not necessitate conflicting demands; rather it entails that acquired behaviours in one domain interfere with role performance in the other domain.

Second, *strain-based conflict* arises when strain, such as fatigue, anxiety, tension, and dissatisfaction from one domain make it difficult to satisfy demands of the other domain (e.g., fatigue from excessive socializing the night before practice interferes with early morning training commitments). Strain-based conflicts indicate that mere participation in a domain can produce strain that hinders role performance in another domain, and do not imply conflicting demands per se.

Third, *time-based conflicts* arise when time or attention allocated to the demands of one domain uses up time or attention needed to meet demands of the other domain (e.g., increased studying for a final school examination hinders an athlete from doing enough training and so interferes with the athlete's subsequent competitive performance). Consequently, time-based conflicts are a type of resource drain, in which time or attention are transferred between domains, leaving demands in one of the domains unmet.

Resource drain, the sixth linking mechanism views resources such as time, attention, and energy (physical and psychological) as finite (Small & Riley, 1990; Staines, 1980; Tenbrunsel, Brett, Maoz, Stroh, & Reilly, 1995). It posits that as these resources are limited, so using resources to fulfil obligations in one role (e.g., sport) prevents one's capacity to fulfil obligations in other roles (e.g., family commitments). Resource drain is similar to the compensation linking mechanism that involves a shift of attention or time between domains (Edwards & Rothbard, 2000). That said, as mentioned above, compensation is an active response to dissatisfaction in another domain, whereas resource drain refers to the unintentional transfer of resources between domains, regardless of drive for transfer. In the case of resource drain conflicts the relationships between domain resources are negative and direct, such that resources committed to one domain reduce resources available for the other domain. The unavailability of resources and the struggle to gain and maintain resources for the other domain can exacerbate stress levels experienced by individuals.

According to Hobfoll (1989), stress is a reaction to a threat or an actual loss of resources or a lack of an expected acquisition of resources. The conservation of resources theory (Hobfoll, 1989) suggests that inter-role conflicts lead to stress because resources are lost in the process of juggling several roles across domains. Moreover the loss of resources

can contribute to dissatisfaction, which could have a negative effect on individuals' lives (Carlson & Kacmar, 2000; Grandey & Cropanzano, 1999). Accordingly, many work-family conflict measures are based on the *resource drain* approach (e.g., Carlson & Frone, 2003; Gutek, Searle, & Klepa, 1991; Riediger & Freund, 2004). The *resource drain* mechanism appears relevant to the pursuit of sports, as athletes have to allocate their resources to multiple life domains. Further, it is in line with the definition that conflicts occur when the demands of one domain make it difficult to perform demands in another domain. In addition, Cosh and Tully's (2014) study of student athletes found that time (a resource) can be a barrier to successfully integrating elite sport and tertiary education.

One of the objectives of the present thesis is to develop a bidirectional conflict questionnaire based on *resource drain*, which is applicable to a wider set of domains in order to investigate bidirectional domain conflicts within elite sport. The bidirectional scope is consistent with work-to-family and family-to-work conflicts literature, which suggests work-to-family and family-to-work conflicts are two distinct but related constructs (Carlson & Kacmar, 2000; Fox, Fonseca, & Bao, 2011; Greenhaus & Beutell, 1985). Thus Netemeyer, Boles, and McMurrian (1996) propose that the two constructs should be assessed through separate scales. It is expected that athletes may experience life-sport and/or sport-life conflicts in their day-to-day lives**.**

Self-determination theory and life to sport conflicts

Another aim of this thesis is to examine the antecedents and consequences of life-sport conflicts in the context of self-determination theory (SDT: Deci & Ryan, 2000), a popular perspective on human motivation. The conservation of resources theory (Hobfoll, 1989) suggests that individuals are motivated to increase resources on activities they want to engage in and decrease resource expenditure on activities that do not motivate them. Life domain conflicts can be viewed as social factors that are typically encountered in one's social environment (Vallerand, 2007). SDT also highlights the role of the social context in influencing individuals' motivation. According to SDT, the influence of social factors on motivation is mediated by perceptions of satisfaction of basic psychological needs, namely the innate needs for autonomy, competence, and relatedness. The need for *autonomy* refers to volition and self-endorsement: "the organismic desire to self-organize experience and behavior and to have activity be concordant with one's integrated sense of self" (Deci & Ryan, 2000, p. 231). The need for *competence* is satisfied when an individual feels he/she has

the ability and opportunity to be effective in his/her environment. The need for *relatedness* refers to a sense of mutual respect, connectedness, caring and reliance on others such as the social bonds experienced between teammates and coaches (Deci & Ryan, 2000). These psychological needs are viewed within SDT as nutriments that are essential for individuals' vitality, integration, and health.

SDT suggests that when the social context fosters satisfaction of individuals' psychological needs, autonomous types of motivation are facilitated, whereas if basic needs are thwarted it is expected that individuals' motivation is more controlled (Deci & Ryan, 2000). Autonomous motivation refers to volitional activities that individuals undertake because they find them interesting and enjoyable (intrinsic motivation), because they are consistent with their sense of self (integrated regulation), or because they value their outcomes (identified regulation). Deci and Ryan (2000) argued that more controlled forms of motivation applies to activities that individuals do in order to avoid guilt, shame, and a loss of self-worth (introjected regulation) or because of interpersonal psychological and/or behavioural pressures (e.g., reward or punishment administered by others). SDT postulates an autonomous-to-controlled continuum to describe the degree to which an external regulation (integrated regulation, identified regulation, and introjected regulation) has been internalised. The more fully it has been internalised, the more autonomous the subsequent externally motivated behaviour (Gagné & Deci, 2005). SDT assumes that the internalisation and integration of values and regulations is an innate developmental tendency. Internalisation refers to a process through which individuals transform an external value or regulation into a personally held value or regulation that is congruent with their personal values and sense of self. These natural developmental processes do not happen automatically; the internalisation and integration processes are facilitated when the social context supports autonomy, competence, and relatedness (Ryan & Deci**,** 2000). Conversely a controlling social context results in less self-determined motivation, since mandates and directives, as opposed to volition, are mainly responsible for these motivations (e.g., Pelletier, Fortier, Vallerand, & Brière, 2001). Controlling regulatory styles imply non-self-determined forms of motivation, for instance external regulation and introjected regulation. Stebbings, Taylor, Spray, and Ntoumanis (2012) found that sport coaches' work-life conflict was positively associated with psychological need thwarting and negatively associated with psychological need satisfaction. In their structural model they hypothesised that need thwarting and need satisfaction are consequences of work-life conflict. As a result, within the current project it is assumed, in

contrast to Boiché and Sarrazin (2007) and in line with Stebbings et al. (2012), that life-domain conflicts foster non-self-determined forms of motivation.

Perfectionism, SDT and life to sport conflicts

Organisational research has shown that personality characteristics play an important role in predicting and explaining employee motivation and behaviour (see Barrick & Mount, 1991; Hogan & Holland, 2003; Judge & Ilies, 2002; Salgado, 1997). One such personality characteristic is perfectionism. Perfectionism is characterized by striving for flawlessness, setting exceedingly high standards for performance, and overly critical evaluations of one's behaviour (Flett & Hewitt, 2002; Frost, Marten, Lahart, & Rosenblate, 1990). Perfectionism is a common personality characteristic that can affect all domains of life, including of course sport (Gotwals & Dunn, 2009). Perfectionism has been shown to be associated with different forms of motivational regulation (Gaudreau & Antl, 2008; Mallinson & Hill, 2011). Further, research has suggested that personality characteristics (i.e., perfectionism) influence the way in which individuals interpret and respond to situations/contexts (Mischel, 1973). This would include life-sport conflicts. Of relevance to the current project, behavioural regulation is itself dependent on the perception of situations/contexts (Deci & Ryan, 2000) and so perfectionism will likely play an influential role for athletes' motivation for sport. Consequently, this thesis reports on testing a model in which perfectionism moderates the relationship between life-sport conflicts and behavioural regulation.

Overview of Thesis

The overall PhD project addresses the following in six chapters: Chapter One provides an overview of the life domain conflicts and SDT; Chapter Two describes the development of a life-sport conflict measure; Chapter Three investigates the moderating role of perfectionism on the relationship between life-sport conflicts and autonomous/controlled motivation; Chapter Four focuses on the development of a sport-life conflict measure; Chapter Five examines whether life-sport conflicts, sport-life conflicts, perfectionism, and the interaction between life-sport conflicts and perfectionism longitudinally predict athletes' competitive level two years post initial data collection; and Chapter Six is the general discussion of the thesis. The main part of the thesis comprises four original and empirical chapters that will be prepared for publication. This will no doubt mean that there is an overlap and repetition in places although this has been minimised. For the four empirical chapters two multi-sport samples of elite adult athletes that represent or had represented Switzerland in their sport were

used. The first sample, which consisted of 258 athletes was used for Chapter Two Phase 1, Chapter Three, Chapter Four Phase 1, and Chapter Five. The second sample, which consisted of 389 athletes was utilised in Chapter Two Phase 2 and Chapter Four Phase 2.

Athletes, like everyone, experience situations where the demands of life domains are in conflict. So it can be expected that athletes encounter inter-role conflicts in which role pressures from life interfere with demands from their sport. To be able to assess the day-day conflicts of athletes, a life-sport conflicts measure has to be developed. Chapter Two focuses on the development of such a measure that is grounded within resource drain theory. Further, in Chapter Two the reliability, the structure and concurrent validity of the measure are tested across two samples of elite athletes.

The thesis assumes life-sport conflicts are social factors that influence the motivation of individuals. Chapter Three examines the moderating effect of perfectionism on the relationship between life-sport conflicts and autonomous/controlled motivation. Perfectionism is seen as a multidimensional personality trait, with the chapter focussing on one of the major aspects of perfectionism - the setting of extremely high standards. The source of these standards can be internal or external. It has been highlighted that prescribed perfectionism (external source) can be debilitating (Flett & Hewitt, 2005), and that self-oriented perfectionism (internal source) can have positive motivational qualities (Enns & Cox, 2002; Gould, Dieffenbach, & Moffett, 2002; Stoeber & Otto, 2006; Stoeber & Eismann, 2007; Stoeber, Stoll, Pescheck, & Otto, 2008). Following from these findings, it is proposed that self-oriented perfectionism will attenuate the relationship between life-conflicts and autonomous/controlled motivation, whereas prescribed perfectionism will exaggerate the relationship.

Chapter Four focuses on the development of a sport-life measure. It is argued that athletes also experience conflict when sport demands interfere with life demands. Therefore the reliability, the factorial validity, and the concurrent validity of a questionnaire assessing the opposite direction of conflicts to the measure developed in Chapter Two, is tested in Chapter Four.

Chapter Five investigates the predictive validity of life-sport conflicts, sport-life conflicts, perfectionism, and the combination of life-sport conflicts and perfectionism on the competition level of athletes initially competing at international level two years after their initial data collection. It considers that greater life-sport conflicts, greater sport-life-conflicts,

lower self-oriented perfectionism, and/or higher prescribed perfectionism increase the probability of athletes competing at sub-international competitive levels two years later. Finally, Chapter Six discusses the main findings of the research chapters, identifies limitations of the thesis, and presents suggestions for future research and good practice.

Chapter Two:

The development and validation of the life-sport conflict measure

Abstract

This chapter reports two phases of work detailing the development and validation of a life-sport conflict measure. Phase 1 (N=258) uses Bayesian structural equation modelling to assess the structure of the measure, resulting in a 12-item, three factor model comprising work/study, free time and family. In Phase 2, utilising a different sample of adult elite athletes (N=389), the factor structure of the life-sport measure was confirmed. Further, the concurrent validity of the measure was investigated by examining the life-sport conflict measure's associations with other relevant constructs identified within work-family conflict literature. The results showed that the three factors were related to athlete burnout, sport commitment, social support, general autonomy support, and life satisfaction. Collectively Phase 1 and 2 represent the first investigation to examine life domain conflicts to elite sport and to develop a psychometrically sound measure of life-sport conflicts.

Introduction

Organisational behaviour researchers have studied conflicts between life domains extensively, with contention between work and family as the main research interest. This research has shown that work-family conflict is a source of stress that many individuals experience (Carlson, Kacmar, & Williams, 2000). Work-family conflict has been defined as "a form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect" (Greenhaus & Beutell, 1985, p. 77). Research has identified that work-family conflict can influence many outcomes, including psychological distress, job satisfaction, organisation commitment, job turnover, and life satisfaction (Frone, Russell, & Cooper, 1992a; Higgins, Duxbury, & Irving, 1992; O'Driscoll, Ilgen, & Hildreth, 1992; Parasuraman, Greenhaus, Rabinowitz, Bedeian, & Mossholder, 1989).

In contrast, sport science research has scarcely studied the conflict between life domains (e.g., family, work/education, friends, and leisure activities) and sport. Nevertheless, the organisation of elite sport is not dissimilar from the working world, so it can be expected that athletes also experience inter-role conflicts in which role pressures from sport and other life domains are at loggerheads with each other. An obvious starting point to enable systematic research of life-sport conflicts is the development and preliminary validation of a conceptually driven and psychometrically sound measure of life-sport conflicts; this chapter describes that process.

The foundations of the approach adopted in this chapter of life-sport conflict are based on organisational behaviour research seeing inter-role conflicts as a form of conflict in which "role pressures associated with membership in one organisation are in conflict with pressures stemming from membership in other groups" (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964, p. 20). From a life-sport conflict perspective, this type of conflict reflects the degree to which role responsibility from life domains (family, work/education, friends and leisure activities) and sport are incompatible. Drawing from work-family conflict literature, we learn that "participation in the work (family) role is made more difficult by virtue of participation in the family (work) role" (Greenhaus & Beutell, 1985, p. 77). As such, the demands of one role make performance of another role more difficult (Katz & Kahn, 1978). Most organisational behaviour researchers agree that the general demands of a role, the time devoted to a given role, and the strain produced by a given role are domain elements of work-family conflicts (e.g., Edwards & Rothbard, 2000; Greenhaus & Beutell, 1985). Furthermore the time devoted

to and the resistance of strain produced by a given role can be viewed as resources that are limited (Hobfoll, 1989).

In this chapter the conservation of resources (COR) theory (Hobfoll, 1989) is used to guide the conceptualisation of life-sport conflict. According to the COR theory, individuals aim to acquire and maintain resources such as objects, personal characteristics, conditions, energies and time. Following on from the work of Boiché and Sarrazin (2007) this chapter focuses on the resources of time, energy, and attention. When these resources are endangered or lost, individuals experience stress (Hobfoll, 1989). According to COR theory, life domain demands can be viewed as stressors that consume time and psychological resources with increases in such demands translating into additional resources being required. Since resources are finite, an increase of demands in one domain, e.g. family, leaves fewer resources available to fulfil demands in another domain, e.g., sport (Edwards & Rothbard, 2000). For example, the more energy an athlete spends on leisure activities, the less energy the athlete has to meet the demands of sport. Conflicts develop between two domains as a result of insufficient resources being available to fulfil demands in both roles.

Given the potential for multiple clashes across domains, it is likely that resource drain is a relatively common occurrence, especially at elite levels of sport, which require consistent dedication. Resource drain would occur when athletes perceive resource loss for their sport role performance due to high resource demands in another domain. More specifically this may manifest itself as a lack of time, energy or attention needed for effective high quality training sessions in preparation for competitions and/or major sport events. Consequently, in order to provide a clear conceptual grounding for the development of a life-sport conflict questionnaire, and in line with Boiché and Sarrazin (2007), life-sport conflict is defined as a form of inter-role conflict in which demands of time, energy, and attention devoted to life domains interfere with performing sport oriented demands. This is supported by the findings of Cosh and Tully (2014) concerning student athletes who reported that insufficient time was a barrier to combining sport and education successfully. The athletes perceived time as fixed, limited and externally controlled.

Life-sport literature to date is sparse although a couple of published studies have investigated the motivational determinants of conflicting or instrumental relationships between sport and school, and sport and friendship and how these relationships affect recreational engagement in youth sport (Boiché & Sarrazin, 2007; Boiché, Sarrazin, &

Chanal, 2015). In their first study, Boiché and Sarrazin (2007) tested a model in which they predicted that low levels of self-determined motivation for sport, school and friendship would be associated with higher levels of conflict between these domains. Consequently, high-conflicting relationships were expected to predict dropout 12 months later. The sample used in their study comprised 446 sixth to tenth grade French students (M_{age} = 13.85). The data provided some support for their predicted model, but there were exceptions. The relationship between self-determined motivation towards sport and school-sport conflict was positive, although it was expected to be negative. Boiché and Sarrazin's (2007) explanation of this anomaly is based on the characteristics of their sample. The self-determined motivation of their young participants was clearly higher for sport than for school: most of the participants showed strong preference for sport compared to school. Consequently they may have perceived that school consumes time and energy that they would have preferred to invest in sport. Interestingly only school-sport conflict was associated with sport dropout, whereas friendship-sport conflict had no relationship with sport participation.

Boiché et al. (2015) conducted a longitudinal follow-up of the first study to explore developmental trends of the perceived conflicting and instrumental relationships between school-sport and friendship-sport. Boiché et al. anticipated that perceptions of conflicts related to sport would increase during the period studied (from 2004 to 2006), because sport participation decreased among the French adolescents, and perceived conflict between sport and other contexts was recognised as an important factor of sport dropout. They also expected that female participants would report higher levels of conflict relative to the sport context and/or that those perceptions would progress more quickly among them compared to male participants. This expectation arose as girls show higher rates of sport dropout during adolescence and the level of gender role conflict was found to be higher among student female athletes (e.g., Lance, 2004). A further aim of their study was to assess the motivational correlates of the perceived education-sport and friendships-sport conflicts relationships and the interaction effect between contextual motivations. They anticipated that self-determined motivation towards sport, education, and friendship would be negatively associated with perceived conflicts. Additionally, in line with the hierarchical model of intrinsic and extrinsic motivation (Vallerand, 1997) and the findings of their previous study, they expected those with highly self-determined motivation towards sport but not towards other contexts would be more prone to perceive those contexts as conflicting with sport.

In the follow-up study 746 students (from 6th to 12th grade) were included and the data collected in three waves. Their data revealed that perceived school-sport conflict increased over time, implying that resources devoted to schoolwork increased from year to year. According to Boiché et al. this can be explained by French educational guidelines that call for an increase in school hours and in cognitive abilities as students advance in age. Following the guidelines, school pupils will increasingly have to devote more resources towards school from grade to grade in high school. However, no significant increase in friendship-sport conflict was observed. The data showed that gender was negatively associated with friendship-sport conflicts. It appears that girls' scores on friendship-sport conflicts were higher than the boys' scores. The explanation for this result, which is consistent with previous results (Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002), is that female school pupils consider friendships a priority over sport. Concerning the associations between self-determined motivation towards sport, education, and friendship, only self-determined motivation towards friendships and its corresponding conflict was in line with their expectations. As in their previous study, self-determined motivation was positively related with school-sport conflict. Their explanation for this result was that if individuals have self-determined motivation toward sport, it could be less likely that they perceive sport undermining other domains but rather perceive other domains preventing them from devoting meaningful resources to sport. Regarding the interaction effect between contextual motivations, only the interactions between sport and school were significant. Thus, school pupils reporting the maximal level of conflict between sport and school were self-determined towards sport but not towards school.

While the findings of these two studies are of interest, a number of issues remain to be addressed. First, as the participants in these studies were school children participating in recreational sport, the findings have questionable application to adults pursuing elite sport. Second the two Boiché et al.'s studies did not capture life domains in their full breadth, limiting the scope of investigation. The measure developed in this chapter extended these studies by including the domains of family and leisure activities and modifying items Boiché et al. had used, to suit a sample of elite adult athletes. Importantly, the measure developed in this chapter included family, work/school, friends and leisure activities as research has shown that they form, together with sport, the major domains of athletes' lives (Barkely & Fischer, 2010). To address the four relevant life domains, a four-factor model was identified for the present life-sport conflicts measure. The process of developing a psychometrically sound life-

sport conflict measure was followed stepwise in two phases across two different samples. After defining the construct, in Phase 1 items were generated and modified with elite athletes completing a paper and pencil based survey allowing an examination of factorial validity and internal consistency. Phase 2 attempted to confirm the factor structure of the questionnaire with a separate sample of elite athletes completing an online version of the survey and examined concurrent validity with respect to conceptually related constructs.

Phase 1

Method

Participants

Participants in the present project were 258 German speaking elite Swiss athletes (149 males, 109 females) with a mean age of 20.78 years (*SD* = 2.11; range 18-29 years). Athletes competed in a variety of sports including soccer (*N* = 76), floorball (*N*= 35), cycling (*N* = 25), ice hockey (*N* = 22), handball (*N* = 21), skiing (*N* = 21), athletics (*N* = 15), gymnastic (*N* = 12), shooting (*N* = 11), tennis (*N* = 5), triathlon (*N* = 5), snowboard (*N* = 4), ski jumping (*N* = 4), sport climbing (*N* = 1), and golf (*N* = 1). All participants had represented Switzerland at international level competitions (e.g., European Youth Championships, World Championships) in their respective sports. On average, the athletes had participated in their sport for 12.26 years (*SD* = 3.67).

Item generation

Items were generated based on Boiché and Sarrazin's (2007) conflict questionnaire and the broader work-family conflict literature. Item development followed DeVellis' (2012) suggestions to avoid lengthy items, items that need a high ability of reading comprehension, and double-barrelled items. Content validity of the items was assessed by four sport and exercise psychologists with expertise in measurement development and in consulting elite athletes based on two criteria: relevance to elite athletes and clarity of the item. Each expert received the items by mail and independently judged if each item should be retained and provided comments or edits to items. The items were subsequently discussed until agreement was reached among the experts.

This process resulted in 12 items representing four subscales that differed only marginally in their phrasing from the initially generated items. Each item was preceded by the stem: "Often my involvement with my…" To assess conflicts across four domains (work/study, leisure activities, friends, family) and sport, three items per life domain conflict were developed (e.g., "…work/study prevents me from giving my sport enough attention", "… leisure activities means that I lack the energy to do my sport effectively", "…friends means that I am too tired to do my sport", "… family means that I do not have enough time for my sport"; see Table 5 for the full list of items). Items were responded to on a 5-point Likert type scale (1 = *not at all true* to 5 = *very true*).

Initially all items were developed in English. The items were translated from English to German following the appropriate translation procedures suggested by Del Greco, Walop, and Eastridge (1987). In the current study both the expert evaluation and the back-translation methods were used. In the expert evaluation method, five experts (two language and three sport psychology experts) were given the original and translated versions and were asked to evaluate each translated item. Any objections as well as suggestions for improvement were discussed in an expert group meeting. Problematic items were redrafted and the evaluation procedures were repeated until all items were deemed acceptable. In the second method, back-translation, a translator blind to the original questionnaire translated German items back into English. The back-translated items were compared with the original items. Discrepancies were examined and discussed in a second expert group meeting. Potentially problematic items were redrafted and retranslated with the back-translation method until the experts were satisfied with the eventual set of items. In the final stage of item development, 16 students from the Eidgenössichen Hochschule für Sport Magglingen (Swiss Federal Institute of Sport Magglingen) pilot-tested the twelve translated life-sport conflicts items. The students completed the measure and reported that the instructions and items were easy to understand.

Procedures

Prior to data collection, institutional ethical approval was received. To gain access to the participants, a letter was sent to the performance directors of the respective sport associations. Participants completed the questionnaires in a classroom setting at their training centres. The participants were informed that the aim of the study was to explore the life-sport conflicts experienced by athletes. It was emphasised that participation was completely voluntary and that all responses would be kept confidential. The author was available to

answer any queries raised during the data collection process. Participant informed consent was gained prior to the completion of the questionnaire.

Model testing and data analysis strategy

The hypothesised four-factor-model of the life-sport conflict measure was tested using Bayesian structural equation modelling (BSEM) in Mplus 7 (Muthén & Muthén, 1998-2012). The majority of studies testing the factor structure of multidimensional measures use confirmatory factor analysis (CFA) with a maximum-likelihood (ML) estimation procedure. The independent cluster model of CFA (ICM-CFA) requires that indicators load freely on their intended factors, and cross loadings and residual loadings are fixed at zero. This approach typically leads to researchers ignoring the rejection of the model by the likelihood ratio χ^2 test on the basis of its oversensitivity to trivial discrepancies at large sample sizes (Fong & Ho, 2013). Subsequently, researchers may rely exclusively on approximate fit indices to justify the model fit (Fong & Ho, 2013). Nevertheless, it may be difficult to find a well-fitting model estimated by approximate indices (Marsh, Hau, & Wen, 2004); therefore researchers often ease the goodness of fit criteria (e.g., Hu & Bentler, 1999), and/or modify models *post hoc* by eliminating items in order to improve the model fit.

The basic assumption behind ICM-CFA is that indicators are held to load uniquely on their respective latent variables, with no cross-loadings on the other latent variables (Marsh, Muthén, et al., 2009). A further assumption of ICM-CFA is that covariances between indicators are entirely accounted for by their latent variables. In reality, indicators will often covary because of shared method factors, and this unnecessarily strict constraint of residual correlations fixed to zero can bias the factor loadings and change the meaning of the latent variables (Cole, Ciesla, & Steiger, 2007; Kolenikov, 2011). In short, these procedures are highly restrictive and do not always reflect reality or the researchers' theories and beliefs (Muthén & Asparouhov, 2012). A further problem using the ICM-CFA approach is that the 'inhibited' covariances between indicators are channelled through their factors, upwardly biasing the inter-factor correlations and distorting structural relations in subsequent structural equation models (Asparouhow & Muthén, 2009). Thus, it has been recognised that many CFA models with less than optimal fit were typically incorrectly specified in the first place by not allowing cross-loadings and correlated residuals (Muthén & Asparouhov, 2012).

Specification of some cross-loadings and/or correlated residuals is possible with the standard ML-CFA approach. However, by freeing too many cross-loadings and/or correlated

residuals, the model would eventually become non-identified. Muthén and Asparouhov (2012) introduced the Bayesian structural equation modeling approach (BSEM) as a solution for these problems. BSEM and ML-CFA differ, with the former viewing parameters as variables with a mean and a distribution of values and the latter viewing them as constants (Muthén & Asparouhov, 2012). Owing to the parameter distribution, a specification of informative priors on cross-loadings and residual correlations with approximate zero means and small variances within an identified model are possible. The researcher can specify a priori the variances to set limits on the amount of tolerated deviation from zero in the parameter estimates. Specifying small variances means that the researcher wants the estimates close to zero, but not exactly zero as in ML-CFA. Consequently, the theory driven ML-CFA is more restrictive than BSEM because there is absolutely no uncertainty concerning the parameters. However, the less restrictive BSEM approach, by taking prior knowledge (e.g., that in reality items will cross-load, and residuals will correlate to some extent) into account, includes strong theory and the framework of the analysis is still confirmatory in nature (Golay, Revert, Rossier, Favez, Lecerf, & Thierry, 2013).

Allowing larger prior variances in the BSEM approach may let cross-loadings and residual correlations have too large a probability of substantive values. When the variances are increased, the priors will contribute less information, so the model can be under-identified (Muthén & Asparouhov, 2012). All parameters in the model are considered statistically significant when the 95% credibility intervals for estimates do not incorporate zero. Therefore, significant parameters (with zero mean and small variance priors specified and 95% credibility intervals that do not cover zero) could show that the values for these estimates are larger than the researcher may want to tolerate. This diagnostic information can be used to estimate such parameters freely or to eliminate poorly performing indicators.

The information provided by ML-CFA modification indices show only the model fit improvement when one parameter is freed at a time. Usually a sequence of such modifications is needed, which increases the risk of capitalizing on chance (MacCallum, Roznowski, & Necowitz, 1992). Here BSEM has an advantage over ML-CFA. BSEM's small variance priors approach provides information on model modification with all parameters estimated simultaneously (Muthén & Asparouhov, 2012). An additional advantage of BSEM over ML-CFA is that it does not rely on large sample normal theory, and it can better accommodate skewed distribution of data (Muthén & Asparouhov, 2012). Further, it performs better than ML at small sample sizes (Lee & Song, 2004).

In the present study, the procedures described by Muthén and Asparouhov (2012) were followed for the BSEM. Specifically, three a priori models were progressively estimated using a series of prior specifications, explicitly (a) exact zero cross-loadings and residual correlations (equivalent to a standard ML-CFA), (b) approximate zero cross-loadings and exact zero residual correlations, and (c) approximate zero cross-loadings and residual correlations. The approximate zeros were specified using zero mean, prior variances of ± .01, which results in 95% credibility interval for the standardised factor loadings and residual correlations of 0 ± .20. This represents substantively small cross-loadings and residual correlations (Muthén & Asparouhov, 2012). Model estimation was initially executed with 50,000 iterations and then 100,000 to assess convergence and stability of the estimates. Convergence was tested by the potential scale reduction factor (PSR). Evidence for convergence is supported when the PSR lies between 1.0 and 1.1 (Gelman, Carlin, Stern, & Rubin, 2004). BSEM model fit was tested with the posterior predictive p value (PPP) and the related 95% credibility interval (Muthén & Asparouhov, 2012). A small PPP value ($p < .05$) and a positive 95% lower limit credibility interval indicate a poor fit. A PPP value around .5 with a symmetric 95% credibility interval centring around zero indicates a well fitting model (Muthén & Asparouhov, 2012). Model comparison was done using the deviance information criterion (DIC), with smaller values representing better fit (Kaplan & Depaoli, 2012).

Results

Table 1 shows the correlations between the factors of the four-factor model of the BSEM. Table 2 reports the BSEM results for the four-factor models. Model 1a, with the specification of non-informative priors, presented a poor fit with positive 95% lower posterior predictive limits and a low PPP value. Using the specification of informative priors for the cross-loadings, Model 1b showed a slight improvement but again a poor fit with positive 95% lower posterior predictive limits and a low PPP value. Model 1c, which specified informative priors with cross-loadings and residual correlations, fitted well with symmetric 95% posterior predictive intervals centring around zero and PPP around .5. However, not only was the inter-factor correlation between friends and leisure time perfect ($r = 1.00$) with 50,000 iterations, using 100,000 iterations the model failed to converge. This extremely high factor correlation suggested a three-factor model by collapsing friends and leisure time into one factor: free time. Subsequently a three-factor model was tested.

Table 1

Inter-factor correlations for the four-factor model

Factors	1	2	3	4
1. Work/study	-			
2. Friends	.58**	-		
3. Leisure time	.59**	1.00**	-	
4. Family	.56**	.87**	.89**	-

Note. $^{**}p < .01$.

Table 2

Bayesian structural equation modelling results for the four factor life to sport conflicts questionnaire

Model	Priors specification	Numbers of free parameters	2.5 % PPP limit	97.5% PPP limit	PPP	DIC	PSR
1a	Non-informative	42	47.37	114.54	.00	6313.66	1.00
1b	Informative (cross-loadings)	78	39.94	109.3	.00	6316.76	1.03
1c	Informative (cross-loadings & residual correlations)	144	-40.74	37.04	.53	6270.88	1.03

Note. PPP = posterior predictive p value, DIC = deviance information criterion; informative priors on cross-loadings and residual correlations have a zero mean and a variance of .01; PSR = potential scale reduction factor

Table 3 displays inter-factor correlations for the three-factor model. Table 4 presents the model fit for the three Bayesian estimated three factor models using 100,000 iterations. All models showed stable PSR values between 1.00 and 1.01. The non-informative model, model 1a, and model 1b with informative priors for cross-loadings revealed poor model fits with PPP values of .00 and 95% positive lower posterior predictive limits. Model 1c with informative priors for cross-loadings and residual correlations emerged as a well-fitting model with a PPP value of .54 and a symmetric 95% posterior predictive interval centring around zero. Furthermore, model 1c had the lowest DIC among the three models (see Table 4). The correlations between latent factors ranged from .50 to .83 (see Table 3) and factor loadings from .80 to .93 (see Table 5). The credibility intervals did not include zero for any factor

loadings. None of the cross-loadings fell outside the specified interval of ±.20. The residual correlations ranged from -.35 to .26, and all had a 95% credibility interval that included zero. Evidence for internal consistency was provided by composite reliabilities: coefficients; work/study-sport = .89, free time-sport = .95, and family-sport = .91.

Table 3

Factor correlations from the three factor model

Factors	*M*	*SD*	1	2	3
1. Work/study	1.91	.85	-		
2. Free time	1.49	.63	.56** [.37 .71]	-	
3. Family	1.42	.59	.51** [.27 .64]	.83** [.72 .90]	-

Note. **$p < .01$. [95% C.I.] = 95% credibility interval.

Table 4

Bayesian structural equation modelling results for the three factor life to sport conflicts questionnaire

Model	Priors specification	Numbers of free parameters	2.5 % PPP limit	97.5% PPP limit	PPP	DIC	PSR
1a	Non-informative	39	44.36	110.19	.00	6309.21	1.00
1b	Informative (cross-loadings)	63	38.9	107.9	.00	6315.41	1.00
1c	Informative (cross-loadings & residual correlations)	129	-40.15	35.87	.54	6275.56	1.01

Note. All models were estimated using 100,000 iterations in Mplus. PPP = posterior predictive p value, DIC = deviance information criterion; informative priors on cross-loadings and residual correlations have a zero mean and a variance of .01; PSR = potential scale reduction factor

Discussion

The purpose of Phase 1 was to examine the construct validity and internal consistency of scores resulting from a newly developed life-sport conflict measure. The 12-item four factor model with approximate zero cross-loadings and residual correlations fitted the data well, but the perfect correlation between leisure time and friends cast doubt on the discriminant validity of those scales. The perfect factor correlation is reflective of

multicollinearity, which can create problems in structural equation modelling (SEM) analyses, such as uninterpretable results (Marsh, 2007). A further argument for rejecting the four-factor model is that the BSEM analyses would not converge when using 100,000 iterations.

Table 5

Standardised factor loadings, cross loadings and 95% credibility intervals from the BSEM three-factor model using informative priors for cross loadings and residual correlations (model 1c)

Items	Three-factor model		
	Work/study	Free time	Family
Stem: Often my involvement with my…	[95% C.I.]	[95% C.I.]	[95% C.I.]
work/study prevents attention to sport	**.81 [.58 .99]**	.01 [-.17 .18]	.00 [-.18 .17]
work/study lack of energy for sport	**.84 [.63 1.02]**	-.02 [-.19 .15]	-.03 [-.21 .14]
work/study insufficient time for sport	**.86 [.69 1.02]**	.00 [-.17 .16]	.03 [-.15 .19]
friends too tired for sport	.01 [-.14 .16]	**.81 [.61 1.02]**	.01 [-.18 .19]
friends prevents attention to sport	.00 [-.13 .13]	**.93 [.75 1.10]**	-.04 [-.21 .13]
friends insufficient time for sport	-.04 [-.17 .09]	**.90 [.74 1.08]**	.03 [-.15 .19]
leisure activities insufficient time for sport	.03 [-.13 .18]	**.80 [.60 1.01]**	.03 [-.16 .21]
leisure activities lack of energy for sport	-.00 [-.14 .13]	**.89 [.71 1.07]**	-.01 [-.19 .16]
leisure activities prevents attention to sport	.01 [-.12 .13]	**.88 [.72 1.05]**	.02 [-.15 .18]
family not enough time for sport	.02 [-.14 .17]	.02 [-.18 .20]	**.86 [.67 1.07]**
family prevents attention to sport	.01 [-.14 .16]	.00 [-.19 .18]	**.88 [.67 1.08]**
family too tired for sport	-.02[-.19 .13]	.01 [-.19 .20]	**.88 [.68 1.10]**

Note. Bolded values indicate the significant major loadings. 95% C.I. = 95% credibility interval

An explanation of the very high factor correlation between sport-leisure time and sport-friends could be the actual overlap between and time spent in leisure and time spent with friends in the investigated athlete population, and that leisure activities are commonly done in the same context as meeting friends. In other words, athletes will most likely spend their leisure time with friends, thus when a conflict is perceived between sport and leisure it will also be perceived between sport and friends and vice versa.

The multicollinearity problem led to collapsing the two factors into a single factor, and renaming the factor as sport-free time. The 12-item three-factor model fitted the data well, demonstrated strong factor loadings with approximate zero cross-loadings and residual correlations, and produced internally consistent factors. None of the credibility intervals of the factor correlations of the three-factor model encompassed 1.00, which supports the discriminant validity of the three-factor model.

Phase 2

The first aim of Phase 2 was to replicate the structure of the model emerging from Phase 1 and test the internal consistency of the life-sport conflicts measure with a cross validation sample. In Phase 1 the results supported the three-factor measurement model. The second aim of Phase 2 was to examine the concurrent validity of the measure by investigating the life-sport conflict measure's relationships with other relevant constructs identified within work-family conflict literature. Based on organisational behaviour research, correlations with scores derived from measures of burnout, organisational commitment, life satisfaction, social support, and general autonomy support were examined (Carlson, et al., 2000; Netemeyer, Boles, & McMurrian, 1996; Senécal, Vallerand, & Guay, 2001). Social support and general autonomy support can be viewed as antecedents whereas burnout, organisational commitment, and life satisfaction could be conceptualised as consequences of life-sport conflicts.

Allen, Herst, Bruck, and Sutton (2000) reported that one of the most consistent findings in work-family conflict literature is the relationship of work-family conflict with stress related outcomes (e.g., burnout, depression, substance abuse). According to Allen et al., the strongest observed relationship was between work-family conflict and burnout; a result that reinforced Netemeyer et al.'s (1996) finding of a positive association between work-family conflicts and burnout in the organisational setting. Consequently I expected that in the context of elite sport life-sport, conflicts would be positively correlated with athlete burnout.

Previous research also reveals an inverse relationship between work-family conflicts and organisational commitment, life satisfaction, social support and general autonomy support (Carlson et al., 2000; Netemeyer et al., 1996; Senécal et al., 2001). General autonomy support is defined in terms of one's support network (e.g., family, friends, coach, sport director) acknowledging your perspective, providing choice, encouraging self-initiation, and being responsive to you. Findings suggest that work-life conflicts can detrimentally influence the

formation of attitudes related to work and life such as organisational commitment and life satisfaction, respectively (Netemeyer et al., 1996). Therefore I predicted that life-sport conflicts would have negative relationships with commitment to sport and life satisfaction. Furthermore, research indicates that work-family conflicts lead to poor well-being (Byron, 2005) with social support and general autonomy support implicated, in a buffering capacity, within this association (Blanch & Aluja, 2012; Senécal et al., 2001). Henz and Mills (2015) suggest that job resources (e.g., autonomy support) help individuals to reduce or cope with work-life conflicts. Being offered autonomy support should lead athletes to behave in a more self-determined manner, which increases their feeling of responsibility for their actions (Deci, 1995; Hackman & Oldham, 1975). Feeling responsible could increase the perception of having control over situations and therefore reduce the perceived life domain conflicts. Thus, I hypothesised that life-sport conflicts would be negatively related with social support and general autonomy support.

Method

Participants

In all 389 Swiss elite athletes (267 males, 122 females) aged between 18 and 53 (M_{age} = 22.89, *SD* = 4.90) were recruited to take part in the online study. Athletes competed in skiing (*N* = 75), athletics (*N* = 41), ice hockey (*N* = 41), handball (*N* = 37), soccer (*N* = 32), floorball (*N* = 30), cycling (*N* = 27), shooting (*N* = 20), gymnastics (*N* = 20), rowing (*N* = 15), volleyball (*N* = 15), judo (*N* = 11), badminton (*N* = 7), golf (*N* = 5), ju-jitsu (*N* = 4), table tennis (*N* = 3), squash (*N* = 2), wrestling (*N* = 1), tennis (*N* = 1), and triathlon (*N* = 1). On average, the sample trained 15.08 hours per week (*SD* = 6.08). Of these athletes, 23.9% rated their current performance level as international worldwide (e.g., competed at Olympic Games, World Championships), 14.9% as international within Europe (e.g., competed at European Championships), 61.2% as national (e.g., at Swiss Championships). This sample was independent of the sample utilized in Phase 1.

Measures

Life-sport conflicts. Life-sport conflicts were assessed using the items of three-factor life-sport conflicts measure created and tested in Phase 1. Data obtained in Phase 1 demonstrated good internal consistency; Cronbach's α obtained in the present study ranged from .74 to .84.

Athlete burnout. Athlete burnout was measured with the 15-item Athlete Burnout Questionnaire (ABQ; Raedeke & Smith 2001). The ABQ includes three subscales: emotional/physical exhaustion, reduced sense of accomplishment, and sport devaluation. Participants were asked to indicate how often they felt or thought a certain way during the current season on a 5-point Likert type scale (1 = *almost never* to 5 = *almost always*). Example items include "I feel overly tired from my sport participation" (emotional/physical exhaustion); "I am not performing up to my ability in sport" (reduced sense of accomplishment); and "I'm not into sport like I used to be" (sport devaluation). Additionally to the subscale scores, a global burnout index can be computed by calculating a mean score from the three subscales (Raedeke & Smith, 2004). Previous studies have supported the reliability, as well as construct and concurrent validity, of the ABQ scores (e.g., Cresswell & Eklund, 2006; Raedeke & Smith, 2001). In the present study Cronbach's αs ranged from .74 to .84.

Sport commitment. Sport commitment was assessed with the new 4-item KUT (Klein et al., Unidimensional Target-free) Measure of Commitment (Klein, Cooper, Molloy, & Swanson, 2014). The advantage of the KUT over other measures is that commitment is concisely defined with clear boundaries that better differentiates it as a unique construct. Because of the clear definition, the KUT excludes confounds such as antecedents to commitment (work ethic), outcomes of commitment (withdrawal intentions) and distinct constructs (e.g., sport identification). Furthermore, it is applicable to an array of targets (e.g., team, clubs, and sport). An example is "How dedicated are you to your sport?". Participants indicated their commitment to sport on a on a 5-point Likert type scale (1 = *not at all* to 5 = *extremely*). Klein et al. (2014) have shown that the KUT scores obtained from five distinct samples were internally consistent and valid. Cronbach's α obtained in the present study was .80.

Satisfaction with social support. Satisfaction with social support was measured using an adapted version of the 6-item Social Support Questionnaire – short form (SSQ; Sarason, Sarason, Shearin, & Pierce, 1987). The original version covers a number of social support sources and satisfaction with that support. Previous sport related research has used the adapted short version successfully to measure social support (e.g., Kelley, 1994; Martin, Kelley, & Eklund, 1999, Raedeke & Smith, 2004). Consistent with this sport-oriented research, the adapted version in this chapter was limited to measure satisfaction with social support received, regardless of the number of social support sources. Participants responded

to the items on a 5-point Likert type scale (1 = *very dissatisfied to* 5 = *very satisfied*). All items followed the stem, "To what extent are you satisfied with the overall support you receive...". Example items include "… when you feel under stress and need to be distracted from your worries?" and "… when you are very upset and need to be comforted?". Previous research indicates that scores on the SSQ are internally consistent (e.g., Raedeke & Smith, 2004). For the present study Cronbach's α was .80.

General autonomy support. General autonomy support was assessed with an adapted version of the Friendship Autonomy Support Questionnaire (FASQ; Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). This 10-item scale was modified to assess not only the perceived autonomy support from friends but also other sources in the athletes' social environments (e.g., family, coach, sport directors) more generally. Participants responded to the items on a 1 (*strongly disagree*) to 7 (*strongly agree*) 5-point Likert type scale. Sample items were: "I feel that my environment provides me with choices and options", "My support network tries to understand how I see things", and "My support network listens to my thoughts and ideas". Deci et al. (2006) reported data supportive of the scale's internal consistency. Cronbach's α was .94 in the present study.

Life satisfaction. Life satisfaction is commonly assessed using the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). In the present study, satisfaction with life was measured with the validated German translation of the SWLS (Glaesmer, Grande, Braehler, & Roth, 2011) comprising five items. An example is "In most ways my life is close to my ideal.". Respondents indicated the extent to which they agreed with each item on a 7-point Likert type scale ranging from 1 (*strongly agree*) to 7 (*strongly disagree*). Cronbach's α for the present study was .91.

Procedures

Prior to data collection, institutional ethical approval was received for Phase 2. Twenty-one performance directors of national sport associations were approached and informed about the study details and asked to forward the link of the online survey to the members of their national teams. One sport association did not take part, because the survey was in German and the members of the national team were French speaking. The other 20 performance directors received text with the link of the online survey to forward as email to the members of their national teams. In this email the participants were informed that the purpose of this study was to explore the challenges athletes perceive between their sporting

lives and their lives outside of sport. In other words how different aspects of their life (e.g., school/work/family commitments) interact with their sporting commitments. On the first page of the online survey participants were informed that by clicking the "next" button, they would provide informed consent.

Model testing and data analysis strategy

The structural validity of the three-factor model of the life-sport conflict measure was tested using Bayesian structural equation modelling (BSEM) in Mplus 7 (Muthén & Muthén, 1998-2012) and the concurrent validity was assessed using Pearson's zero-order correlations in SPSS version 22 software for Windows. In Phase 2 the previous well-fitting three-factor model of Phase 1 was tested, this time using highly informative priors. In other words the factor loadings of Phase 1 were used to specify the priors for the target factor loadings. The approximate zeros were specified using zero mean, prior variances of ± .01, which results in 95% credibility interval for the standardised factor loadings and residual correlations of 0 ± .20, representing substantively small cross-loadings and residual correlations (Muthén & Asparouhov, 2012).

Model estimation was initially executed with 50,000 iterations and then 100,000 to assess convergence and stability of the estimates. Convergence was tested by the potential scale reduction factor (PSR). As before, evidence for convergence is present when the PSR lies between 1.0 and 1.1 (Gelman et al., 2004). BSEM model fit was again tested with the PPP value and the related 95% credibility interval (Muthén & Asparouhov, 2012). The concurrent validity was tested using Pearson's correlation analysis in SPSS version 22 software for Windows. Furthermore, correlations were disattenuated for measurement error because measurement errors can decrease the correlations between variables. Correlations were disattenuated using the formula; $r_{dis} = r(x,y)/\sqrt{(rho\ x, rho\ y)}$ where $r(x,y)$ is the correlation between variables and *rho* is the reliability of the variables). All tests of significance were performed on the uncorrected correlations because there is no significance test available for disattenuated correlations. But if the uncorrected correlations are significant the greater corrected correlations will be significant as well.

Results

Structural validity

In order to generate data concerning discriminant validity, I examined the inter-factor correlations from the BSEM. These correlations ranged from .51 to .84 (see Table 6) and none of credibility intervals of the correlations encompassed 1.00. Thus, supportive evidence of the scale's discriminant validity was found. Table 7 presents the model fit for the estimated Bayesian three-factor model with highly informative priors for target factor loadings (model 2c) using 100,000 iterations. The model showed a stable PSR value of 1.02. The results revealed a well-fitting model with a PPP value of .52 and a symmetric 95% posterior predictive interval centring around zero. The factor loadings ranged from .80 to .88 and the credibility intervals did not include zero for any factor loadings (see Table 8). None of the cross-loadings fell outside the specified interval of ±.20. The residual correlations ranged from -.51 to .35, and fourteen of the sixty six residuals had a 95% credibility interval that did not included zero. To aid comparison, Table 7 shows the results of the BSEM for both (Phase 1 and Phase 2) samples while Table 9 presents the factor loadings and inter-factor correlations of the original and replication phases. Evidence for internal consistency was provided by composite reliabilities. The composite reliabilities for the three factors were: work/study-sport = .90, free time-sport = .93, and family-sport = .89.

Table 6

Factor correlations from the three factor model (*N* = 389)

Factors	*M*	*SD*	1	2	3
1. Work/study	2.13	.94	-		
2. Free time	1.58	.59	.57** [.38 .71]	-	
3. Family	1.58	.64	.51** [.30 .67]	.84** [.75 .91]	-

Note. **p < .01. [95% C.I.] = 95% credibility interval.

Table 7

BSEM results for the three factor life to sport conflicts questionnaire for the original (Model 1c) and replication (Model 2c) samples

Model	Priors specification	Numbers of free parameters	2.5 % PPP limit	97.5% PPP limit	PPP	PSR
1c	Informative (cross-loadings & residual correlations; N = 257)	129	-40.15	35.87	.54	1.01
2c	Highly informative (cross-loadings & residual correlations; N = 389)	129	-38.04	36.74	.52	1.02

Note. The models were estimated using 100,000 iterations in Mplus. PPP = posterior predictive, BIC Bayesian information criterion; informative priors on cross-loadings and residual correlations have a zero mean and a variance of .01; PSR = potential scale reduction factor

Table 8

Standardised factor loading and cross loadings from the BSEM three-factor model using highly informative priors for the target factor loadings (Model 1c)

Items	three-factor model		
	Work/study [95% C.I.]	Free time [95% C.I.]	family [95% C.I.]
work/study prevents attention to sport	**.86 [.74 .99]**	.01 [-.15 .17]	-.01 [-.17 .15]
work/study lack of energy for sport	**.82 [.69 .96]**	.03 [-.13 .18]	.04 [-.13 .19]
work/study insufficient time for sport	**.84 [.71 .97]**	.01 [-.16 .17]	.02 [-.14 .17]
friends too tired for sport	.02 [-.12 .15]	**.82 [.68 .97]**	.01 [-.15 .15]
friends prevents attention to sport	-.05 [-.19 .08]	**.86 [.72 1.02]**	.03 [-.13 .18]
friends insufficient time for sport	.02 [-.13 .15]	**.85 [.72 1.00]**	-.01 [-.16 .14]
leisure activities insufficient time for sport	.01 [-.14 .16]	**.80 [.65 .95]**	.01 [-.15 .16]
leisure activities lack of energy for sport	.02 [-.12 .15]	**.83 [.69 .98]**	-.01 [-.17 .14]
leisure activities prevents attention to sport	-.02 [-.18 .12]	**.83 [.69 .99]**	-.03 [-.19 .13]
family not enough time for sport	-.02 [-.17 .14]	.10 [-.09 .26]	**.81 [.66 .99]**
family prevents attention to sport	.04 [-.10 .19]	-.03 [-.18 .12]	**.88 [.74 1.03]**
family to tired for sport	-.01[-.17 .14]	-.01 [-.17 .15]	**.83 [.69 .99]**

Note. Bolded values indicate the significant major loadings. 95% C.I. = 95% credibility interval

Concurrent validity

The expected differential relationships between the three life-sport conflicts scores and the scores of the selected potential correlates are displayed in Table 10. More specifically, Table 10 presents the zero-order correlations and the disattenuated correlations between the scores of life-sport conflicts dimensions and scores derived from the measures of athlete burnout, sport commitment, satisfaction with social support, general autonomy support, and life satisfaction. The predicted positive correlations between life-sport conflicts dimension scores and athlete burnout scores were all significant[1]. Similarly the expected negative correlations between the life-sport conflict dimension scores and the scores for sport commitment, social support, general autonomy support, and life satisfaction were also significant

Table 9

Factor loadings and factor correlations for the original and replication samples

Items	three-factor model (replication)			three-factor model (original)		
	Work study	Free time	Family	Work study	Free time	Family
work/study prevents attention to sport	**.86**	.01	-.01	**.81**	.01	-.00
work/study lack of energy for sport	**.82**	.03	.04	**.84**	-.02	-.03
work/study insufficient time for sport	**.84**	.01	.02	**.86**	.00	.03
friends too tired for sport	.02	**.82**	.01	.01	**.81**	.01
friends prevents attention to sport	-.05	**.86**	.03	.00	**.93**	-.04
friends insufficient time for sport	.02	**.85**	-.01	-.04	**.90**	.03
leisure activities insufficient time for sport	.01	**.80**	.01	.03	**.80**	.03
leisure activities lack of energy for sport	.02	**.83**	-.01	.00	**.89**	-.01
leisure activities prevents attention to sport	-.02	**.83**	-.03	.01	**.88**	.02
family not enough time for sport	-.02	.10	**.81**	.02	.02	**.86**
family prevents attention to sport	.04	-.03	**.88**	.01	.00	**.88**
family to tired for sport	-.01	-.01	**.83**	-.02	.01	**.88**

[1] Significance tests only exist for uncorrected correlations and not for disattenuated correlations

Factors	Work study	Free time	Family	Work study	Free time	Family
Work/study	-			-		
Free time	.57**	-		.56**	-	
Family	.51**	.84**	-	.51**	.83**	-

Note. Bolded values indicate the significant major loadings. **$p < .01$.

Table 10

Concurrent validity related (zero-order) correlations

Scales	Expected correlations	Work/study-sport conflict	Free time-sport conflict	Family-sport conflict
Reduced sense of accomplishment	+	.29 (.36)	.26 (.31)	.22 (.27)
Emotional and physical exhaustion	+	.16 (.19)	.22 (.25)	.19 (.22)
Sport devaluation	+	.27 (.34)	.38 (.47)	.33 (.41)
Global burnout	+	.31 (.38)	.37 (.43)	.31 (.38)
Sport commitment	-	-.15 (-.19)	-.19 (-.23)	-.14 (-.17)
Social support	-	-.16 (-.18)	-.20 (-.22)	-.23 (-.26)
General autonomy support	-	-.19 (-.21)	-.14 (-.15)	-.14 (-.16)
Life satisfaction	-	-.28 (-.34)	-.19 (-.22)	-.14 (-.17)

Note. All correlations are significant at $p < .01$ level (two-tailed). Disattenuated correlations are reported in parentheses.

Discussion

The life-sport conflict scores of the replication sample were internally consistent and fitted the proposed three-factor model well. The results of the BSEM supported the factorial structure of the life-sport conflict measure developed in Phase 1. Broadly speaking findings from Phase 2 replicated those reported in the Phase 1. The inter-factor correlations offer some support for the measure's discriminant validity and therefore the decision to keep the dimensions of life-sport conflicts distinct. The moderate to large magnitude of the inter-factor correlations plausibly reflects the co-occurrence of the three conflicts and the overlaps of these contexts. Furthermore the correlations between the life-sport conflict scores and the scores of the antecedent and consequence measures provide support for the concurrent validity of the measure developed in Phase 1. The three dimensions of life-sport conflicts had

similar positive relationships with each aspect of burnout, as well as with the global athlete burnout scores. Additionally, the negative correlations between the three life-sport conflicts scores and the scores of sport commitment, social support, general autonomy support, and life satisfaction were all significant. However, the correlations between the three conflict dimensions and each criterion measure were of similar magnitudes (strength of the correlations range from weak to moderate). The magnitudes and direction of the correlations are in line with work-family conflict literature (e.g., Carlson et al., 2000; Netemeyer et al., 1996). Even though these similar relationship patterns could give some weight to an argument to collapse the three dimensions, the discriminant validity and the face validity results offer support for keeping the dimensions separate. Nevertheless, differential predictive validity of the three conflict domains remains an issue for future research.

General Discussion

This chapter presents initial support regarding the validity and reliability of scores obtained from the newly constructed life-sport conflict measure across two independent elite athletic samples. The items comprising the measure are a combination of items modified from previous work and ones developed in this chapter. Content analyses, Bayesian confirmatory factor analyses, and correlations were conducted; a 12-item measure resulted in three dimensions of life-sport conflicts being assessed: work/study-sport conflict, free time-sport conflict, and family-sport conflict. Each of the three conflict dimensions revealed internal consistency, discriminant validity, and a stability of the factor structure across both sets of data. In addition, the three dimensions related as predicted to various antecedents and consequences of life-sport conflicts, which further supports the (concurrent) validity of the measure.

Although another scale exists that measures school-sport and friendship-sport conflicts (Boiché & Sarrazin (2007), it does not include the domain “leisure activities”, and therefore it does not capture the conceptual breadth of life-sport conflicts as well as the tool developed in this study. Moreover, research has revealed that leisure activities taken together are one of the major life domains of individuals (Barkely & Fischer, 2010). A second noteworthy point is that Boiché and Sarrazin’s measure was developed for school pupils and not for elite athletes. The measure developed in this chapter overcomes these limitations by extending and modifying their scale to create a more comprehensive measure for elite athletes. Future use of this measure should offer a greater understanding of how separate life-sport conflicts

dimensions relate to attitudes and behaviours of elite athletes. Moreover it should help practitioners understand athletes more holistically by recognizing the major life domain conflicts of their clients and the potential to maintain the athletes' commitment within healthy bounds.

Strengths and Limitations

The present research developed and provided an initial validation of a new measure. There are at least three strengths to the investigation. First, with BSEM scientists can use their background knowledge to define certainty about the parameters of the model in the prior distribution. In the case of this study, the advantage of being able to incorporate theoretical knowledge into the informative priors better reflected our conceptualisation of life-sport conflicts. Using informative priors allows simultaneous estimation of cross-loadings and residual correlations that would not be possible in the ML-CFA approach due to model nonidentification issues. It is perhaps because of such advantages that in both mainstream psychology and in sport and exercise psychology, the use of Bayesian statistics is on the rise (Stenling, Ivarsson, Johnson, & Lindwall, 2015). Second, this chapter entails two phases with independent samples that together represent a robust approach to measurement-development. Lastly, the measure using 12-items is short and can be conducted in less than 5 minutes enabling full focus by respondents and bodes well from a practitioner perspective.

This study is however not without limitations. First a four-factor model, in other words four domains, was hypothesised. Following the results of the factor inter-correlations and the BSEM, two domains (friends and leisure activities) were collapsed into one. Therefore it is no longer possible to identify if the conflict is due to resource limitation because of friends or leisure activities. Nonetheless it was appropriate to merge the two domains, because the correlation between the two factors was perfect. Further, it is also feasible that given the age group of the athletes/participants, they integrate their friends in their leisure activities. Consequently, they do not distinguish between time spent with friends and time spent doing leisure activities.

Second, it is a strength but also a limitation that the participants of both samples in this study were elite athletes. While the utilisation of such samples remains relatively scarce in sport psychology, further validation of the measure across different ages and performance levels is needed to establish the generalizability of the measure. Finally, the measure only includes four major life domains of athletes; sport, work, free time, and family. To create a

fully comprehensive measure more domains could be included, such as romantic relationships, money management, handling daily responsibilities, etc.

Future research

Future research should include additional constructs thought to be related to the different forms of life-sport conflicts. Following the importance of self-regulation (i.e., the control of thoughts, emotions and motivation) in applied sport psychology, it would be interesting to examine the effects of life-sport conflicts on self-regulation. Self-regulation has been identified as an important element of sport psychological training (Beckmann & Elbe, 2015). Elite athletes and coaches emphasise the importance of motivation in sport (e.g., Gould, 1982). Self-determination theory (SDT: Deci & Ryan, 1985, 2000) represents an ideal framework to investigate the relationships between life-sport conflicts and motivation. Boiché et al. (2007; 2015) have tested the relationships between self-determined motivation and conflicts and have conceptualised conflicts as a consequence of low self-determined motivation toward contexts. On the other hand, I suggest in line with Stebbings et al. (2012) that life-sport conflicts are social contexts that are antecedents to the type of motivation. This proposition is based on the self-determination theory proposition (SDT: Deci & Ryan, 1985, 2000) that social contexts can foster or hinder internalisation of behavioural regulations. Therefore it would be informative to see if the three life-sport conflicts form interfere with motivation, possibly in a distinct manner.

Further, the measure developed in this chapter does not address the sport-life conflicts direction. An effective measure is required for bi-directional testing. Organisational behaviour research has suggested that work-family and family-work conflicts are distinct but related forms of inter-role conflict (e.g., Carlson et al., 2000; Netemeyer et al., 1996). Carlson et al. have shown that family-work conflict impacts on job satisfaction, organisational commitment and life satisfaction. Therefore it can be expected that sport-life conflicts will also have unfavourable impact on important factors (e.g., burnout).

Conclusion

In conclusion, the present study enhances understanding by developing a life-sport conflicts measure for elite athletes. To the best of the author's knowledge, no such measure exists. The results of the BSEM support the psychometrics of the life-sport conflicts measure. Potentially this measure could be used by applied sport psychologists to identify conflicts

between important life domains and sport, namely work/study-sport, free time-sport, and family-sport conflict, and therefore tailor the focus of their planned systematic training programmes.

Chapter Three:

Unpacking the interplay between life-sport conflicts, perfectionism, and motivation in elite sport

Abstract

The purpose of the study described in this chapter was to test a model positing that perfectionism moderates the relationship between life-sport conflicts and self-determined motivation. Life-sport conflicts were conceptualised as antecedents to self-determined motivation. The study results revealed that life-sport conflicts are negatively associated with self-determined motivation. Further the findings support the proposition that perfectionism, in the form of setting oneself high personal standards or that parents and coaches set high standards for oneself, influences the relationships between life-sport conflicts and self-determined motivation. The study underscores the importance for applied sport psychologists to take all the life domains of athletes into account when counselling as well as personality traits of athletes experiencing life-sport conflicts.

Introduction

In addition to their sporting lives, athletes have other important life domains such as work/study, friends, leisure activities, and family. The resource demands of these life domains can be incompatible with the demands of their sport. In such situations/contexts athletes might perceive the domains to be in conflict with their pursuit of sport. These life-sport conflicts are defined in Chapter Two. In this study, life-sport conflicts are viewed as social contexts. According to self-determination theory (SDT: Deci & Ryan, 1985, 2000) social contexts can foster or hinder internalisation of behavioural regulations. Following on, it is hypothesised in the models of this chapter that life-sport conflicts could undermine athletes' self-determined motivation. Further, it has been suggested that the personality trait perfectionism can be positively or negatively related to autonomous and controlled motivation (e.g., Mouratidis & Michou, 2011). Consequently the purpose of the present study is to examine the moderating role of perfectionism on the relationship between life-sport conflicts and self-determined motivation for athletes.

Self-determination theory (SDT: Deci & Ryan, 1985, 2000) is an approach to understanding human motivation and personality in social contexts, differentiating motivation as autonomous, controlled and amotivated. This differentiation is central to SDT (Deci & Ryan, 2008). Autonomous motivation implies volitional activities that individuals do because they find them interesting and enjoy them (intrinsic motivation), fully internalise them in their sense of self (integrated regulation), or internalise them considerably because they value their outcomes (identified regulation). It is argued that controlled motivation involves activities that individuals do because they want to avoid guilt, shame, and a loss of self-worth (introjected regulation), or because of interpersonal pressure (e.g., reward or punishment administered by others; Deci & Ryan, 2000). Both autonomous and controlled motivation energize and direct behaviours, in contrast to amotivation, which refers to a lack of intention and motivation. A number of empirical studies support the assertion that autonomous motivation leads to better psychological adjustment and well-being, whereas controlled motivation is related to poorer psychological adjustment and ill-being (see Ryan & Deci, 2007 for review). The extent to which the regulation of behaviour has become internalised and integrated into the individual's sense of self, depends on the social context.

According to SDT, the influence of the social context on autonomous and controlled motivation is mediated by perceptions of satisfaction of basic psychological needs, namely

the innate needs for autonomy, competence and relatedness (Deci & Ryan 1985, 2000). The need for autonomy refers to volition and self-endorsement, "the organismic desire to self-organize experience and behaviour, and to have activity be concordant with one's integrated sense of self" (Deci & Ryan, 2000, p. 231). The need for competence is satisfied when an individual feels he/she has the ability and opportunity to be effective in his/her environment. The need for relatedness refers to a sense of mutual respect, connectedness, caring, and reliance on others such as the social bonds experienced with teammates and coaches (Deci & Ryan, 2000). These psychological needs are viewed within SDT as nutriments that are essential for individuals' vitality, integration, and health.

SDT suggests that social contexts can thwart the satisfaction of psychological needs in an individual and therefore may undermine autonomous motivation and may enhance controlled motivation. For more internalised motivation to be maintained or enhanced, individuals must not only perceive competence and relatedness in a context, but must also feel their behaviour is autonomous (Deci & Ryan, 2000). Within SDT literature there has been consistent support for the benefits of autonomy-supportive contexts compared to more controlled settings. Autonomy-supportive contexts have been positively related to more self-determined forms of behavioural regulation, performance, prosocial behaviour, and greater well-being (e.g., Adie, Duda, & Ntoumanis, 2012; Grolnick, Ryan, & Deci, 1991; Hodge & Gucciardi, 2015).

Boiché and Sarrazin (2007) investigated the association between self-determined motivation and domain conflicts (school-sport and friendship-sport conflicts). They considered self-determined motivation as an antecedent to conflict. Consequently, they predicted that low levels of self-determined motivation for sport, school and friendship would be associated with higher levels of school-sport and friendship-sport conflicts. Their results showed that low levels of self-determined motivation for friendship were associated with higher levels of friendship-sport conflict, and low levels of self-determined motivation for school were related to school-sport conflict. High levels of self-determined motivation for sport were associated only with high levels of school-sport conflict. There was no association between self-determined motivation for sport and friendship-sport conflict. The concept of self-determined motivation being the antecedent to conflict was only partially supported by their results. Their results actually indicate that high levels of self-determination do not protect school pupils from experiencing conflict between domains.

Further, Boiché and Sarrazin suggested that conflicts occur because the school pupils perceived that school consumes time and energy that they would like to invest in sport. Boiché and Sarrazin's (2007) rationale that conflicts are a consequence of low self-determination can be questioned. In the limitations section of their paper they state that they cannot exclude the hypothesis that context conflicts could influence the motivation towards those contexts. In the current study, I took up this point and tested the hypothesis that life-sport conflicts could influence the self-determined motivation towards sport. Athletes who experience conflict between a life domain and sport, perceiving their autonomy as thwarted by the context, would exemplify this. Following the suggestion in SDT literature (e.g., Deci & Ryan, 2000), this chapter proposes that if the need for autonomy is thwarted, the motivation for sport will be less internalised. Thus, if life-sport conflicts are experienced, the motivation for sport will be more controlled.

In organisational literature, it has been suggested that individual differences in personality traits play important roles in predicting and explaining employee motivation and behaviour (see Barrick & Mount, 1991; Hogan & Holland, 2003; Judge & Ilies, 2002; Salgado, 1997). Research has shown that perfectionism, a multidimensional personality trait, is associated with different forms of motivational regulation (Gaudreau & Antl, 2008; Mallinson & Hill, 2011). Perfectionism has been defined as the striving for excellence and the setting of extremely high standards for performance accompanied by a manner of overly critical self-evaluation (Dunn, Causgrove Dunn, & Syrotuik, 2002; Flett & Hewitt, 2002; Frost, Marten, Lahart, & Rosenblate, 1990). This chapter focuses on one of the major aspects of perfectionism - the setting of extremely high standards. The source of these standards can be from oneself or from significant external factors, such as parents or coaches. It has been highlighted that prescribed perfectionism (external source) can be debilitating (Flett & Hewitt, 2005), and that self-oriented perfectionism (internal source) can have positive motivational qualities that lead to adaptive achievement striving and a healthy pursuit of excellence (Enns & Cox, 2002; Gould, Dieffenbach, & Moffett, 2002; Stoeber & Eismann, 2007; Stoeber & Otto, 2006; Stoeber, Stoll, Pescheck, & Otto, 2008).

Personal standards, a dimension of perfectionism, entail higher levels of personal control and efficacy and the setting of high standards for oneself (Mallinson & Hill, 2011). Personal standards have been suggested to be a form of adaptive perfectionism (e.g., Mouratidis & Michou, 2011; Stoeber, 2011). Research on perfectionism conducted in sport has shown that personal standards were positively associated with hope for success and

internal attributions for success (Stoeber & Becker, 2008), better performance (Stoll, Lau, & Stoeber, 2008), less burnout (Lemyre, Hall, & Roberts, 2008), and higher levels of performance and task goal orientations (Dunn et al., 2002; Stoeber et al., 2008).

In contrast to adaptive perfectionism, maladaptive perfectionism in this chapter refers to two dimensions of perfectionism: perceived parental and coach pressure. Both perceived parental and perceived coach pressure encompass a number of beliefs and perceptions that others have set high standards for the athlete over which he/she has limited perceived control. Consequently, the athlete perceives an external pressure. From an applied view it seems appropriate to assess perceived parental and coach pressure, as parents and coaches have a great influence on an athlete's development, providing not only support, but the potential for negative impact. Gotswal and Dunn (2009) showed that perceived parental pressure and perceived coach pressure were negatively associated with global self-esteem among athletes. From an SDT perspective it is also legitimate to assess the two, because athletes who pursue the high standards set by their parents and coaches might perceive their autonomy thwarted, which could lead to athletes being subject to more controlled motivation for their sport.

The relationship between perfectionism and autonomous and controlled motivation in sport has been investigated in studies that found maladaptive perfectionism correlated positively with controlled motivation (Gaudreau & Antl, 2008; Jowett, Hill, Hall, & Curran, 2013; McArdle & Duda, 2004; Mouratidis & Michou, 2011). In comparison to maladaptive perfectionism, adaptive perfectionism seems to be more motivationally complex. Personal standards have been found to relate positively to both autonomous and controlled motivation. Mouratidis and Michou (2011) suggested this is because high personal standards can lead either to autonomous or to controlled motivation, depending whether these standards are perceived as a challenge or a "should-be" level of performance that the athlete has to reach in order to prove his/her self-worth. If personal standards are perceived as a challenge, it is more likely that the athlete's behaviours are autonomously regulated (Chatzisarantis & Hagger, 2007). Thus, personal standards would be expected to be positively associated with autonomous motivation. In contrast, if personal standards are perceived as an internal pressure to achieve or sustain self-worth, it is feasible that personal standards will inhibit the athlete's self-regulated behaviour. Consequently, one would expect personal standards to be positively correlated to controlled motivation.

It is unlikely that all athletes respond similarly to perceived domain conflicts. According to the social cognitions theory (Mischel, 1973) personality characteristics, such as perfectionism, influence the way in which individuals interpret and respond to situations/contexts. Since behavioural regulation is dependent on the perception of situations/contexts, the type of perfectionism is likely to have an influence. Because life-sport conflicts are a rather novel field of research, no research has explored the interaction between life-sport conflicts and personality characteristics, let alone perfectionism, in explaining behavioural regulation. Perfectionism presents itself as a likely moderator, because the source of the desired high standards could influence the experience of autonomy. Athletes with high personal standards could perceive life-sport conflicts as less autonomy thwarting, because they feel in control of their standards and would therefore regard the conflicts/contexts as less stressful, and therefore as less autonomy thwarting, leading to more autonomous motivation for their sport. In contrast, if athletes perceive high parental or coach pressure, they would more likely experience conflicts, and more thwarting of their autonomy. This is because they could feel externally controlled and experience the conflicts as distress. This perception would foster more controlled motivation or amotivation for their sport.

In this study I examine the interactive effects of life-sport conflicts and perfectionism on behavioural regulation. A model was tested for each of three life-sport conflicts (work/study-sport, free time-sport, family-sport). The interactive effects of life-sport conflicts and perfectionism are represented in the model by the product of sport-life conflict * perfectionism (Baron & Kenny, 1986).

The following three hypotheses were tested: (1) Life-sport conflicts are negatively associated with autonomous motivation. In contrast, life-sport conflicts are positively associated with controlled motivation and amotivation. (2) Personal standards attenuate the negative relationship between life-sport conflicts and autonomous motivation. In contrast, personal standards attenuate the positive relationship between life-sport conflicts and controlled motivation and amotivation. (3) Perceived parental and coach pressure increase the strength of the negative relationship between sport life-sport conflicts and autonomous motivation. In contrast, perceived parental and coach pressure increase the strength of the positive relationship between sport life-sport conflicts and controlled motivation and amotivation.

Method

Participants

The same participants (N = 258) as in Chapter Two, Phase 1 (see page 20).

Measures

Life-sport conflicts. Life-sport conflicts were assessed using the items of the three factor life-sport conflicts measure created and tested in Chapter Two. The three subscales were work/study-sport, free time-sport, and family-sport.

Motivation. Behavioural Regulation was measured using the 24-item Behavioural Regulation in Sport Questionnaire (BRSQ; Lonsdale, Hodge, & Rose, 2008). The instrument includes six 4-item subscales to measure intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, and amotivation. Deci and Ryan (2008) have theorized that autonomous motivation comprises intrinsic motivation, integrated regulation, and identified regulation, whereas controlled motivation includes introjected and extrinsic motivation. Participants responded using a 7-point Likert type scale (1 = *not at all true* to 7 = *very true*). Scores obtained from the BRSQ in previous research (Lonsdale et al., 2008) provide evidence for the internal consistency, test-retest reliability, and factorial validity in a sample of athletes. BRSQ scores also demonstrated acceptable to good reliability in the current study (composite reliabilities > .85).

Perfectionism. Perfectionism was measured using three subscales of the Sport Multidimensional Perfectionism Scale-2 (S-MPS-2; Gotwals & Dunn, 2009) based on a multidimensional theory of perfectionism similar to Frost et al.'s (1990) conceptualization. The scale's 22 items are responded to using a 5-point Likert type scale (1 = *strongly disagree*; 5 = *strongly agree*). The S-MPS-2's three subscales are personal standards (7 items; e.g., "I have extremely high goals for myself in my sport"), perceived parental pressure (9 items; e.g., "In competition, I never feel like I can quite meet my parents' expectations"), perceived coach pressure (6 items; e.g., "Only outstanding performance in competition is good enough for my coach"). Gotwals and Dunn's (2009) scores obtained from the S-MPS-2 were found to be internally consistent and valid in a sample of student athletes. Data from the three subscales demonstrated acceptable to good reliability in the current study (composite reliabilities > .85).

Procedures

Prior to data collection, institutional ethical approval was received. To gain access to the participants, a letter was sent to the performance directors of the respective sport associations. Participants completed the questionnaires in a classroom setting at their training centres. The participants were informed that the aim of the study was to explore life-sport conflicts experienced by athletes. It was emphasised that participation was completely voluntary and that all responses would be kept confidential. The author was available to answer any queries raised during the data collection process. Participant informed consent was gained prior to the completion of the questionnaire.

Data analysis

Bivariate correlations between the study variables were examined using Pearson's correlation analysis. To test the interactions between life-sport conflicts (work/study-sport conflict, free time-sport conflict, and family-sport conflicts) and perfectionism (personal standards, perceived parental pressure, and perceived coach pressure) to predict motivation (autonomous motivation, controlled motivation, and amotivation), a hybrid structural equation model was specified (see Figure 1). Work/study-sport conflict, free time-sport conflict, family-sport conflict, personal standards, perceived parental pressure, perceived coach pressure, and the interactions terms between the conflicts and subscales of perfectionism were modelled as latent variables with mean scores as their observed indicators. Autonomous motivation was modelled as a latent variable with intrinsic motivation, integrated, and identified regulation as its observed indicators. Controlled motivation was modelled as a latent variable with introjected and external regulations as its observed indicators. Finally, amotivation was modelled as latent variable with mean score as its observed indicator.

Error variances for work/study-sport conflict, free time-sport conflict, family-sport conflict, personal standards, perceived parental pressure, perceived coach pressure, intrinsic motivation, integrated, identified, introjected, external regulations, and amotivation were specified based on their reliabilities using the formula: variance X * (1 - composite reliability) where variance X is the variance of the scores on the respective scales (Wang & Wang, 2012).

Mplus 7 (Muthén & Muthén, 1998-2012) was used to conduct the hybrid SEM analyses employing the robust maximum likelihood (MLR) estimator. Mplus does not provide model goodness of fit indicators when interaction terms involving latent factors are included

(Muthén & Muthén, 1998-2012). In such cases it is recommended to compare the Bayesian Information Criterion (BIC; Schwarz, 1978) values of the model specifying interactions against the BIC for the main effects equivalent model. A smaller BIC value indicates a better fitting model. All other analyses were conducted using SPSS version 22.

First, three models with just the main effects were examined. Model 1a (work/study-sport conflict) included the predictors work/study-sport conflict, personal standards, perceived parental pressure, and perceived coach pressure. Outcomes included autonomous motivation, controlled motivation, and amotivation. Model 2a (free time-sport conflict) included the same predictors and outcomes with the exception that work/study-sport conflict was replaced by free time-sport conflict. The specification for Model 3a (family-sport conflict) mirrored this process but incorporated family-sport conflict.

Second, three models with interaction terms were tested by adding the multiplicative interaction terms between the latent factors: work/study-sport conflict and personal standards, work/study-sport conflict and perceived parental pressure, work/study-sport conflict and perceived coach pressure in Model 1b; free time-sport conflict and personal standards, free time-sport conflict and perceived parental pressure, free time-sport conflict and perceived coach pressure in Model 2b; and finally family-sport conflict and personal standards, family-sport conflict and perceived parental pressure, and family-sport conflict and perceived coach pressure in Model 3b . The multiplicative interaction terms were calculated within Mplus as part of the model specification process (see Appendix I for an example of an input syntax). Significant interactions were clarified by plotting the simple effects of life-sport conflicts at three different levels (-1 SD, mean, +1 SD) of the relevant perfectionism variable.

Results

Preliminary analysis

Table 11 presents the internal consistencies, means, standard deviations, and correlations between the variables included in the structural equation models. Testing of the bivariate correlations involved the mean of each variable. Autonomous motivation was derived as the mean of intrinsic motivation, integrated regulation and identified regulation, whereas controlled motivation was computed as the mean of introjected and extrinsic motivation. The correlations between the three conflict subscales were positive; in particular the correlation between free time-sport conflict and family-sport conflict was very high. The

correlations between the three dimensions of perfectionism were moderate in strength and positive. The correlation between autonomous motivation and controlled motivation was non-significant. The correlation between autonomous motivation and amotivation was of a moderate magnitude and negative. The correlation between controlled motivation and amotivation was positive. The life-sport conflicts correlated negatively with autonomous motivation, although the association between family-sport conflict and autonomous motivation was non-significant. Life-sport conflicts correlated positively with controlled motivation and amotivation. The three dimensions of perfectionism correlated positively with the three types of motivation apart from personal standards with amotivation. Overall, life-sport conflict variables were not correlated with perfectionism variables; however, free time-sport conflict and family-sport conflict correlated positively with perceived parental pressure.

Modelling Results

Comparison of main and interaction effects.

Table 12 shows the sample-size adjusted BICs of all six models. Comparisons of the BICs for the main effects and interactive models showed a difference of -54.91 between the work/study-sport conflict interactive model and its main effect model; a difference of -40.35 between the free time-sport conflict interaction and main effect models; and a difference of -14.92 between the family-sport conflict interaction and main effect model. Considered collectively, these data indicate very strong evidence for an improvement of model fit when the interactions were included (Raferty, 1995).

Significant associations involving work/study-sport conflict.

Autonomous motivation. Figure 1 shows the significant paths of Model 1b (work/study-sport conflict), and Table 13 shows all standardized path coefficients. In Model 1b work/study-sport conflict and perceived coach pressures negatively predicted autonomous motivation, whereas personal standards positively predicted autonomous motivation. Work/study-sport conflict and perceived coach pressure interacted to predict autonomous motivation. The moderating role of perceived coach pressure was such that the negative association between work/study-sport conflict and autonomous motivation was amplified with increasing perceived coach pressure (see Figure 2 Panel A).

Table 11

Reliabilities, descriptive statistics, and correlations of variables used in hybrid SEM

					Correlations								
Variables	Composite reliability	Response Range	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Work/study-sport conflict	.89	1-5	1.91	0.85	-								
2. Free time-sport conflict	.95	1-5	1.47	0.62	.54*	-							
3. Family-sport conflict	.91	1-5	1.42	0.59	.48*	.86*	-						
4. Personal standards	.86	1-5	3.54	0.75	-.07	-.09	-.04	-					
5. Perceived parental pressure	.86	1-5	1.62	0.64	.08	.21*	.24*	.22*	-				
6. Perceived coach pressure	.85	1-5	2.70	0.80	.09	.07	.08	.34*	.34*	-			
7. Autonomous motivation	.93	1-7	5.93	0.69	-.19*	-.21*	-.10	.35*	.16*	.15*	-		
8. Controlled motivation	.90	1-7	1.71	0.83	.27*	.42*	.38*	.16*	.45*	.33*	.01	-	
9. Amotivation	.85	1-7	1.56	0.85	.28*	.38*	.31*	-.05	.21*	.20*	-.25*	.58*	-

Note. * $p < .05$

Table 12

Sample-size adjusted Bayesian Information Criterions (BIC) of models with main effects and models with main and interactive effects

Models	BIC
Model 1a (work/study-sport conflict main effects)	9381.47
Model 1b (work/study-sport conflict main and interaction effects)	9326.56
Model 2a (free time-sport conflict main effects)	9324.62
Model 2b (free time-sport conflict main and interaction effects)	9284.27
Model 3a (family-sport conflict main effects)	9354.12
Model 3b (family-sport conflict main and interaction effects)	9339.20

Controlled motivation. Further, work/study-sport conflict, perceived parental pressure, and perceived coach pressure positively predicted controlled motivation. Perceived parental pressure interacted significantly with work/study-sport conflict to predict controlled motivation. The positive association between work/study-sport conflict and controlled motivation increased as perceived parental pressure increased (see Figure 2 Panel B).

Amotivation. Work/study-sport conflict and perceived coach pressures positively predicted amotivation, whereas personal standards negatively predicted amotivation. Work/study-sport conflict and personal standards, and work/study-sport conflict and perceived coach pressure significantly interacted to predict amotivation. The positive relationship between work/study-sport conflict and amotivation reversed as personal standards increased (see Figure 2 Panel C). The positive association between work/study-sport conflict and amotivation was strengthened as perceived coach pressure increased (See Figure 2 Panel D).

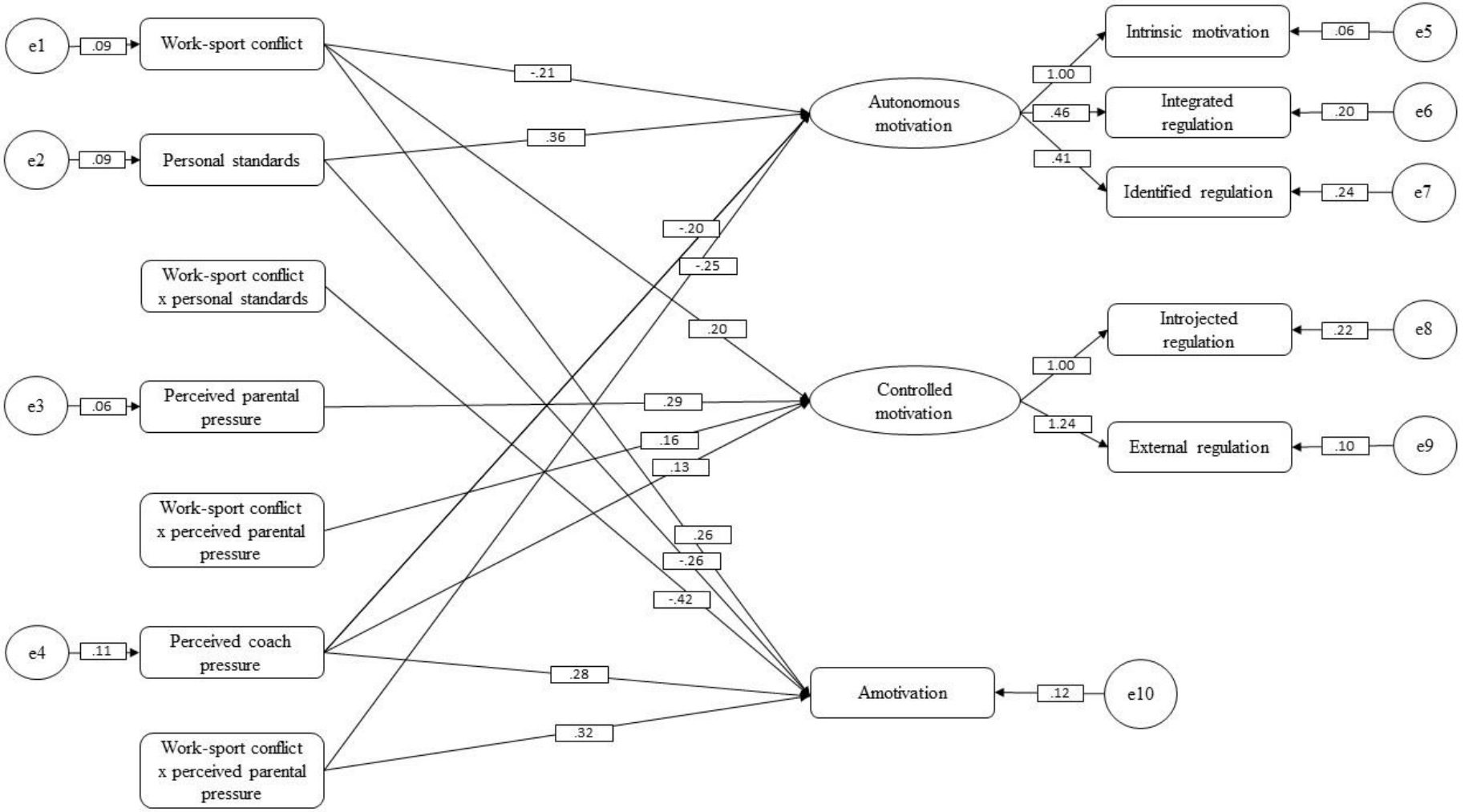


Figure 1. Model 1b (work/study-sport conflict) showing the significant paths. Values of Model 1b are standardized parameter estimates, and non-significant paths have been omitted for reading purposes (95% CI excluded zero).

Table 13

Path coefficients of models with interaction terms in hybrid SEM

	Predicted variables					
	Autonomous motivation		Controlled motivation		Amotivation	
Predictor Variables	Standardized coefficient	CI	Standardized coefficient	CI	Standardized coefficient	CI
Model 1b (work/study-sport conflict)						
Work/study-sport conflict	**-.21**	**(-.36, -.07)**	**.21**	**(.11, .31)**	**.26**	**(.11, .42)**
Personal standards	**.36**	**(.17, .55)**	-.04	(-.14, .07)	**-.26**	**(-.44, -.08)**
Work/study-sport conflict x personal standards	.23	(-.04, .49)	-.06	(-.21, .10)	**-.42**	**(-.70, -.15)**
Perceived parental pressure	.01	(-.13, .15)	**.29**	**(.18, .40)**	.11	(-.05, .26)
Work/study-sport conflict x perceived parental pressure	.06	(-.08, .20)	**.16**	**(.02, .31)**	.19	(-.04, .42)
Perceived coach pressure	**-.20**	**(-.38, -.02)**	**.13**	**(.01, .24)**	**.28**	**(.11, .46)**
Work/study-sport conflict x perceived coach pressure	**-.25**	**(-.49, -.01)**	.15	(-.01, .31)	**.32**	**(.04, .61)**
Model 2b (free time-sport conflict)						
Free time-sport conflict	**-.26**	**(-.40, -.12)**	**.23**	**(.14, .32)**	**.24**	**(.10, .37)**
Personal standards	**.32**	**(.14, .50)**	-.02	(-.11, .08)	**-.22**	**(-.37, -.07)**
Free time-sport conflict x personal standards	.13	(-.07, .34)	-.05	(-.19, .10)	**-.28**	**(-.51, -.05)**
Perceived parental pressure	.08	(-.07, .23)	**.23**	**(.13, .34)**	.02	(-.12, .16)
Free time-sport conflict x perceived parental pressure	.07	(-.06, .19)	.08	(-.04, .21)	.07	(-.12, .26)
Perceived coach pressure	**-.22**	**(.-41, -.04)**	**.12**	**(.00, .24)**	**.28**	**(.11, .45)**
Free time-sport conflict x perceived coach pressure	-.17	(-.43, .09)	.13	(-.06, .33)	**.33**	**(.06, .61)**

Model 3b (family-sport conflict)						
Family-sport conflict	**-.16**	**(-.31, -.02)**	**.22**	**(.13, .31)**	**.20**	**(.06, .34)**
Personal standards	**.33**	**(.16, .50)**	-.03	(-.16, .10)	**-.25**	**(-.45, -.05)**
Family-sport conflict x personal standards	.02	(-.21, .25)	-.05	(-.27, .17)	-.22	(-.56, .11)
Perceived parental pressure	.05	(-.13, .22)	**.23**	**(.09, .36)**	.02	(-.16, .20)
Family-sport conflict x perceived parental pressure	.02	(-.11, .16)	.05	(-.13, .24)	.07	(-.18, .31)
Perceived coach pressure	**-.20**	**(-.37, -.03)**	.15	(-.03, .33)	**.29**	**(.07, .51)**
Family-sport conflict x perceived coach pressure	-.04	(-.30, .22)	.12	(-.21, .46)	.27	(-.15, .69)

Note. CI = confidence intervals. All coefficients are standardized. Values in bold indicate 95% confidence interval excluded zero.

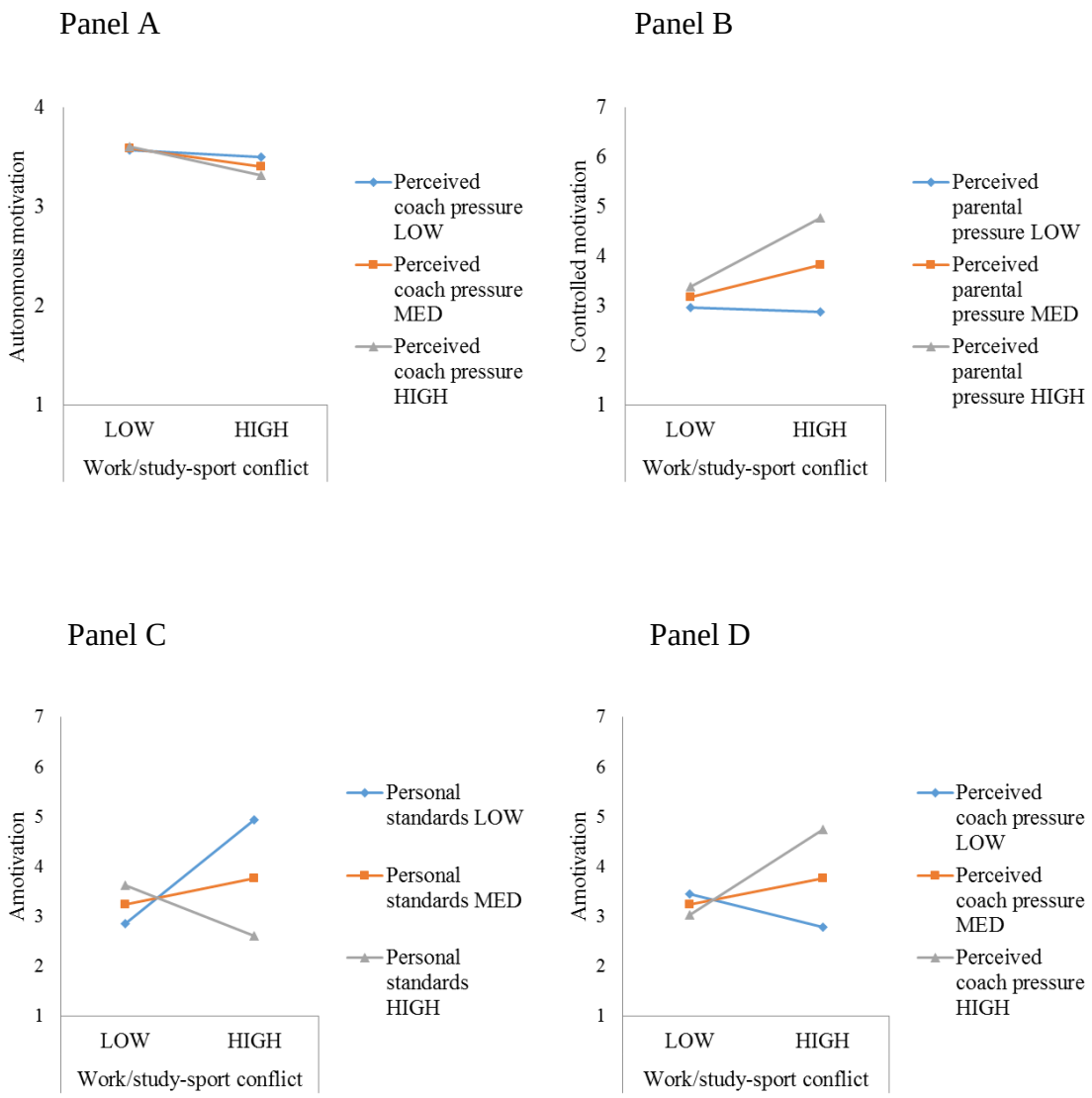


Figure 2. Panels indicating significant interactions between work/study-sport conflict and when perfectionism is low (1 SD below mean) medium (mean), and high (1 SD above mean) to predict type of motivation. Panel A perceived coach pressure increasing the negative relationship between work/study-conflict and autonomous motivation. Panel B perceived parental pressure increasing the positive relationship between work/study-conflict and controlled motivation. Panel C personal standards decreasing and Panel D perceived coach pressure increasing the positive relationship between work/study-conflict and amotivation.

Significant associations involving free time-sport conflicts.

Autonomous motivation. Figure 3 shows the significant paths of Model 2b (free time-sport conflict), and Table 13 shows all standardized path coefficients. In Model 2b free time-sport conflict and perceived coach pressures were negatively related to autonomous motivation, whereas personal standards was positively related to autonomous motivation.

Controlled motivation. Further, free time-sport conflict, perceived parental pressure, and perceived coach pressure positively predicted controlled motivation.

Amotivation. Finally, free time-sport conflict and perceived coach pressure were positively associated with amotivation, whereas personal standards was negatively associated with amotivation. Both personal standards and perceived coach pressure significantly interacted with free time-sport conflict to predict amotivation. The positive relationship between free time-sport conflict and amotivation was reversed as personal standards increased (see Figure 4 Panel A). However the moderating role of perceived coach pressure was in the opposite direction such that the negative association between free time-sport conflict and amotivation was amplified with increasing perceived coach pressure (See Figure 4 Panel B).

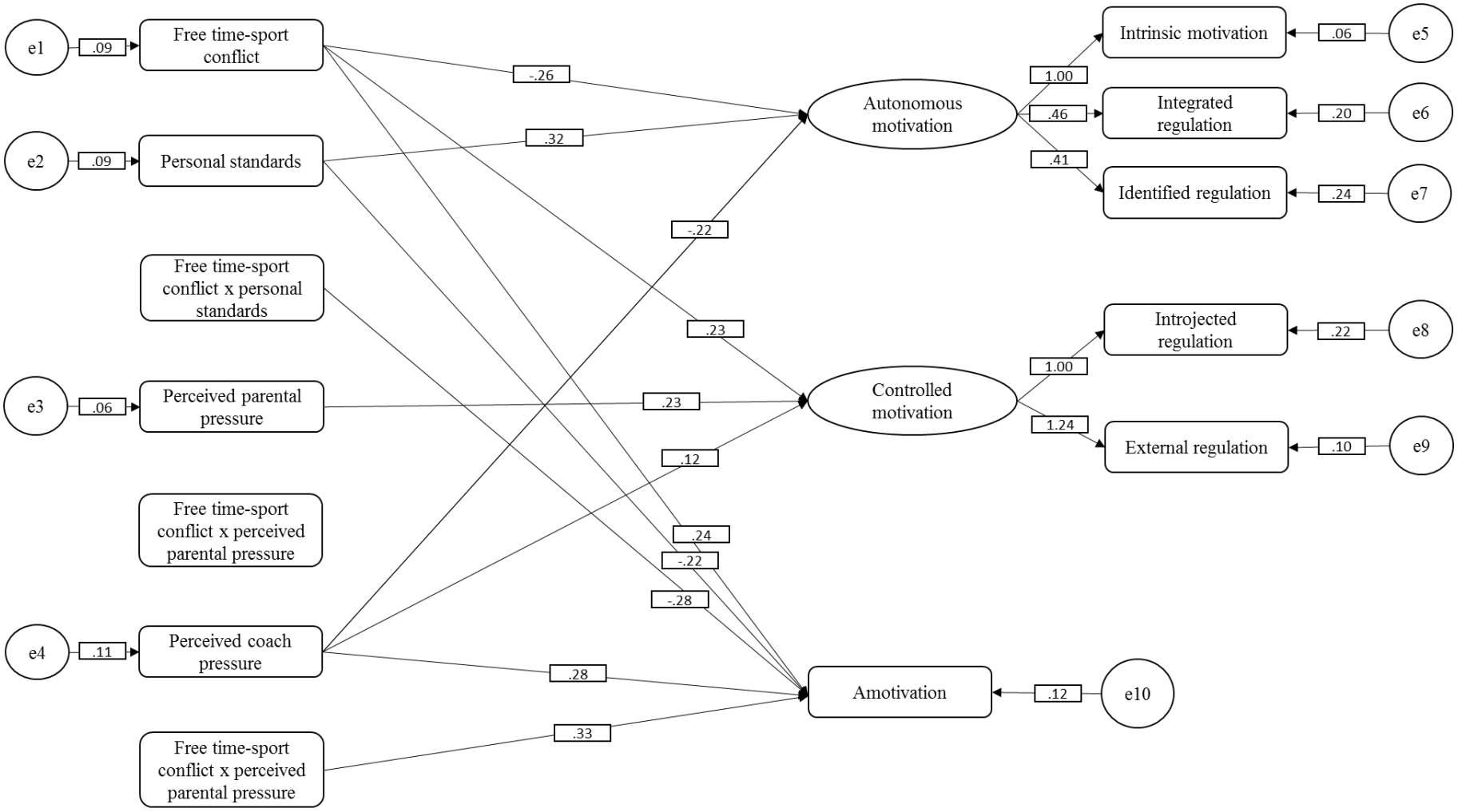
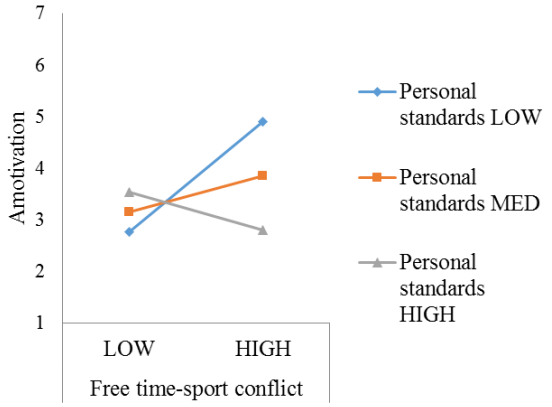


Figure 3. Model 2b (free time-sport conflict) showing the significant paths. Values of Model 2b are standardized parameter estimates, and non-significant paths have been omitted for reading purposes (95% CI excluded zero).

Panel A



Panel B

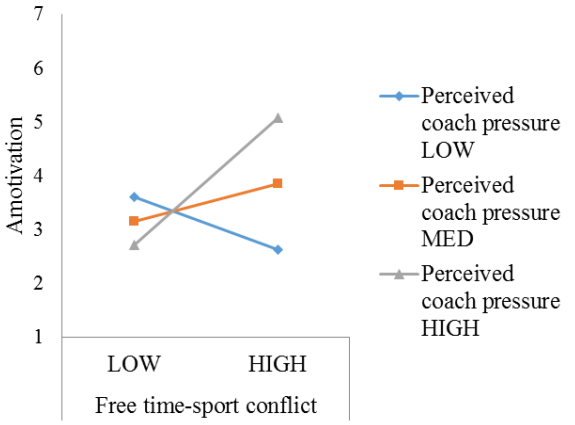


Figure 4. Panels indicating significant interactions between free time-sport conflict and when perfectionism is low (1 SD below mean) medium (mean), and high (1 SD above mean) to predict amotivation. Panel A: personal standards reversing the negative relationship between free time-conflict and amotivation. Panel B: perceived coach pressure increasing the positive relationship between free time-sport conflict and amotivation.

Significant associations involving family-sport conflict.

Figure 3 shows the significant paths of Model 3b (family-sport conflict), and Table 13 shows all standardized path coefficients. Compared to the work/study-sport conflict and free time-sport conflict analysis, a slightly different picture emerged from the family-sport conflict analysis. Family-sport conflict was negatively related to autonomous motivation and positively associated with controlled motivation and amotivation; personal standards was positively related to autonomous motivation and negatively related to amotivation; perceived coach pressure negatively predicted autonomous motivation and positively amotivation; and perceived parental pressure was positively correlated with controlled motivation. No significant interactions between family-sport conflict and perfectionism emerged.

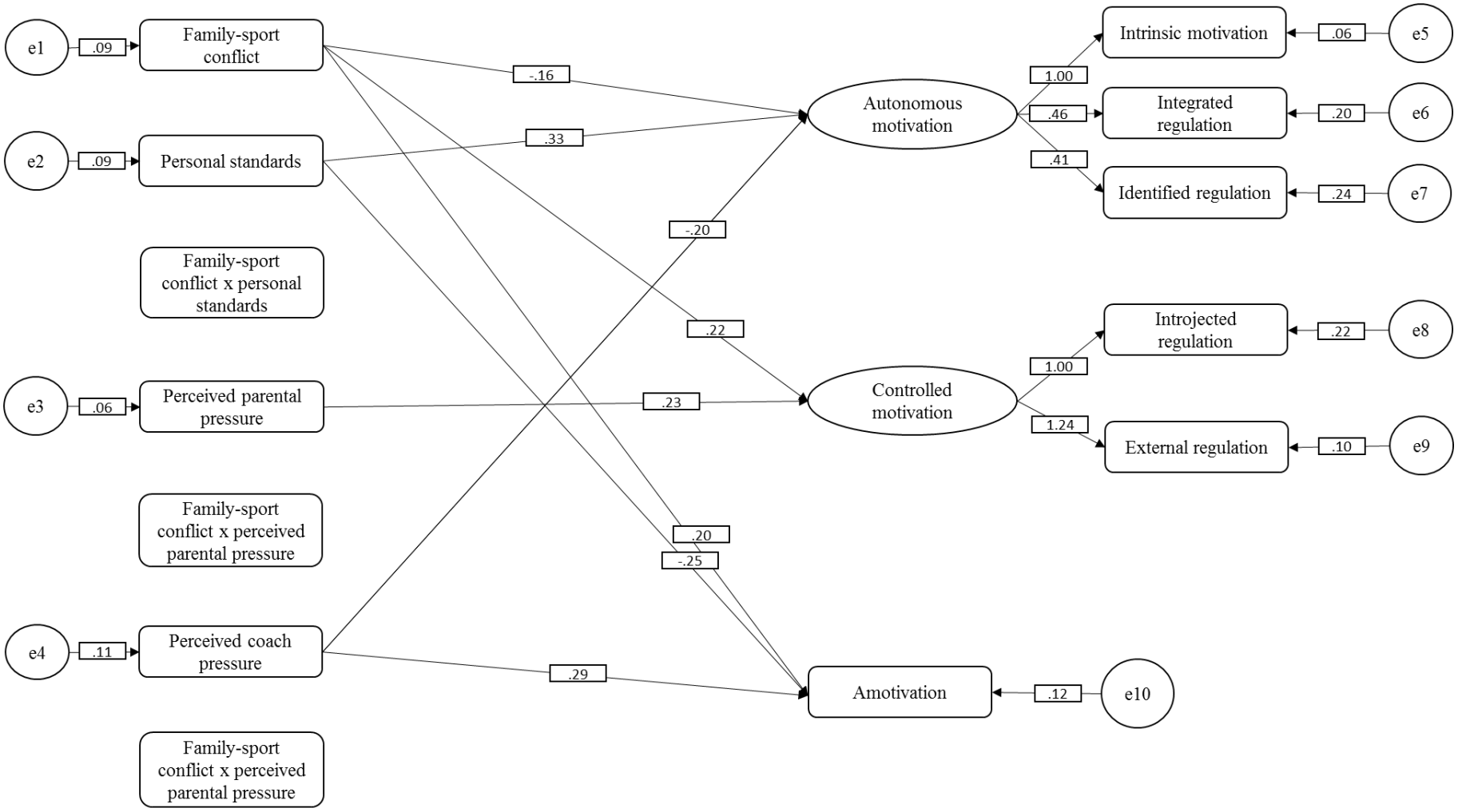


Figure 5. Model 3c (family-sport conflict) showing the significant paths. Values of Model 3c are standardized parameter estimates, and non-significant paths have been omitted for reading purposes (95% CI excluded zero).

Summary of hypothesised effects. Confirming my hypotheses, life-sport conflicts are negatively associated with autonomous motivation and are positively associated with controlled motivation and amotivation. The results presented in Table 13 support the predictions. Thus hypothesis 1 was supported.

My second set of predictions were that personal standards would attenuate the negative relationships between life-sport conflicts and autonomous motivation, and that personal standards would attenuate the positive relationships between life-sport conflicts and controlled motivation and amotivation. Work/study-sport conflict had a positive relationship with amotivation, but by including personal standards the association was negative. Therefore personal standards reversed the relationship between work/study-conflicts and amotivation. Free time-sport conflict had a positive association with amotivation, and personal standards had a buffering effect on this association. However, no other interactions between conflicts and personal standards were observed. Thus, the second hypothesis was partially supported.

My third prediction was that perceived parental and coach pressure increase the strength of the negative relationship between sport-life conflicts and autonomous motivation. In contrast, I also predicted that perceived parental and coach pressure increase the positive relationship between sport life-sport conflicts and controlled motivation and amotivation. The results indicate that perceived parental pressure amplified the positive association between work/study-sport conflict and controlled motivation. Perceived coach pressure had an amplifying role on the negative relationship between work/sport-conflict and autonomous motivation and on the positive association between work/study-sport conflict and amotivation. The relationship between free time-sport conflict and amotivation was amplified by perceived coach pressure. Thus hypothesis 3 was partially supported.

Discussion

The purpose of this chapter is to examine the moderating role of perfectionism on the relationship between life-sport conflicts and self-determined motivation. The findings are in line with previous research that life-sport conflicts are negatively associated with self-determined motivation (Boiché & Sarrazin, 2007). Further, the results support the proposition that perfectionism, in the form of setting oneself high standards or that parents and coaches set high standards for oneself, influences the associations between conflicts and self-determined motivation.

The correlations between the work/study-sport, family-sport, and free time-sport conflicts are as expected, although the correlation between family-sport and free time-sport conflicts is high. This high correlation plausibly reflects the overlap of contexts of free time-sport and family-sport conflicts. The positive correlations between controlled motivation and amotivation indicate that when athletes feel controlled they also feel relatively amotivated. In line with SDT research, the inter-correlations of this chapter show that autonomous motivation is not related to controlled motivation and is negatively associated with amotivation (Deci & Ryan, 1985; 2000).

Common finding for the three conflicts. The results of the hybrid SEMs provide support for the hypotheses that life-sport conflicts are negatively associated with autonomous motivation and are positively associated with controlled motivation and amotivation. In the models tested, life-sport conflicts were defined as social contexts and the type of motivation as a consequence. The findings of this chapter are consistent with SDT literature that social contexts can foster or hinder the internalisation of behavioural regulations (e.g., Deci & Ryan, 1985; 2000; Stebbings et al., 2008). According to Deci and Ryan (2000), internalisation depends on perceptions of satisfaction of the basic psychological needs. Therefore one reason for these findings could be that an athlete experiencing life-sport conflicts might perceive that his/her basic human needs as being thwarted, especially the need for autonomy, and therefore they feel less self-determined in their motivation for sport. I expect that the need for autonomy is most likely to be thwarted because it refers to the desire to self-organise experience and behaviours. If an athlete experiences life-sport conflicts, he/she is less likely to be able to optimally self-organise his/her experience and behaviour, because he/she cannot allocate sufficient resources to the domain to resolve the conflict. A further reason for this finding could be that athletes appraise life-sport conflicts as stressful situations, because resources are lost in the process of juggling roles across domains. Skinner and Edge (2002) view appraisals of stressful situations as challenges and threats to the basic psychological needs for autonomy, competence, and relatedness. Thus, athletes might perceive that stress is experienced because life-sport conflicts threaten their basic psychological needs. Consequently, their motivation for sport will be less self-determined.

Work/study-sport conflict. Work/study-sport conflicts were negatively associated with autonomous motivation and positively associated with controlled motivation and amotivation. The positive effect of personal standards on self-determined motivation in this study is in line with previous research on perfectionism and SDT (e.g., Jowett et al., 2013;

Mouratidis & Michou, 2011). By including personal standards, the association between work/study-sport conflict and amotivation was reversed. This finding suggests that personal standards can protect athletes from the negative motivational consequences of work/study-sport conflict. This could be because athletes who set their own high personal standards for sport may perceive work/study-sport conflict as a challenge to be overcome rather than a threat, and accordingly they cope better with these stressful situations. Skinner and Edge (2002) state than individuals who are convinced of their own efficacy to overcome obstacles are more likely to use problem-solving coping strategies and remain optimistic in the face of stressful situations. Consequently they will perceive their basic psychological needs as less undermined by the social context. Stoeber and Rennert (2008) found that striving for perfection[2] in teachers was positively related to challenge appraisals and active coping. According to Stoeber and Rennert (2008) this may explain why perfectionistic strivings are seldom related to higher levels of stress.

The results show that perceived parental and coach pressure negatively influence the relationships between work/study-sport conflict and the three types of motivations. Thus, it can be suggested that perceived parental pressure and coach pressure are negative aspects of perfectionism. The results are in line with the Flett and Hewitt (2005) suggestion that prescribed perfectionism (external source) can be debilitating. The negative relationship between work/study-sport conflict and autonomous motivation was amplified by perceived coach pressure. Additionally, perceived coach pressure also amplified the positive relationship between work/study-conflict and amotivation. In other words, if an athlete perceives work/study as being in conflict with sport, and he/she perceives coach pressure as high, he/she are most likely to be amotivated for sport.

Furthermore, the results also suggest that perceived parental pressure amplifies the positive association between work/study-sport conflict and controlled motivation. Stoeber and Rennert (2008) found that perceived pressure on teachers from students and students' parents to be perfect was related to threat and loss appraisals. Threat appraisal of situations means that the individual anticipates harm, loss, or damage will occur. Loss appraisal of situations refers to any kind of harm, loss or damage that has already been sustained. It has been suggested that loss or threat of appraisals are indicative of distress (Lazarus, 1991). Consequently, a reason for my findings may be that when athletes experience work/study-sport conflict and have high perceived parental and coach pressure, they will most likely appraise the conflict as stressful.

[2] Striving for perfection is highly correlated with personal standards (r = .72; Stoeber, 2005)

Distress can undermine the basic psychological needs (Skinner & Edge, 2002) and therefore hinder the internalisation of behavioural regulations (e.g., Deci & Ryan, 1985; 2000).

Free time-sport conflicts. The associations between free time-sport conflicts and autonomous, controlled motivation, and amotivation are similar to the associations of work/study-conflict and self-determined motivation. There was evidence that personal standards and perceived coach pressure moderated the relationship between free time-sport conflict and amotivation. Personal standards reversed the relationship, and perceived coach pressure amplified the relationship. Therefore it can be suggested that personal standards protect athletes' motivation and perceived coach pressure harms athletes' motivation.

Family-sport conflict. Family-sport conflicts were negatively associated with autonomous motivation and positively associated with controlled motivation and amotivation. Personal standards were positively related to autonomous motivation and negatively related to controlled motivation. Perceived parental pressure increased controlled motivation, and perceived parental pressure undermined autonomous motivation and increased amotivation. As such, it can be suggested again that personal standards can be beneficial whereas perceived parental and coach pressure can be detrimental for athletes. In terms of the interactive effects with perfectionism (personal standards, perceived parental pressure, and perceived coach pressure), family-sport conflict seems to differ compared to work/study-conflict and free time-sport conflict. Personal standards do not attenuate the negative association between family-sport conflict and the three types of motivation; hence they appear not to offer a protective mechanism for athletes when experiencing family-sport conflict. Additionally, perceived parental and coach pressure do not amplify the negative relationships between family-sport conflict and these types of motivation. Both perceived parental and perceived coach pressure do not seem to have additional harmful effects for athletes experiencing family-sport conflict.

One reason why personal standards do not protect athletes from the consequences of family-sport conflict could be because family-sport conflict resonates with athletes more than other conflicts. Data from organizational psychology show that employees rank their family roles as more important than their work roles (Thoits, 1992). Moreover, employees' family roles are said to be central to their mental and physical well-being and more critical to their psychological state than their work related roles (Pleck, 1985). The measure developed in this thesis only captures how true the conflict statements are and does not reflect the personal nature or the intensity of the conflict experienced. As a result, it may be that athletes

experiencing family-sport conflict are in more of a dilemma than when they perceive the presence of work/study-sport and free time-sport conflicts. Because family-sport conflict might be qualitatively different compared to the other two types of conflict and more ingrained for the individual, the effects of family-sport conflict could be more resistant to change by potential moderating factors. This is consistent with the lack of interactions found in the study addressed in this chapter. Consequently, I suspect that as high personal standards in sport are somewhat detached from athletes' family life domain, they do not influence the perceived importance of their family roles and associated conflict states.

One would expect that perceived coach pressure and especially perceived parental pressure would amplify the relationship between family-sport conflict and motivation. The findings do not support this expectation. Looking closely at the bivariate correlation between family-sport conflict and perceived parental pressure reveals that they are connected. Thus, it could be that perceived parental pressure is a source of family-sport conflict. Consequently, it could be that perceived parental pressure does not additionally strengthen the negative effects of family-sport conflict on motivation. An explanation why perceived coach pressure does not amplify the relationship between family-sport conflict and motivation could be that because of the priority of the family role, the athlete is already highly distressed. Consequently, the coaches' expectations and pressure to be perfect has minimal impact/influence on the experience of family-sport conflict.

As no research has investigated these issues, my explanation of the family-sport conflict findings are speculative. Clearly further research is needed to identify the reasons for the differences between family-sport conflicts and the other two conflicts, potentially verifying my theorising. First, research should identify the athletes' reference point when they are asked to respond to family-sport conflict questions (e.g., parents, siblings, etc.). Second, future investigation should include the perceived importance of life domains as this could help explain those circumstances where perfectionism does not influence the relationship between the conflict and motivation. Carlson and Kacmar (2000) found that the values the individual places on various life roles make a difference in the way that work-family conflict is experienced. They showed that when family was highly valued the antecedents from the work domain were more salient and had a greater impact on conflict and satisfaction. Lastly, future research would do well to unpack the potential differences between the family relationship compared to the coach relationship, two sizable social sources of influence for athletes. In fact, despite the prevalence of family support within sport (especially for younger aged

athletes; e.g., Côté, 1999; Wylleman, De Knop, & Van Kerckhoven 2000), relatively limited research attention has been channelled on the family.

Overall the findings of the present study are consistent with the concept that internalisation can be repressed by personal and social-contextual factors (Deci & Ryan, 2000). In short, life-sport conflicts are already likely to have a substantial psychological cost for athletes, and if athletes perceive high parental and coach pressure, the costs will be even greater. Further, the results of this chapter support the proposition of Chapter Two to keep the three conflicts separate from each other even though the inter-factor correlations reported in Chapter Two were high. When comparing the results of the three conflicts presented in the present chapter, a slightly different picture emerged from each analysis.

Practical implications

The findings underline that it is important for the sport psychologist to take into account all the life domains of athletes when counselling. Clearly life domains can be in conflict with athletes' pursuit of sport and be detrimental to athletes' motivation, particularly if the athlete has strong perceived parental and coach pressure. In such cases the practitioner should try to reduce the life-sport conflict and perceived parental and coach pressures. One way to reduce life-sport conflicts may be to clarify the life values of athletes (Birrer, Röthlin, & Morgan, 2012). Shapiro, Carlson, Astin, and Freedman (2006) describe values clarification as recognition by individuals of what they truly value and is meaningful for them in their lives. According to Carmody, Baer, Lykins, and Olendzki (2009) enhanced life clarity will likely mean that individuals will perceive less stress. Identifying individual's values is an important component of acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999). The aim of a values clarification intervention is to motivate behaviour change or provide direction for change (Twohig & Crosby, 2008). This is done by shifting the focus from the perceived conflict to valued living by helping athletes define the concept of values, identify their own values, and use behavioural strategies to act in accordance with their chosen values.

Another approach to reduce life-sport conflicts may be to promote the coping strategy of planning behaviours. Planning behaviours represent the core element of effective time management (Claessens, van Eerde, Rutte, & Roe, 2007; Cosh & Tully, 2014) and according to Edwards and Rothbard (2000) planning behaviours may be one form of effective resource allocation. To this end, Claessens et al. (2004) suggest that planning behaviours enable

individuals to make more efficient use of their time by distributing their attention and energy more effectively. Cosh and Tully (2014) suggest that time-management skill training should give the athlete insight into how to find time for studying. Consequently I expect that planning behaviours may reduce the chance of athletes experiencing life-sport conflicts.

When considering perfectionism, parents and coaches should be instructed how to foster their children's/athletes' high personal standards instead of simply setting high standards for them. This could also reduce perceived parental and coach pressure. Fostering high personal standards could be done by supporting the athlete to develop an "approach goals" instead of "avoidance goals" orientation. Athletes with an orientation towards approach goals aim to make the best of the situation and are confident of being able to so. Athletes with an orientation towards avoidance goals are anxious about not being able to master a task or not making the best of the situation (e.g., Stoeber et al. 2008). Stoeber et al. (2008) have shown that striving for perfection[3] is positively associated with "approach goals".

Limitations and future directions

The present study has several limitations. First, the design of this study is cross-sectional and non-experimental. Although the results of this study lend strong support to the proposition that life-sport conflicts could undermine athletes' self-determined motivation, it is feasible that low self-determined motivation towards the domains could be considered as antecedents to conflicts (Boiché & Sarrazin, 2007), rather than as consequences. Longitudinal and experimental studies would be needed to verify causal relationships between life-sport conflicts, perfectionism, and motivation.

Further, this study investigated one of the main aspects of perfectionism – the setting of extremely high standards - as the moderator on the relationship between life-sport conflicts and self-determined motivation. Future research should investigate the moderating role of other aspects of perfectionism - the negative reactions to imperfection – on the relationship between life-sport conflicts and self-determined motivation. To-date well designed studies investigating the effectiveness of sport psychological interventions to reduce the negative aspects of perfectionism have not been published. Therefore research is needed to test possible interventions to foster personal standards and reduce perceived parental and coach pressure.

[3] Striving for perfections is highly correlated with personal standards (r = .72; Stoeber, 2005)

Conclusion

Self-determination theory (Deci & Ryan, 1985; 2000) offers a useful framework to understanding the consequences of life-sport conflicts that athletes might experience during their sporting career. This chapter suggests a new perspective and support for conceptualising life-sport conflicts as antecedents to self-determined motivation. Further, the inclusion of perfectionism as examined in this chapter shows how important it is to take personality traits into account when athletes are experiencing conflicts between life domains and sport. Personal standards can protect athletes from negative motivational consequences of conflict, but athletes with high perceived parental and coach pressure experience an amplification of the negative consequences.

Chapter Four:

The development and validation of the sport-life conflicts measure

Abstract

For elite sports athletes, sport and life can be perceived as in conflict in either direction. In Chapter Two a life-sport conflict measure was developed and validated. The aim of the study reported in this chapter was to develop and validate a measure of conflicts in the opposite direction, namely sport-life conflicts. In Phase 1 (N=258) the structure of the measure was tested using Bayesian structural equation modelling, resulting in a 12-item, three factor model. Phase 2 of this study, utilizing a different sample (N=389) confirmed the robustness of the factor structure from Phase 1. Additionally in Phase 2, the concurrent validity of the developed measure was assessed. The results showed that sport-life conflicts were associated (as expected) with other relevant constructs, such as athlete burnout, sport commitment, social support, general autonomy support, and life satisfaction. The findings of both phases suggest that the scores derived from sport-life conflicts measure are reliable and valid. Combined with Chapter Two, this chapter indicated that life-sport conflicts and sport-life conflicts are distinct but related constructs.

Introduction

Research in organizational psychology has suggested that work-family and family-work conflicts are distinct but related forms of inter-role conflict (Greenhaus & Beutell, 1985; Netemeyer, Boles, & McMurrian, 1996). Role conflict reflects the degree to which role demands from work and family domains are incompatible; that is, "participation in the work (family) role is made more difficult by the virtue of participation in family (work) role" (Greenhaus & Beutell, 1985, p.77). In a meta-analysis Mesmer-Magnus and Viswesvaran (2005) supported the suggestion that work-family and family-work conflicts are related. Nevertheless, they concluded that "despite some overlap, the two measures have sufficient unique variance to warrant independent examinations" (p. 228). Organizational research has found differential correlation patterns of work-family and family-work conflicts with outcomes (e.g., psychiatric disorders, job satisfaction, depressive symptoms, stress, turnover intent) in longitudinal studies (e.g., Frone, 2000; Grandey, Cordeiro, & Crouter, 2005; Hammer, Cullen, Neal, Sinclair, & Shafiro, 2005; Kelloway, Gottlieb, & Barham, 1999). A further reason for considering both directions of conflict is that the prevalence of inter-role conflicts is reported to be different, with work-family conflict being more prevalent than family-work conflict (Eagle, Miles, & Icenogle, 1997; Frone, Russell, & Cooper, 1992b). Consequently it is important to differentiate between work-family and family-work conflicts so that the possibly different mechanisms underlying these inter-role conflicts can be determined.

In the context of elite sports, it can also be expected that sport and life domain roles can be perceived as in conflict in either direction. For a simple, but everyday illustration of the differences in the direction of conflicts with their possibly different effects consider the case where, because of the need to study for examinations, an athlete does not have enough time to train for an important competition (life-sport conflict). Conversely, because of training and competition, an athlete may not have enough time to adequately prepare for examinations (sport-life conflict; Cosh & Tully, 2014**).**

In Chapter Two the development and validation of the life-sport conflicts measure was reported. The present chapter focuses on the opposite direction of conflict: sport-life conflicts. Sport-life conflicts are defined as a form of resource conflict in which time, energy, and attention devoted to sport interferes with performing life domain-related responsibilities.

After a thorough search of sports research literature, to the best of my knowledge no measures exist that assess sport-life conflicts. To measure domain conflicts holistically a sound sport-life conflict scale is needed. Developing and validating a sport-life conflict measure would close a gap in research literature on life conflicts in sport. To this end, an aim of the present chapter is to develop a psychometrically sound sport-life conflicts measure. Analogous to Chapter Two, the life domains included in the current measure are work/study, leisure activities, friends, and family. Thus the measure is envisioned to capture the following conflicts: sport-work/study, sport-leisure activities, sport-friends, and sport-family.

Based on the premise that life-sport conflicts and sport-life conflicts are distinct but related concepts, and the manner in which I investigated conflicts between life domains in the current thesis, Chapters Two and Four have some overlap. To facilitate the reading of this chapter, I have attempted to reduce repetition. The same broad approach was adopted as that employed in Chapter Two. Thus two phases and two independent samples were utilised within this process. In Phase 1 the construct was defined and the items generated and modified. With the newly generated items, data were collected from elite athletes, which enabled testing the structural validity and internal consistency of the measure. Based on the high inter-factor correlation issue that arose with the four-factor model in Chapter Two, a three-factor model was expected to be the product of this chapter. For the sake of thoroughness, a four-factor model was also tested however. Additionally, the relationships between life-sport conflicts and sport-life conflicts were investigated to generate information pertaining to discriminant validity. The goal of Phase 2 was to confirm the factor structure of the scale resulting from Phase 1 and examine the concurrent validity with respect to conceptually related constructs.

Phase 1

Method

Participants, Procedures and Item generation

The same sample (N = 258) and item generation process was employed as in Phase 1 of Chapter Two (see pages 20-21). Additionally, the current measure was administered alongside the instrument developed in Phase 1 of Chapter Two.

Model testing and data analysis strategy

To test if the same inter-factor correlation issues arise with the sport-life conflict direction as those outlined in Chapter Two (i.e., life-sport conflict direction), the suitability of both four and three-factor models was tested using Bayesian structural equation modelling (BSEM) in Mplus 7 (Muthén & Muthén, 1998-2012). The same procedures as described in Chapter Two were followed for the present BSEM analyses. Specifically three a priori models were progressively estimated using a series of priors specifications; explicitly (a) exact zero cross-loadings and residual correlations, (b) approximate zero cross-loadings and exact zero residual correlations, and (c) approximate zero cross-loadings and residual correlations (Muthén & Asparouhov, 2012). The approximate zeros were specified using zero mean, prior variances of ± .01, resulting in a 95% credibility interval for the standardised factor loadings and residual correlations of 0 ± .20. This represents substantively small cross-loadings and residual correlations (Muthén & Asparouhov, 2012). Model estimation was initially executed with 50,000 iterations and then 100,000 to assess convergence and stability of the estimates. Convergence was tested by the potential scale reduction factor (PSR). Evidence for convergence is supported when the PSR lies between 1.0 and 1.1 (Gelman, Carlin, Stern, & Rubin, 2004). BSEM model fit was tested with the posterior predictive p value (PPP) and the related 95% credibility interval (Muthén & Asparouhov, 2012). A small PPP value ($p < .05$) and a positive 95% lower limit credibility interval indicate a poor fit. A PPP value around .5 with a symmetric 95% credibility interval centring around zero indicates a well-fitting model (Muthén & Asparouhov, 2012). Model comparison was done using the deviance information criterion (DIC), with smaller values representing better fit (Asparouhov, Muthén, & Morin, 2015; Stenling, Ivarsson, Johnson, & Lundwall, 2015).

Results

Table 14 shows the correlations between the factors of the four-factor model. Corresponding with the results of Chapter Two, the inter-factor correlation between friends and leisure time was almost perfect (r = .98). As expected, this extremely high inter-factor correlation suggested going forward with a three-factor model by collapsing sport-friends and sport-leisure time conflicts into one factor: sport-free time conflict. Based on this, only the inter-factor correlations of the four-factor model of the BSEM are reported (see Table 14).

Table 14

Inter-factor correlations for the four-factor model

Factors	*M*	*SD*	1	2	3	4
1. Sport-work/study	2.69	1.01	-			
2. Sport-friends	3.00	.91	.53**	-		
3. Sport-leisure time	2.92	.98	.64**	.98**	-	
4. Sport-family	2.60	1.01	.45**	.77**	.74**	-

Note. **p < .01.

Table 15 displays inter-factor correlations for the three-factor model and Table 16 presents the model fit for three Bayesian estimated three factor models using 100,000 iterations. All models showed stable PSR values between 1.00 and 1.01. Model 1a, the non-informative model, and Model 1b with informative priors for cross-loadings, revealed poor model fits with PPP values of .00 and 95% positive lower posterior predictive limits. Model 1c with informative priors for cross-loadings and residual correlations emerged as a well-fitting model with a PPP value of .53 and a symmetric 95% posterior predictive interval centred around zero. The superior fit for Model 1c was also supported by the smaller DIC for this model compared to the other two (see Table 16). The inter-factor correlations for Model 1c ranged from .45 to .70 (see Table 15), and factor loadings ranged from .69 to .87 (see Table 17). The credibility intervals did not include zero for any of the major factor loadings. None of the cross-loadings fell outside the specified interval of ± .20. One of the 66 residual correlations had a 95% credibility interval that did not include zero, and the residual

correlations ranged from -.37 to .40. Evidence for internal consistency was provided by composite reliabilities: sport-work/study = .87, sport-free time = .89, and sport-family = .89.

Table 18 shows the disattenuated bivariate correlations between sport-life conflicts and life-sport conflicts. The significant correlation between sport-work/study conflict and work/study-sport conflict was positive and moderate in strength. The significant associations between sport-free time conflict and free time-sport conflict and between sport-family conflict and family-sport conflict were positive and of weak magnitude.

Table 15

Inter-factor correlations for the three factor model

Factors	*M*	*SD*	1	2	3
1. Sport-work/study	2.69	1.01	-		
2. Sport-free time	2.96	.88	.55** [.34 .70]	-	
3. Sport-family	2.60	1.01	.45** [.19 .57]	.70** [.53 .81]	-

Note. $^{**}p < .01$. [95% C.I.] = 95% credibility interval.

Table 16

Bayesian structural equation modelling results for the three factor sport to life conflicts questionnaire

Model	Priors specification	Numbers of free parameters	2.5 % PPP limit	97.5% PPP limit	PPP	DIC	PSR
1a	Non-informative	39	160.51	226.02	.00	7354.24	1.00
1b	Informative (cross-loadings)	63	88.93	162.27	.00	7297.04	1.00
1c	Informative (cross-loadings & residual correlations)	129	-39.55	35.81	.53	7206.02	1.01

Note. All models were estimated using 100,000 iterations in Mplus. PPP = posterior predictive p value, DIC = deviance information criterion; informative priors on cross-loadings and residual correlations have a zero mean and a variance of .01; PSR = potential scale reduction factor.

Table 17

Standardised factor loadings and cross loadings from the BSEM three-factor model using informative priors for cross loadings and residual correlations (Model 1c)

Items	Three-factor model		
	Work/study	Free time	Family
Stem: Often my involvement in sport …	[95% C.I.]	[95% C.I.]	[95% C.I.]
prevents attention to work/study	**.85 [.63 1.02]**	-.02 [-.19 .15]	-.03 [-.20 .14]
lack of energy for work/study	**.75 [.52 .96]**	.05 [-.14 .22]	.00 [-.17 .17]
insufficient time for work/study	**.86 [.69 1.01]**	-.01 [-.18 .15]	.04 [-.13 .19]
too tired for friends	.01 [-.16 .17]	**.77 [.53 .97]**	-.02 [-.20 .16]
prevents attention to friends	-.04 [-.21 .13]	**.76 [.52 .98]**	.02 [-.17 .20]
insufficient time for friends	-.01 [-.18 .16]	**.78 [.56 .99]**	.02 [-.17 .19]
insufficient time for leisure activities	-.02 [-.20 .15]	**.77 [.51 .98]**	-.02 [-.20 .17]
lack of energy for leisure activities	.00 [-.18 .16]	**.69 [.43 .92]**	.04 [-15 .23]
prevents attention to leisure activities	.08 [-.11 .25]	**.74 [.49 .96]**	-.01 [-.19 .17]
not enough time for family	.01 [-.15 .16]	.00 [-.19 .16]	**.86 [.66 1.04]**
prevents attention to family	-.04 [-.19 .11]	.00 [-.18 .17]	**.87 [.69 1.05]**
too tired for family	.05 [-.12 .22]	.03 [-.16 .21]	**.74 [.51 .95]**

Note. Bold values indicate the significant major loadings. 95% C.I. = 95% credibility interval.

Table 18

Disattenuated bivariate correlations between sport-life conflicts and life-sport conflicts

Factors	Work/study-sport	Free time-sport	Family-sport
1. Sport-work/study	.47	.33	.31
2. Sport-free time	.49	.29	.29
3. Sport-family	.35	.14	.22

Note. No test of statistical significance exists for disattenuated correlations. Nevertheless, all uncorrected correlations were significant at $p < .05$.

Discussion

The aim of Phase 1 was to examine the structural validity and internal consistency of scores resulting from a newly developed sport-life conflict measure. The same issue as reported in the development of the life-sport conflicts measure arose with the four-factor model of the sport-life conflicts measure: namely an extremely high inter-factor correlation between leisure activities and friends. This strengthens the suggestion that the time spent on leisure activities overlaps with the time spent with friends. In other words, athletes do not differentiate between leisure activities and time with friends. Further, the high and significant loadings of the leisure activities and friends items on the sport-free time conflict factor offers support for the decision to collapse across these factors. Additionally, the 12-item three-factor model fitted the data well, demonstrated strong factor loadings with approximate zero cross-loadings and residual correlations, and produced internally consistent factors. The results of Phase 1 provide evidence that the three-factor model better represented the structure of sport-life conflicts measure than the four-factor model. Consequently the three-factor (and not the four-factor) structure with approximate zero cross-loadings and residual correlations was tested in Phase 2.

As expected, the small to moderate correlations between sport-life conflicts and life-sport conflicts are consistent with findings from organizational research (e.g., Carlson, Kacmar, & Williams, 2000). The present correlations suggest that sport-life and life-sport conflicts are positively but at best modestly related. In fact, the reported correlations are in line with Carlson et al.'s (2000) recommendation that if the correlations between scales are less than .60, one can assume that they are discriminated from each other. Thus, the results support the use of two measures reflecting the bi-directional nature of the domain conflicts.

Phase 2

Phase 2 of this study was similar to Phase 2 described in Chapter Two. So, the aim of this phase was to replicate the factor structure of the model evolved from Phase 1 and to assess the reliability and the concurrent validity of the sport-life conflicts measure. To test the concurrent validity of the measure, the same antecedents and consequences were utilised as in Chapter Two. The antecedents included social support and general autonomy support. The consequences comprised burnout, sport commitment and life satisfaction. In Chapter Two all these variables were found to be significantly related to life-sport conflicts. Thus, it was expected that sport commitment, social support, general autonomy support, and life

satisfaction would be negatively related to sport-life conflicts (Carlson et al., 2000; Netemeyer et al., 1996; Senécal, Vallerand, & Guay, 2001), whereas burnout was expected to relate positively with sport-life conflicts (Netemeyer et al., 1996).

Method

Participants, Measures, Procedures

The same sample (N = 389), measures, and procedures were employed as in Phase 2 of Chapter Two. Sport-life conflicts were assessed using the items of the three-factor sport-life conflicts measure created and tested in Phase 1. To aid recall, the antecedent and consequence variables measured were the same as those assessed in Phase 2 Chapter Two (see pages 29-31 for more details). Athlete burnout was measured with the 15-item ABQ (Raedeke & Smith, 2001). The ABQ includes three subscales: emotional/physical exhaustion, reduced sense of accomplishment, sport devaluation and a global burnout score. As a reminder, example items include "I feel overly tired from my sport participation" (emotional/physical exhaustion); "I am not performing up to my ability in sport" (reduced sense of accomplishment); and "I'm not into sport like I used to be" (sport devaluation). Sport commitment was assessed with the new 4-item KUT Measure of Commitment (Klein, Cooper, Molloy, & Swanson, 2014). An example is: "How dedicated are you to your sport?". Satisfaction with social support was measured using an adapted version of the 6-item Social Support Questionnaire (SSQ; Sarason, Sarason, Shearin, & Pierce, 1997). All items followed the stem, "To what extent are you satisfied with the overall support you receive...". An example item includes "… when you feel under stress and need to be distracted from your worries?". General autonomy support was assessed with an adapted version of the Friendship Autonomy Support Questionnaire (FASQ; Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). A sample item is: "I feel that my environment provides me with choices and options". Life satisfaction is commonly assessed using the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). An example item is: "I am satisfied with my life".

Model testing and data analysis strategy

The structural validity of the three-factor model of the sport-life conflict measure was tested using Bayesian structural equation modelling (BSEM) in Mplus 7 (Muthén & Muthén, 1998-2012) and the concurrent validity was assessed using Pearson's zero-order correlations in SPSS version 22 software for Windows. In Phase 2 the previous well-fitting three-factor

model of Phase 1 was tested, this time using highly informative priors. In other words the factor loadings of Phase 1 were used to specify the priors for the target factor loadings. The approximate zeros for cross-loadings and residual correlations were specified using zero mean, prior variances of ± .01, which results in 95% credibility interval for the standardised factor loadings and residual correlations of 0 ± .20, representing substantively small cross-loadings and residual correlations (Muthén & Asparouhov, 2012). Model estimation was initially executed with 50,000 iterations and then 100,000 to assess convergence and stability of the estimates. Convergence was tested by the potential scale reduction factor (PSR). As before, evidence for convergence is present when the PSR lies between 1.0 and 1.1 (Gelman et al., 2004). BSEM model fit was again tested with the PPP value and the related 95% credibility interval (Muthén & Asparouhov, 2012).

Results

Structural validity

The inter-factor correlations ranged from .45 to .64 (see Table 19), and factor loadings from .68 to .86 (see Table 20). The credibility intervals did not include zero for any major factor loadings. Table 21 presents the model fit for the estimated Bayesian three-factor model with highly informative priors for target factor loadings (model 2c) using 100,000 iterations. The model showed a stable PSR value of 1.03. The results revealed a well-fitting model with a PPP value of .53 and a symmetric 95% posterior predictive interval centring around zero. None of the cross-loadings fell outside the specified interval of ±.20. The residual correlations ranged from -.45 to .42, and nine of the sixty six residuals had a 95% credibility interval that did not included zero. To aid comparison, Table 21 shows the results of the BSEM for both (Phase 1 and Phase 2) samples, while Table 22 presents the factor loadings and inter-factor correlations of the original and replication phases. Evidence for internal consistency was provided by composite reliability. The composite reliabilities for the three factors were: sport-work/study = .84, sport-free time = .87, and sport-family = .86. Broadly speaking, findings from Phase 2 replicated those reported in the first phase of development.

Table 19

Factor correlations of the three factor model

Factors	*M*	*SD*	1	2	3
1. Sport-work/study	2.74	.90	-		
2. Sport-free time	2.92	.77	.45** [.24 .61]	-	
3. Sport-family	2.70	.87	.41** [.18 .60]	.64** [.48 .76]	-

Note. ***p* < .01. [95% C.I.] = 95% credibility interval.

Table 20

Standardised factor loadings and cross loadings from the BSEM three-factor model using highly informative priors for the target factor loadings (Model 1c)

Items	Three-factor model		
	Work/study	Free time	Family
Stem: Often my involvement in sport …	[95% C.I.]	[95% C.I.]	[95% C.I.]
prevents attention to work/study	**.85 [.73 .97]**	-.02 [-.18 .13]	.02 [-.14 .19]
lack of energy for work/study	**.73 [.58 .87]**	.03 [-.13 .19]	.02 [-.15 .19]
insufficient time for work/study	**.81 [.68 .93]**	.01 [-.15 .16]	-.01 [-.18 .15]
too tired for friends	.03 [-.13 .18]	**.77 [.63 .91]**	-.03 [-.19 .13]
prevents attention to friends	-.03 [-.18 .12]	**.76 [.63 .90]**	.02 [-.14 .16]
insufficient time for friends	-.01 [-.17 .14]	**.71 [.57 .86]**	.03 [-.14 .19]
insufficient time for leisure activities	-.01 [-.17 .13]	**.76 [.62 .89]**	-.02 [-.17 .13]
lack of energy for leisure activities	.00 [-.16 .15]	**.68 [.53 .82]**	.04 [-.13 .20]
prevents attention to leisure activities	.04 [-.12 .19]	**.71 [.57 .86]**	-.02 [-.18 .14]
not enough time for family	.03 [-.13 .18]	.04 [-.13 .20]	**.77 [.63 .93]**
prevents attention to family	.00 [-.14 .15]	-.01 [-.16 .14]	**.86 [.73 .99]**
too tired for family	-.01 [-.15 .14]	.01 [-.14 .15]	**.79 [.67 .92]**

Note. Bold values indicate the significant major loadings. 95% C.I. = 95% credibility interval

Table 21

BSEM results for the three factor sport to life conflicts questionnaire for the original (Model 1c) and replication (Model 2c) samples

Model	Priors specification	Numbers of free parameters	2.5 % PPP limit	97.5% PPP limit	PPP	PSR
1c	Informative (cross-loadings & residual correlations; N = 257)	129	-39.55	35.81	.53	1.01
2c	Highly informative (cross-loadings & residual correlations; N = 389)	129	-38.68	35.83	.53	1.03

Note. The models were estimated using 100,000 iterations in Mplus. PPP = posterior predictive p value; informative priors on cross-loadings and residual correlations have a zero mean and a variance of .01; PSR = potential scale reduction factor

Concurrent validity

The results confirmed the expected relationships between the three sport-life conflicts and the selected potential correlates (see Table 23). More specifically, Table 23 presents the zero-order correlations and the disattenuated correlations between the scores of sport-life conflicts dimensions and scores derived from the measures of athlete burnout, sport commitment, satisfaction with social support, general autonomy support, and life satisfaction. The predicted positive correlations between the scores of sport-life conflicts dimensions and the scores for athlete burnout were all significant[4]. Similarly the expected negative correlations between the sport-life conflict dimension scores and the scores of social support, general autonomy support and life satisfaction were also significant. There was one exception; the sport-life conflicts score did not correlate with sport commitment.

[4] Significance tests only exist for uncorrected correlations and not for disattenuated correlations.

Table 22

Factor loadings and factor correlations for the original and replication samples

Items	three-factor model (replication)			three-factor model (original)		
Stem: Often my involvement in sport …	Work/ study	Free time	Family	Work/ study	Free time	Family
prevents attention to work/study	**.85**	-.02	.02	**.85**	-.02	-.03
lack of energy for work/study	**.73**	.03	.02	**.75**	.05	.00
insufficient time for work/study	**.81**	.01	-.01	**.86**	-.01	.04
too tired for friends	.03	**.77**	-.03	.01	**.77**	-.02
prevents attention to friends	-.03	**.76**	.02	-.04	**.76**	.02
insufficient time for friends	-.01	**.71**	.03	-.01	**.78**	.02
insufficient time for leisure activities	-.01	**.76**	-.02	-.02	**.77**	-.02
lack of energy for leisure activities	.00	**.68**	.04	.00	**.69**	.04
prevents attention to leisure activities	.04	**.71**	-.02	.08	**.74**	-.01
not enough time for family	.03	.04	**.77**	.01	.00	**.86**
prevents attention to family	.00	-.01	**.86**	-.04	.00	**.87**
too tired for family	-.01	.01	**.79**	.05	.03	**.74**
Factors						
Work/study	-			-		
Free time	.45**	-		.58**	-	
Family	.41**	.64**	-	.46**	.77**	-

Note. Bold values indicate the significant major loadings. ** $p < .01$.

Table 23

Concurrent validity related (zero-order) correlations

Scales	Expected correlations	Sport-work/study conflict	Sport-free time conflict	Sport-family conflict
Reduced sense of accomplishment	+	.18 (.23)**	.18 (.22)**	.13 (.16)**
Emotional and physical exhaustion	+	.44 (.54)**	.42 (.50)**	.38 (.46)**
Sport devaluation	+	.20 (.26)**	.20 (.26)**	.14 (.18)**
Global burnout	+	.36 (.46)**	.35 (.43)**	.29 (.36)**
Sport commitment	-	-.01 (-.02)	-.01 (-.01)	.00 (.00)
Social support	-	-.17 (-.21)**	-.19 (-.21)**	-.17 (-.19)**
General autonomy support	-	-.10 (-.12)*	-.14 (-.17)**	-.18 (-.21)**
Life satisfaction	-	-.22 (-.28)**	-.22 (-.26)**	-.21 (-.26)**

Note. * $p = .05$; ** $p < .01$ level (two-tailed). Disattenuated correlations are reported in parentheses.

Discussion

The aims of Phase 2 were to replicate the factor structure of the three-factor model that emerged from Phase 1, and to test the internal consistency and the concurrent validity of the sport-life conflicts measure with a cross validation sample. The results of the BSEM supported the proposed factor structure of the measure developed in Phase 1. The data of Phase 2 fitted the model well and were internally consistent. Furthermore some support for the instrument's discriminant validity was evidenced by the moderate inter-factor correlations (i.e., two of three correlations were below .60; Carlson et al., 2000).

The correlations between the three sport-life conflicts and the antecedents and consequences were assessed to test concurrent validity. It was predicted that sport-life conflicts would be positively correlated with burnout and negatively correlated with sport commitment, social support, general autonomy support, and life satisfaction. As expected, all correlations were significant, with the exception of those between sport-life conflicts and sport commitment, so supporting the convergent validity of the scores obtained from the developed measure. As is apparent, sport-life conflicts do not predict sport commitment

although the equivalent results in Chapter Two revealed that life-sport conflicts had a negative influence on sport commitment.

When viewed in concert, these findings add further weight to theorising that sport-life and life-sport conflicts are distinct, albeit related, constructs. This is supported by comparing the respective correlation matrices for life-sport conflicts (Chapter Two, Table 10) and sport-life conflicts (present chapter, Table 23) with antecedents and consequences. A different pattern of results is apparent when comparing the matrices. This is in line with organizational literature that has shown that measures of work-family conflict and of family-work conflict overlap but explain sufficient unique variance to warrant independent examination (Mesmer-Magnus & Viswesvaran, 2005).

Looking more closely at the correlations of sport-life and life-sport conflicts with external correlates, a systematic pattern is evident. All six conflicts (sport-work/study, sport-free time, sport-family, work/study-sport, free time-sport, family-sport) correlated similarly with domain non-specified antecedents and consequences, such as social support, general autonomy support, and life satisfaction. But when the antecedents and consequences are specific to the sporting domain, a slightly unexpected correlation pattern emerges. Intuitively, one would assume that life-sport conflicts would predominantly affect the sport domain. The rationale is that the conflict although originating in one domain, causes problems in the other domain. Amstad, Meier, Fasel, Elfering, and Semmer (2011) call this a cross-domain relationship. In other words, work/study interfering with sport has a stronger relationship with sport domain consequences than sport interfering with work/study.

Thus, the finding of this chapter that sport-life conflicts are not associated with sport commitment and that life-sport conflicts are negatively related to sport commitment are consistent with the notion of cross-domain relationships. Further support for the cross-domain relationships are the results of the correlations of free time-sport and family-sport conflicts with sport devaluation. Both of these correlations were stronger than the relationships of sport-free time and sport-family conflicts with sport devaluation. However, Amstad et al. (2011) propose the concept of a "matching-hypothesis", that is useful in this context. The "matching-hypothesis" would assume that the primary effect of sport-life conflicts lies in the domain where the conflict originates, in this case in the sport domain. The underlying premise refers to appraisal, most notably attributional, processes (Amstad et al., 2011). In other words, individuals are likely to dwell on the causes of sport-life conflicts, their characteristics, their

consequences, ways of dealing with them, and so forth. To the extent that this occurs, an individual's thoughts are likely to be centred around sport situations. The correlations of sport-life conflicts with emotional and physical exhaustion concur with this "matching hypothesis".

One explanation why sport commitment and sport devaluation are cross-domain related to life-sport conflicts may be because they are both perceived by athletes as consequences of the conflicts. In contrast, emotional and physical exhaustion could be an antecedent of sport-life conflict. This explanation is supported by Amstad et al. (2011) and the Frone, Yardley, and Markel (1997) integrative model of the work-family interface. According to Frone et al. (1997), two feedback loops exist, so that domain specific outcomes (e.g., life-related well-being) are related to same-domain antecedents (e.g., life-related antecedents). Therefore a given variable might be a consequence of life-sport conflicts but also a direct antecedent to sport-life conflicts. Amstad et al. (2011) propose that the correlation of the antecedent with same domain conflict is stronger than the correlation between the consequence and the cross-domain conflict. However, no causality can be determined from the cross-sectional results of this chapter.

This points to future research investigating the Frone et al.'s (1997) feedback loops model using a prospective longitudinal design to determine causality. The investigated antecedents and consequences should be both domain specific and unspecific. Systematic examination of this model would create a greater understanding of sport-life and life-sport conflicts processes. Furthermore, it would help practitioners know which intervention options are appropriate. Active inclusion of the coaching staff to flag potential approaches that minimise the risk of conflicts also has merit.

General discussion

In the present chapter, I developed and generated initial information concerning the validity of a new, comprehensive and psychometrically sound measure of sport-life conflicts that can be used to advance sport-life conflict research and applied practice, particularly with elite performers. The results of Chapter Four show that it is important to measure sport-life conflict and not only life-sport conflict; the two conflicts are related but distinct. Most individuals working in sport (e.g., coaches, managers, sport directors) believe that life-sport conflicts have more impact on the development and performance of athletes than sport-life conflicts (source; personal discussion with coaches, managers and sport directors in

Switzerland). The findings of the present chapter show that conflict in the sport-life direction, could have far reaching impact on the development and performance related outcomes of athletes. The data of this chapter revealed that sport-life conflicts can also influence sport-specific consequences (e.g., athlete burnout). The correlations between the three forms of sport-life conflict and burnout show that each conflict predicts all three burnout subscales and global burnout, especially emotional and physical exhaustion. Athlete burnout literature has shown how detrimental burnout can be (e.g., poor performance, drop-out, lethargy, negative feelings towards sport, lower self-esteem; Cresswell & Eklund, 2007; Goodger, Wolfenden & Lavallee, 2007; Gould & Whitely, 2009). More research is needed to examine further the perils of sport-life conflicts employing a prospective longitudinal design. Of interest would be to investigate how sport-life conflicts influence injury occurrence or sport absenteeism, two factors of obvious importance in the development of athletes (Bergeron et al., 2015).

A limitation of this study is that no work/study, free time, and family specific antecedents and consequences were included; thus, the discriminant validity was not fully examined. The constructs selected for this chapter were primarily chosen to test the convergent validity of the sport-life conflict questionnaire. An implication of this is that future research should continue to examine domain specific relationships (e.g., family autonomy support, work/school tension) to further assess the independence of the individual three sport-life conflicts.

Conclusion

To be able to measure life domain conflicts holistically in elite sport, a much-needed step is a well-developed measure of sport-life conflicts. The work described in this chapter accomplishes this by creating and modifying items based on a sound conceptualisation of sport-life conflicts and then conducting initial validation of the measure in two samples. In combination with Chapter Two, this chapter shows that life-sport conflicts are bi-directional but distinct in how they relate to other constructs. Life-sport conflicts were more strongly related to reduced sport commitment, sense of accomplishment, and sport devaluation, whereas sport-life conflicts were more strongly related to the emotional and physical exhaustion component of burnout. Only by examining all three conflicts in both directions can sport-life and life-sport conflicts be adequately represented.

Chapter Five:

Why some athletes remain competing at an international level and others do not: Life-sport conflicts, sport-life conflicts, and perfectionism as predictors of competition level

Abstract

The present, somewhat explorative, chapter examines whether life-sport conflicts, sport-life conflicts, perfectionism, and the interaction between life-sport conflicts and perfectionism predict athletes remaining at international competitive level over a two year period. The findings further offer initial insight into how life-sport conflicts, sport-life conflicts, and perfectionism contribute to the maintenance of international competitive standards by elite sports athletes. The results highlight the coach's influence on athletes' involvement at international level over time. Perhaps surprisingly, the research suggests that perceived parental pressure may not be detrimental in the long term. The findings also propose that sport-free time conflict can be an obstacle to overcome for athletes competing and training at international level over time.

Introduction

Understanding the long-term effects of life-sport and sport-life conflicts on the career development of elite athletes is of interest to athletes, parents, coaches, sport directors, and sport psychologists because of the time and financial commitment that athletes and their supporting networks put into sporting careers (Côte, 1999). The findings of the previous chapters of this thesis have shown that life-sport and sport-life conflicts are positively related to constructs (e.g., sport commitment, burnout, and motivation) that have been found to be negatively associated with the career development of elite athletes (e.g., Gould & Whitely, 2009; Helsen, Hodges, Van Winckel, & Starkes, 2000; Pelletier, Fortier, Vallerand, Brière, 2001).

The aim of this chapter is to examine life-sport conflicts, sport-life conflicts and perfectionism as predictors of competition levels that athletes reach and more specifically, maintain. Competition level is defined as the level at which an athlete competes. In this chapter I focus broadly on Swiss international and non-international competition levels. The goal of athletic progression for Swiss sport associations, like many such national institutions, is to help talented athletes develop into international athletes. So it is of great interest for sport associations to know if life-sport conflicts, sport-life conflicts, and perfectionism predict the competition level of their athletes. An additional aim of the chapter is to explore whether life-sport conflicts' predictions are moderated by perfectionism.

In sport psychology literature, prospective studies on career development of elite athletes are scarce. One study, by Van Yperen (2009), investigated psychological factors that predict career success in soccer. After an initial phase in which the predictor variables (goal commitment, level of exhaustion, coping behaviours, and seeking social support) of a unique group of highly skilled youth soccer players were measured, a follow-up 15 years later assessed career success. Success was defined as playing premier league soccer in Europe for at least ten years of the 15-year period following initial data collection. Van Yperen found that goal commitment, engagement in problem-focused coping behaviours, and seeking social support predicted career success.

A few studies have employed prospective designs to understand sport participation continuation or drop-out of young athletes (Barnett, Smoll & Smith, 1992; Pelletier et al., 2001; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002; Ullrich-French & Smith, 2009). Barnett et al. (1992) investigated the role of the coach-athlete relationship in boys' baseball

continuation. They found that players whose coaches took part in specific training to enhance the coach-athlete relationship were less likely to drop-out of baseball from one season to the next compared with athletes whose coaches did not receive the specific training. Their intervention study showed that a positive athlete-coach relationship could increase the probability of continued sport participation.

Both Pelletier et al. (2001) and Sarrazin et al. (2002) focused on the role of the coach, using self-determination theory (Deci & Ryan, 1985) to frame their investigation of adolescent sport participation behaviour. Pelletier et al. (2001) found that coach behaviours that are more autonomy-supportive enhanced intrinsic forms of motivation in competitive swimmers, while controlling behaviours undermined intrinsic forms of motivation. The more internalised forms of motivation led to greater competitive swimming continuation over time. Sarrazin et al. (2002) found in their study of female handball players that if the motivational climate created by their coach thwarted the three basic psychological needs (autonomy, perceived competence, and relatedness), the chances of being less self-determined motivation for handball were increased, which consequently increased the possibility of dropping-out of the sport.

Ullrich-French and Smith's (2009) prospective study investigated whether youth soccer players' positively perceived relationships with parents and peers, the moderating associations among these social relationship variables, and motivation-related variables predicted continuing with soccer the following year. They showed that greater perceived competence, more positive friendship quality, and the three-way interaction between perceived peer acceptance, friendship quality, and mother relationship quality predicted soccer continuation with the same team.

In their longitudinal study Childs and Stoeber (2012) using a sample of healthcare service provision employees and school teachers, found that socially prescribed perfectionism (individuals' perceptions that others have perfectionistic expectations of them) predicted increased role-stress, inefficacy, exhaustion, and cynicism over time, whereas self-oriented perfectionism did not predict role-stress nor burnout. In a sample of junior athletes Madigan, Stoeber, and Passfield (2015) found that personal standards predicted a decrease in athletic burnout. In their longitudinal (three months between the data collections) they measured perfectionistic concern instead of prescribed perfectionism (perceived parental and coach pressure). Similarly, Stoeber, Stoll, Pascheck, and Otto (2008) used in their longitudinal study

striving for perfectionism and negative reaction to imperfection to predict athletes' achievement goals. They found that striving for perfectionism was positively related to mastery-approach and performance-approach goals. Again they did not measure prescribed perfectionism. This means that longitudinal data on prescribed perfectionism in sport is missing. However, according to organisational and sport literature (Childs & Stoeber, 2012; Madigan et al., 2015; Stoeber et al., 2008) it could be anticipated that personal standards, perceived parental pressure, and perceived coach pressure are predictors of competition levels.

Given that Chapters Two and Four of this thesis have shown that both life-sport and sport-life conflicts are negatively related to autonomous motivation, and that self-determined motivation can be a predictor of career development of athletes, it could be expected that both life-sport conflicts (work/study-sport, free time-sport, family-sport) and sport-life conflicts (sport-work/study, sport-free time, sport-family) are predictors of competition level.

Chapter Three showed that the three dimensions of perfectionism (personal standards, perceived parental pressure, perceived coach pressure) were related to self-determined motivation. The correlations of Chapter Three also indicate that personal standards are more strongly related to autonomous motivation, while perceived parental and coach pressure are more strongly related to controlled motivation and amotivation. Further, personal standards attenuated the negative relationships between life-sport conflicts and self-determined motivation, except for family-sport conflicts. In contrast, both perceived parental and coach pressure increased the strength of negative relationships between life-sport conflicts and self-determined motivation, except again for family-sport conflicts.

Although a host of other significant factors (e.g., sport specific skills, motor skills, physiological factors, further psychological factors) are likely to influence career development and termination, equally the examination of long-term effects of life-sport conflicts, sport-life conflicts, and perfectionism are relevant to the careers and continuation for elite athletes. An examination of these factors would extend sport psychology literature. In particular, the majority of the literature referred to above has examined factors that facilitate the "upwards" developmental pathway of athletes (e.g., progression from national to international competition levels) or the continued engagement of athletes within sub-elite competition (e.g., youth sport). Consequently, there is limited understanding of the factors that might influence whether or not athletes retain their competitive edge and maintain competing at the elite level.

In the present investigation, predictor variables were measured in the measurement phase of 2012 in which all participants competed at international level. In the reassessment phase in 2014 the sport directors of participants provided information to the researcher on who had remained competing and who had not remained at international level in their sport. The criterion for competition level was defined simply as follows: an international athlete was one who continued to compete at international competitions. A non-international athlete was one who did not compete at international competitions. Athletes who had dropped-out of sport were omitted from the study because the reasons for sport discontinuation were too heterogeneous (e.g., injury, fatal accident, financial problems, etc.), or unclear for the sport directors to be certain.

The following variables were selected as predictors because they were the main independent variables in the studies described in Chapters Three and Four: work/study-sport conflict, free time-sport conflict, family-sport conflict, sport-work/study conflict, sport-free time conflict, sport-family conflict, personal standards, perceived parental pressure, perceived coach pressure, and all interactions of the three life-sport conflicts and the three perfectionism variables. It was hypothesised that athletes reporting (in the 2012 measurement phase) higher life-sport conflicts, higher sport-life conflicts, lower personal standards, and higher perceived parental and coach pressure would be more likely to be in the non-international group in the 2014 reassessment phase. Further, it was hypothesised that perceived parental and coach pressure would moderate the effect of life-sport conflicts with a higher probability of being in the non-international group when athletes perceived greater parental and coach pressures and had higher conflicts. Finally, it was hypothesised that personal standards would moderate the negative effect of life-sport conflicts with a higher probability of being in the international group when personal standards are high.

Method

Participants

The participants (N = 258) participated in the initial data collection in 2012 as described in Chapter Two, Phase 1 (see page 20) Competition level data were available from 235 (N = 138 male, N = 97 female) of the same participants in 2014. The age range in 2012 of the participants was 20 to 31 years (M = 21.98, SD = 2.03). Athletes competed in a variety of sports including soccer (N = 72), floorball (N= 32), cycling (N =18), ice hockey (N = 22), handball (N = 20), skiing (N = 20), athletics (N = 14), gymnastic (N = 12), shooting (N = 10),

tennis (*N* = 3), triathlon (*N* = 5), snowboard (*N* = 3), ski jumping (*N* = 3), and golf (*N* = 1). Twenty-three participants were omitted from the analyses of this study through dropping out of their sport, as described earlier in this chapter.

Procedure

The 2012 procedure is described in Chapter Two page 19. In 2014 the performance directors were asked to report the present competition levels of all participants of the 2012 data collection. The results showed that 147 remained at international level and 88 had become non-international.

Measures

Life-sport conflicts were measured with the items developed and outlined in Chapter Two and sport-life conflicts were assessed with the items developed and outlined in Chapter Four. Perfectionism was measured using the Sport Multidimensional Perfectionism Scale 2 (S-MPS-2; Gotwals & Dunn, 2009). These measures were also used in Chapter Three (for details see Chapter Three page 57).

Statistical analyses

Sample means and standard deviation were calculated to describe the sample. The variance inflation factor (VIF) was used to assess multicollinearity. VIF scores less than 5 are typically considered acceptable (Rogerson, 2001). To address the study aims, hierarchical logistic regression analysis was used to identify the predictors of group-membership at follow-up (i.e., international or non-international). Predictors in this model were work/study-sport conflict, free time-sport conflict, family-sport conflict, sport-work/study conflict, sport-free time conflict, sport-family conflict, personal standards, perceived parental pressure, perceived coach pressure, and the interactions between life-sport conflicts and perfectionism.

Three steps were used in the analyses. Step 1 included work/study-sport conflict, free time-sport conflict, family-sport conflict, sport-work/study conflict, sport-free time conflict, and sport-family conflict as predictors. Step 2 added personal standards, perceived parental pressure, and perceived coach pressure. Finally, in step 3 all interactions of the three life-sport conflicts and the three perfectionism variables were entered. The predictor variables were centred prior to calculating interaction terms (Aiken, West, & Reno 1991). Significant interactions were clarified by plotting the simple effects of life-sport conflicts at two different

levels (-1 SD, +1 SD) of the relevant perfectionism variable. To test the predictive ability of each variable, I examined Wald statistics, odds ratios (and associated 95% confidence intervals), and regression coefficients. A significant Wald test indicates that the independent variable reliably predicts the outcome. Odds ratios (OR) indicate the change in odds of being in a particular outcome category when the independent variable increases by one unit. OR greater than one reflects an increase in odds of an outcome of 1; that is, in the current study, being in the international group. Regression coefficients are natural logs of the odds ratios and provide information of the direction of the relationship between the predictor and criterion variable (in this case positive values reflect a greater likelihood of being in the international group). The analyses were conducted using SPSS version 23 software for Windows.

Results

Means and standard deviations are provided for the international and non-international groups in Table 24. VIF scores ranged between 1.19 and 4.28, indicating there was no evidence of multicollinearity in this study. The results of the hierarchical logistic regression are shown in Table 25. The full model was statistically significant, χ^2 (18) = 51.48, p = .001 and correctly classified 81.3% of athletes of the international group and 49.5% of athletes of the non-international group; overall the model correctly classified 68.9% of the athletes.

Table 24

Means and standard deviations international and non-international group

Variables	Response Range	International	Non-international
		Mean (SD)	Mean (SD)
Work/study-sport conflict	1-5	1.89 (.83)	1.86 (.83)
Free time-sport conflict	1-5	1.49 (.63)	1.42 (.61)
Family-sport conflict	1-5	1.43 (.60)	1.42 (.61)
Sport-work/study conflict	1-5	2.60 (1.01)	2.75 (.99)
Sport-free time conflict	1-5	2.93 (.91)	2.88 (.87)
Sport-family conflict	1-5	2.51 (.99)	2.69 (1.05)
Personal standards	1-5	3.55 (.71)	3.53 (.78)
Perceived parental pressure	1-5	1.66 (.69)	1.60 (.60)
Perceived coach pressure	1-5	2.55 (.83)	2.97 (.68)

Athletes with higher sport-free time conflict (OR = 2.16, $p < .05$) and higher perceived parental pressure (OR = 1.95, $p < .05$) were more likely to be in the international group. Athletes with lower perceived coach pressure (OR = 0.34, $p < .001$) were more likely to be in the international group. The interaction between family-sport conflict and personal standards (OR = 0.08, $p < .05$) shows that when athletes perceived low family sport conflicts and had higher personal standards they were more likely to be in the international group (see Figure 6).

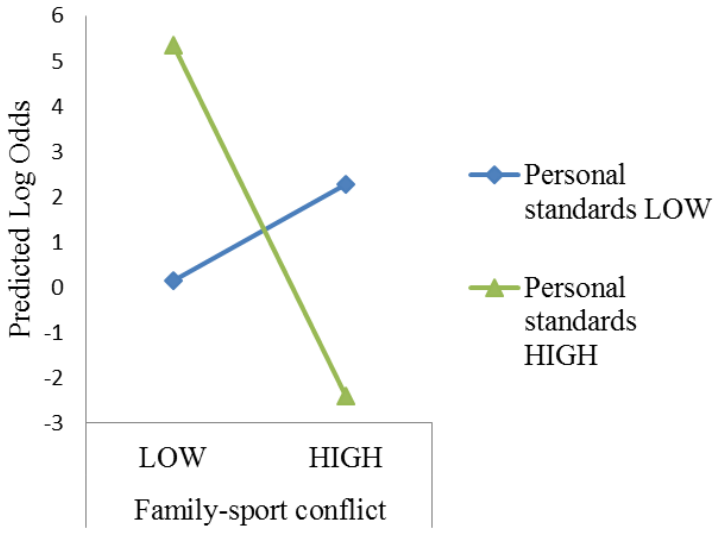


Figure 6. Plot for the interaction between family-sport conflict and personal standards at low (1 SD below mean) and high (1 SD above mean) values of personal standards predicting membership of the non-international group versus international group. A positive log odds indicates a greater probability of being an international athlete. A negative log odds indicates a greater chance of being a non-international athlete.

Table 25

Logistic Regression Analysis for predicting competition level (international vs. non-international)

Predictors	*B*	Wald Chi-square	Odds ratio	95% confidence intervals for Odds ratio	
				Lower	Upper
Sport-work/study conflict	-0.27	1.90	0.76	0.52	1.12
Sport-free time conflict	0.77	7.92*	2.16	1.26	3.68
Sport-family conflict	-0.28	1.49	0.76	0.48	1.18
Study/work-sport conflict	-0.05	0.04	0.95	0.59	1.52
Free time-sport conflict	1.32	3.23	3.75	0.89	15.84
Family-sport conflict	-1.41	3.76	0.25	0.06	1.02
Personal standards	0.13	0.31	1.14	0.71	1.83
Perceived parental pressure	0.67	4.92*	1.95	1.08	3.51
Perceived coach pressure	-1.08	17.57**	0.34	0.21	0.56
Work/study-sport conflict x personal standards	-0.25	1.04	0.78	0.48	1.26
Work/study-sport conflict x perceived parental pressure	-0.63	3.53	0.53	0.28	1.03
Work/study-sport conflict x perceived coach pressure	0.22	0.80	1.24	0.77	1.99
Free time-sport conflict x personal standards	1.69	3.03	5.42	0.81	36.20
Free time-sport conflict x perceived parental pressure	-0.61	0.01	0.94	0.30	2.94
Free time-sport conflict x perceived coach pressure	0.61	0.46	1.85	0.32	10.84
Family-sport conflict x personal standards	-2.48	5.48*	0.08	0.01	0.67
Family-sport conflict x perceived parental pressure	0.76	1.68	2.13	0.68	6.66
Family-sport conflict x perceived coach pressure	-0.35	0.14	0.71	0.12	4.32
Constant	1.34	1.76			

Note. *$p < .05$; **$p < .001$

Discussion

The aim of this chapter was to test if life-sport conflicts, sport-life conflicts, perfectionism, and the moderating associations among life-sport conflicts and perfectionism longitudinally predicted competition level (i.e., two years after the initial measuring phase). The present chapter combined and extended two areas of research revolving around life-sport and sport-life conflicts, and perfectionism as well as uniquely focused on the interactions between these factors. Although the effect sizes are modest, the findings offer new insight into how life-sport conflicts, sport-life conflicts, and perfectionism contribute to the maintenance of international athletic standards.

It was hypothesised that athletes reporting higher life-sport conflicts, higher sport-life conflicts, lower personal standards, and higher perceived parental and coach pressure would be more likely to be in the non-international group. Perceived coach pressure was the only variable to predict membership of the non-international group. This is not surprising given that many studies have shown that coaches have key roles in the careers of elite athletes (e.g., Storm, Henriksen, Larsen; & Christensen, 2014). Further, Chapter Three of this thesis shows that perceived coach pressure is related to controlled motivation, which has been identified as relevant for less optimal career development (e.g., Pelletier et al. 2001). Thus, one reason why high perceived coach pressure predicts being in non-international group could be because of the underlying motivational mechanisms. It has also been shown that perceived coach pressure is related to other maladaptive psychological constructs, such as competitive trait anger and fear of failure (Dunn, Gotwals, Dunn, & Syrotuik 2006). Another reason might be stress. Childs and Stoeber (2012) found in their longitudinal study with healthcare service employees and schoolteachers that prescribed perfectionism, such as perceived coach pressure, predicted role-stress. However, further research is needed to identify the mechanism by which perceived coach pressure predicts competition level and the aforementioned constructs represent initial candidates that future investigations could examine.

Unexpected findings of this chapter are that higher perceived parental pressure and sport-free time conflict increased the likelihood of athletes retaining involvement at the international competitive level. Although unexpected, on reflection the results are not a complete surprise based on our longitudinal data and the theorised dynamics of perfectionism and role of parents. For instance, Dunn et al. (2006) have suggested that the relevance of different aspects of perfectionism can vary during athletes' development. Accordingly, perceived coach pressure might become more relevant than perceived parental pressure to

adult athletes compared to junior athletes. Thus, it may be that athletes in the international group acknowledge the presence of parental pressure but interpret it differently (and more positively) than they once did. As a result, the typical maladaptive findings commonly reported in cross-sectional literature are not present in our longitudinal data. Indeed, research on talent development has shown that the role of parents changes over the stages of athletic development (Côté, 1999; Wylleman, De Knop, & Van Kerckhoven 2000). Wylleman et al. (2000) found that swimmers perceived that their parents played an emotional-supportive role during their childhood, underlining the need for discipline and motivation in order to enhance performance levels. During adolescence, parental influence was perceived to change from an active, participating-inducing role, to advocating the need for hard work to develop athletic abilities. During young adulthood, the swimmers perceived that their parents fulfilled a more autonomy supportive role, acknowledging their need for greater freedom and personal space. Although not measured in the present study, it is possible that the function of perceived parental pressure might have changed in the two-year follow-up period as outlined by Wylleman et al.. So while perceived parental pressure may be detrimental in the short term, it may not be in the long term.

The finding that higher sport-free time conflict predicted athletes' maintenance at the very highest level of sport could be because athletes in the international group had a higher training volume than the non-international athletes. Thus, because of sport they have less time, energy, and attention for free time, so the probability for conflict is greater. But as discussed in Chapter Three, the measure developed in this thesis only captures how true the conflict statements are to the individual and does not reflect the personal nature or the intensity of the conflict experienced. Consequently, international athletes may perceive conflict between domains, but do not experience the conflict as too intense or too disruptive. Consequently, future research should examine the intensity of the perceived conflicts and the impact they are perceived to have.

Further, the results of this chapter show that if athletes have high personal standards and experience low family-sport conflict they are more likely to be in the international group, whereas if athletes have both high personal standards and family-sport conflicts they are more likely to be members of the non-international group. Thus, high personal standards are only a problem if family-sport conflict is high. Consequently, this result indicates that personal standards do not mitigate the effects of family-sport conflicts. This finding is neither in line with the hypotheses nor the findings of Chapter Three. In Chapter Three personal standards

did not influence the relationship between family-sport conflict and self-determined motivation, whereas in this chapter personal standards influence the effect of family-sport conflict negatively. This could be because athletes experiencing distress through family-sport conflicts might be even more stressed when they realise that they do not have the time, energy, and attention to meet their personal standards in sport.

Both family and personal standards seem inherent and close, as they are both personal and private to the athlete. The differences between the two are that families cannot be chosen and to a large extent they shape and make who you are, whereas personal standards are chosen and represent who you want to be and not necessarily what others want you to be. If family expectations are not congruent with the personal standards, it might make individuals feel at loss what to do, and therefore experience stress (Dell'Osso et al., 2012). Stress and not having the social support from the family to turn to, could lead athletes to use avoidance and withdrawal coping behaviours. According to Kim and Duda (2003), if athletes use avoidance and withdrawal coping behaviours to manage stress, it may be viewed as effective at that moment, but if employed repeatedly over time, there is a potential for a suppression of the athletes' positive feelings towards their sport engagement. This could lead to athletes experiencing performance slumps, which over time could lead to non-selection for international competition.

From an applied point of view practitioners should be alert to potential family-sport conflict levels when working with athletes with high personal standards. Given that Chapter Three of this thesis has shown that personal standards can protect athletes from negative motivational consequences of work/study-sport conflict and free-time sport conflict, I suggest that practitioners should focus on reducing family-sport conflict. One possible way to reduce family-sport conflict would to apply a systemic approach. Systemic therapy seeks to address people not only on the individual level, but also as individuals in relationships, dealing with the interactions of groups and their interactional patterns and dynamics (Von Schlippe & Schweitzer, 2012). It assumes that individuals influence each other's beliefs, thoughts and behaviours in a mutual way and explicitly makes connections between people and their wider social contexts (Gorell Barnes, 1998). Therefore, even when working with an individual, a systemic therapist will be interested in and concerned with understanding that individual in the context of other significant systems, including familial, peer, cultural and social systems. Consistent with a systemic therapy approach, the methods of family therapy could also be employed. According to Retzlaff, Sydow, Beher, Haun, and Schweitzer (2013) family therapy

can be defined as a setting in which consultations are held conjointly with family members. The goal of including the family into the meetings would be for the family to develop a greater understanding of any conflict the athlete is experiencing, and explore possible solutions as to how the family can support the athlete when he/she is experiencing family-sport conflicts.

The results of the present study also suggest the full model classifies better the athletes who remain at international level than those who compete at non-international level. This suggests that the variables used in the full model could be used to monitor and screen international athletes. Monitoring and screening athletes facilitates the evaluation and adjustment of consultations to optimise the athletic career. In other words monitoring and screening may provide the sport psychologist with greater information on how to adapt their sessions with athletes with the intention of increasing the probability of athletes remaining at the international level. The variables used in the full model seem less reliable in classifying non-international athletes. This may be because unlike the international group, the competition levels of the non-international athletes in the study are fluid and less clearly defined: it includes national, regional and even local levels being combined together. This comes from the focus of this study on the variables that predict athletes remaining at international level. Because of the time and financial commitment that sport associations invest in elite athletes, they have shown more interest in predictors that increase the probability of athletes remaining at international level. The results of this study provide initial support for the variables used in this chapter to predict athletes that remain competing at international level. Future research could focus on other variables that better predict drop-out from international level.

One reason why study/work-sport conflict, free time-sport conflict, family-sport conflict, sport-work/study conflict, and sport-family conflict did not predict membership between the international and non-international groups could be because of the low variability and the very low means in the conflict scores of the sample. Consequently no distinction between the two groups was statistically present. A further reason might be that athletes perceiving conflicts between domains sought or received help from sport psychologists or significant others.

Limitations and future directions

This chapter's study has several limitations. First, the sampled sports are very heterogeneous. This makes it difficult to compare the competition levels between the sports. More specifically, it is very difficult to determine whether it is harder to compete at the international level (and maintain this standard) at say soccer compared to shooting. Not only are the sports fundamentally different, but also the athletes themselves have different roles as team players or as individuals. Although being able to generalise across sports is of benefit from a scientific perspective, sports organisations would likely be very appreciative of more targeted investigation. Future research should address this problem by using more homogenous samples.

A second potential shortcoming associated with the study is that it is unclear if there were any performance differences between the two groups of athletes at the time of the initial data collection. It might be that athletes who were classified by their sport directors as being international in 2014 were already better athletes in 2012 than those who were subsequently classified in 2014 as non-international. Although not without its own difficulties, future longitudinal research should capture performance levels at both earlier and later time points. By knowing the initial performance levels of the athletes it would be possible to statistically control the performance differences, in order to better isolate and understand the relationship between the predictor variables and competition levels.

Conclusion

This chapter is rather explorative and this might contribute to why the hypotheses are only partly supported. The findings highlight the influence of the coach on elite athletes' involvement at the international level over time. Further, the results suggest that the influence of life-sport conflicts and sport-life conflicts are not stable over time. The findings of this study combined with those of Chapter Three suggest that perceived parental pressure may be detrimental for athletes in the short term, but not in the long term. The results of this longitudinal study also suggest that personal standards are only a problem if family-sport conflict is experienced by the athlete. Finally, I acknowledge that the development of sporting careers is a complex and delicate process influenced by a variety of additional psychological, physical, social, and organizational factors (e.g., Baker, 2003; Gould, Dieffenbach, & Moffett, 2002; Reilly, Williams, Nevill, & Franks, 2000).

Chapter Six:

General Discussion

This chapter aims to summarise the research goal pursued in this thesis. The findings of the four empirical chapters are brought together, followed by discussions of theoretical and methodological advances made by the thesis, together with applied implications, strengths and limitations of the research. Finally, recommendations for future directions of research are presented.

Thesis overview

The thesis had four main aims. First, to extend life-sport conflicts research by developing a psychometrically sound measure. Second, to examine a self-determination-based model in which life-sport conflicts are conceptualised as social contexts that influence the motivation towards sport. Additionally, the influence of perfectionism as a moderator on the relationship between life-sport conflicts and self-determined motivation was tested in the model. Third, to take another perspective of life-sport conflicts research by developing a psychometrically sound measure that assesses sport-life conflicts, the opposite direction of conflicts. Finally, to explore if life-sport conflicts, sport-life conflicts and perfectionism predict competition levels in a prospective design.

In order to achieve these goals, Chapters Two and Four developed measures of life-sport conflicts and sport-life conflicts; Chapter Three examined the relationships between three life-sport conflicts (work/study-sport, free time-sport, family-sport conflicts) and three forms of motivation (autonomous motivation, controlled motivation, and amotivation) and the moderating influence of perfectionism (personal standards, perceived parental pressure, perceived coach pressure) on these relationships; Chapter Five investigated whether life-sport conflicts, sport-life conflicts, perfectionism, and the combination of life-sport conflicts and perfectionism predict the level of competition in a two year follow-up. All studies were performed with Swiss elite athletes who were members of the national teams of their sport.

The main findings of this thesis were: (1) evidence that life-sport conflicts and sport-life conflicts have negative impacts for elite athletes; (2) evidence for the suggestion in organisational literature that life domain conflicts are bi-directional; (3) only by examining all three conflicts (work/study-sport, free time-sport, family-sport) in both directions can life-sport and sport-life conflicts be adequately represented; (4) a new perspective and support for conceptualising life-sport conflicts as antecedents to self-determined motivation, and how important it is to take personality traits (in this case perfectionism) into account when athletes are experiencing conflicts between life domains and sport; (5) further evidence that personal

standards can be viewed as an adaptive form of perfectionism, and both perceived parental and coach pressure can be viewed as maladaptive perfectionism; and (6) sport-free time conflict, combinations of family-sport conflict and personal standards, and perceived parental and coach pressure prospectively predict competition levels (remaining at international level).

Theoretical advances made by the thesis

It was shown for the first time that conflicts between the life domains exist in elite sports. The thesis extends the sparse life-sport conflict research by developing measures of life-sport and sport-life conflicts and by including further domains (family and leisure activities). Until this point only one scale existed that assessed life domains (education and friendship) being in conflict with sport (Boiché & Sarrazin, 2007). Evidence was provided in the thesis to support the suggestion that domain conflicts are bi-directional but distinct in how they relate to other constructs (Greenhaus & Beutell, 1985; Netemeyer, Boles, & McMurrian, 1996). To understand fully the life-sport interface, both directions of life-sport and sport-life conflicts need to be considered.

The measures developed in this thesis are based on the *resource draining* linking mechanism (Edwards & Rothbard, 2000). According to this linking mechanism, resources (time, attention, and energy) are limited, so using resources to fulfil obligations in one domain hinders one's capacity to fulfil obligations in another domain (Small & Riley, 1990; Staines, 1980; Tenbrunsel, Brett, Maoz, Stroh, & Reilly, 1995). The domains (family, work/school, friends and leisure activities[5]) chosen for the measures have been suggested to be the most relevant domains of athletes' lives, together with sport (Barkely & Fischer, 2010). Thus, combining the two directions, the four domains, and the three resources result in six life-sport and sport-life conflicts, namely work/study-sport, free time-sport, family-sport, sport-work/study, sport-free time, and sport-family conflicts. The differing association patterns of the six conflicts with other variables found in Chapter Two, Three, and Four support treating each conflict dimension independently.

The existing research that has investigated the associations between life domains conflicts and self-determined motivation have conceptualised conflict as a consequence of less self-determined motivation (e.g., Boiché & Sarrazin, 2007; Ratelle, Vallerand, Senécal, &Provencher, 2005; Senécal, Julien, & Guay, 2003; Senécal, Vallerand & Guay, 2001). They

[5] High inter-factor correlations suggested to merge the two domains friends and leisure activities into free time (see Chapter Two)

proposed that if an individual were less self-determined in their motivation for domains (e.g., doing schoolwork and sport not by choice but under inner or external pressure) he/she would perceive stronger conflict between the domains, because they are not harmoniously integrated in their self-structure. In contrast to their view, this thesis views life domain conflicts as social factors that are typically encountered in one's social environment (Vallerand, 2007). Thus, life domain conflicts are antecedents to less self-determined motivation for sport. The research presented in Chapter Three provides initial evidence for this new perspective and supports the proposition that social contexts can foster or hinder the internalisation of behavioural regulations (e.g., Deci & Ryan, 1985; 2000).

Social cognitions theory (Mischel, 1973) suggests that personality characteristics influence the way in which individuals interpret and respond to situations/contexts. The findings presented in Chapter Three provided evidence for this suggestion concerning elite athletes. They showed that personal standards attenuated while perceived parental and coach pressure amplified the negative motivational impact of life-sport conflicts. Further, these findings support the suggestion that perfectionism can be adaptive and maladaptive (e.g., Mouratidis & Michou, 2011; Stoeber, 2011).

Further, the new perspective of life domain conflicts in the context of self-determination theory has theoretical and empirical justification. The results of all studies showed that life-sport conflicts are positively related to constructs (e.g., controlled motivation, athlete burnout, less life satisfaction, less satisfaction with social support) that have negative effects on athletes. These findings are in line with organisational literature that has investigated work-family conflict for more than three decades (Carlson & Kacmar, 2000). The studies in this thesis provide a foundation for future research on life-sport conflicts.

Methodological advances made by the thesis

The development and initial validation of robust measures designed to assess both directions of life-sport conflicts are one of the main methodological advances of the present thesis. All empirical chapters provide evidence to suggest that measures of life-sport conflicts (with three dimensions) and of sport-life conflicts (with three dimensions) are useful instruments to assess life domain conflicts of elite athletes. Life domain conflicts of elite athletes are an under-researched area within sport psychology literature. This thesis, by providing an accurate and robust measure of the six dimensions of life-sport and sport-life conflicts, could promote further research of this topic.

A further methodological advance of this thesis is the use of Bayesian structural equation modelling (BSEM). BSEM is on the rise in mainstream psychology and as well in sport and exercise psychology (Stenling, Ivarsson, Johnson, & Lindwall, 2015). According to Muthén and Asparouhov (2012) the use of BSEM provides researchers with a number of theoretical and practical advantages compared to the more widely used confirmatory factor analysis (CFA) with a maximum-likelihood (ML) estimation procedure. One advantage of the BSEM approach compared to ML-CFA approach is that knowledge from substantive theory and previous studies can be incorporated to reflect prior beliefs in the likely parameter values and uncertainty. This is done by allowing simultaneous estimation of all cross-loadings and residual correlation in a statistically identified model. Specifically, the exact zeros for cross-loadings and residual correlations of the ML-CFA approach are replaced by using approximate zero informative priors. In Phase 1 of Chapters Two and Four, I utilised Bayesian estimates to integrate prior knowledge (i.e., life domains are related to each other, and the items share similarity of wording) into the model specification. In Phase 2 of these Chapters I again used Bayesian estimates to integrate the findings of Phase 1 into the model specification.

A further advantage of BSEM approach is that it does not rely on large sample normal theory as in the ML-CFA approach. This means that BSEM can handle skewed distributions of parameter estimates and shows a better small-sample performance. Skewedness and small sample sizes are inevitable in an elite athlete sample, such as used in this thesis. Given that coaches, athletes, sport directors and sport scientists agree that psychological factors are essential for optimal performance of elite athletes (Gulbin, Croser, Morley, & Weissensteiner, 2013), unavoidably evaluation of the latent structure of sport psychological measures is based on relatively small samples. Knowing that the highly restrictive traditional ML-CFA[6] approach has issues with small samples and skewedness, future psychometric research using elite athlete samples should consider applying the BSEM approach to deal effectively with such issues.

The first data collection of the present thesis was done using a paper-pencil questionnaire in a classroom setting and the second was done via online survey. The findings suggest that the factor structures of life- sport conflicts and sport-life conflicts and the

[6] In the ML-CFA approach covariances between indicators are held to be entirely accounted for by their latent variables. In reality, indicators will often covary because of shared method factors, and this unnecessarily strict constraint of residual correlations fixed to zero can bias the factor loadings and change the meaning of the latent variables (Cole, Ciesla, & Steiger, 2007; Kolenikov, 2011).

composite reliabilities of the scales across the two data collection methods were very similar. These findings are in line with the general pattern of results of other sport psychology and psychology research that has used both methods (e.g., Lonsdale, Hodge, & Rose, 2006; Ferrando & Lorenzo-Seva, 2005). Online surveys have several advantages over paper pencil questionnaires through less missing data, the absence of transcription errors, the relatively low cost and time investment, and athletes' invariably disliking paperwork (Beckmann & Kellmann, 2003).

Finally, the unique data collected from elite athletes and especially the two-year longitudinal data of Chapter Five are methodological advances. According to Swann, Moran, and Piggott (2015) many studies use the term elite or expert athletes for their samples, but there is inconsistency in the definitions of this term. In their systematic review they identified a wide range of definitions, from Olympic gold medallist and world-record holders, to regional and university level athletes. They presented an equation that should help define and classify the "eliteness" of the sample. Swann et al. (2015) suggest that the following variables should be included in defining "eliteness" within a sport: (a) the athletes' highest standard of performance, (b) their success at that level, and (c) the amount of experience that they have gained at that level. They added further that the following should be considered when comparing "eliteness" across sports: (d) the competitiveness of the sport within the specific country, (e) and competitiveness of the sport globally. Swann et al. (2015) suggest four classifications: semi-elite (e.g., competing at second-tier standard or below, etc.), competitive-elite (e.g., top divisions/leagues, or competing in the Olympic Games etc.), successful elite (e.g., competing at the highest standard and infrequently winning an event or a medal), and world-class elite (e.g., winning gold medals in consecutive Olympics, or major competitive victories over a number of seasons). Overall, the athletes and the ranking of their sports sampled in the studies of this thesis would be classified as competitive-elite. But as Swann et al. noted as a limitation, their classification is difficult to apply to a multi-sport sample, such as used in this thesis. The classification framework postulated by Swann et al. (2015) can be viewed as a first attempt to define elite athletes. Research on elite athletes needs a classification system such as they propose and it should be validated.

The 2-year longitudinal data used in Chapter Five is unique in the literature of elite athletes in sport psychology. Although there are few prospective studies on talent development with a similar time range (e.g., Morgan & Giacobbi, 2006; van Rossum & van der Loo, 1997) to my knowledge no study exists that has such longitudinal data using an

already elite sample. Designs of future research on elite athletes should include longitudinal data. The findings of these studies can help to guide practitioners developing appropriate interventions. A further advantage of longitudinal data is that it enhances confidence in proposed causal relationships among constructs (Roorda, Mohammadian, & Miller, 2000).

Applied implications

The findings of this thesis provide a number of applied implications and recommendations. First, the support networks for elite athletes should be aware of life domain conflicts, especially if athletes perceive high perceived parental and coach pressure. In organisational psychology research, social support has been identified as a critical resource in protecting mental health, and has been argued to act as a buffer to psychological stress (Bakker & Demerouti, 2007; Cohen & Wills, 1985; Karasek & Theorell, 1992). Cohen and Wills (1985) suggested that social support may function as a coping mechanism against stressful events by preventing the initial stress appraisal, in the light of the available support. They also suggested that social support may help in preventing the stress response by functioning as a resource that provides alternate means to address the stressor. In the case of elite sport it can be assumed that life-sport conflicts are experienced in phases where training is intensified (e.g., preparing for a major competition). Especially in such phases it is recommended that athletes experience the support of their network. The findings in Chapters Two and Four support this suggestion. Both life-sport and sport-life conflicts were negatively related to social support. Thus future research should investigate the buffering role of social support on the relationships between life-sport conflicts/sport-life conflicts and perceived stress.

Further suggestions for interventions have already been discussed in the preceding chapters. To reduce repetition I will only flag them in this chapter. The following interventions and recommendations for life-sport conflicts and sport-life conflicts were proposed: (1) clarify the life values of athletes which should motivate behavioural change or provide direction for change (Twohig & Crosby, 2008); (2) promote the coping strategy of planning behaviours, a core element of effective time management (Claessens, van Eerde, Rutte, & Roe, 2007; Cosh & Tully, 2014)); and (3) develop a systemic therapy approach (e.g., family therapy) specifically for family-sport conflict.

Although stress was not directly measured in any of the empirical chapters of this thesis it appears to be a consequence of life-sport conflicts and sport-life conflicts. In sport

literature it has been suggested that stress in athletes can be clearly differentiated between two major categories, namely competitive and organisational stress (Hanton, Fletcher, Coughlan, 2005). These authors defined competitive stress as an on-going interaction between the athlete and the environmental demands associated primarily and directly with competitive performance. In other words stress (competitive anxiety response) occurs when an athlete perceives an imbalance between the demands of the competitive environment and the available resources. Thus, only issues related to sport performance are regarded as competitive stressors.

Woodman and Hardy (2001) see organisational stress as an interaction between the athlete and the sport organisation (e.g., coaches, managers, sport directors, etc.) within which the athlete is operating. Woodman and Hardy defined organisational stress as "the stress that is associated primarily and directly with the individual's appraisal of the structure and function of the organization within which she/he is operating" (p.208). Issues that are not normally directly related to sport organisation (e.g., parents, friends, education) should not be regarded as organisational stress (Hanton et al., 2005). According to these definitions, life-sport conflicts (work/study-sport, free time-sport, family-sport) and sport-life conflicts (sport-work/study, sport-free time, sport-family) cannot be viewed as competitive or organizational stressors. They do not fit the two major categories.

According to Hanton et al. (2005) life domain conflicts may be associated with personal stress. Personal stress is associated primarily and directly with the individual's appraisal of the demands and pressures of his/her personal life (James, 2011). Accordingly, life-sport conflicts and sport-life conflicts can be regarded as triggers for personal stress. To my knowledge sport psychology research has neglected personal stress. That is why possible interventions/training programs to cope with personal stress appear not to have been developed for elite athletes.

From an applied view a possible intervention/training programme for coping with personal stress may be a mindfulness-based intervention. The core of mindfulness includes awareness and acceptance of whatever is happening in the "here and now". One of these interventions is mindfulness-based stress reduction (MBSR), developed by Kabat-Zinn (1982). The MBSR intervention is proposed to teach individuals to become more conscious of, and relate differently to thoughts, feelings, and body sensations. MBSR supports individuals in fostering a non-judging yet discriminating observation of all the stimuli that

enter their consciousness moment by moment. Mindfulness practice enables greater consciousness of the "here and now," as the practitioner (i.e., athlete) learns to let go of ruminations about the past and fears regarding the future. Thus, the practitioner learns to recognise habitual reactions to stress and foster healthier, more adaptive ways of responding. Research has shown that MBSR can effectively reduce stress (e.g., Shapiro, Astin, Bishop, & Cordova, 2005). To the best of my knowledge there has been no research on MSBR using an elite athlete sample. Further research is needed to test if personal stress of elite athletes is reduced by a mindfulness-based intervention. However, Birrer, Röthlin, and Morgan (2012) have suggested that the use of mindfulness-based interventions in sports seems to be a promising approach.

The final applied implication concerns the monitoring of life-sport conflicts and sport-life conflicts during intensive phases in the sport season/year. According to Kenttä, Hassmén, and Raglin (2006) monitoring instruments are important to assess the athlete's mood, his/her need for recovery, and current life circumstances. In elite sport, monitoring athletes has become important to guide training and to detect any progression towards negative health outcomes and associated poor performance (Kenttä et al., 2006). Monitoring life-sport conflicts and sport-life conflicts (life circumstances) would enable the sport psychologist or sport scientists to intervene before the conflicts negatively affect the psychological well-being of the athlete.

Strengths and limitations of the thesis

The main strengths related to the empirical research have been discussed in each empirical chapter. To reiterate, strengths have included aspects such as a robust approach to measurement development, a bi-directional instrument to measure life-sport conflicts, a new perspective and support for conceptualising life-sport conflicts as antecedents to self-determined motivation, and longitudinal study using an elite athlete sample. Limitations have included aspects such as generalizability of the measures, measures only include four major life domains of athletes, discriminant validity was not fully examined, and the sampled sports were very heterogeneous. So, the discussion here relates for the most part to strengths and limitations of the research programme as a whole.

One of the major strengths of this thesis is the novel area of research that was investigated. To date life domain conflicts of elite athletes have not been investigated in the form of work-life balance. The robust measures developed in this thesis enable researchers as

well as practitioners to assess or monitor the life domain balance of elite athletes. The empirical chapters have provided preliminary evidence for the importance of life domain balance in elite sport.

Moreover, a further strength is the diverse methods and analyses utilised in this thesis, which provide evidence of an extensive research training programme. These include both cross-sectional paper and online questionnaire-based surveys, prospective design, Bayesian structural equation modelling, hybrid structural equation model, and hierarchical logistic regression analysis.

A potential notable limitation of the thesis is the homogeneity of the participants used, despite the fact that they came from different sports. Both samples were obtained from a Swiss elite athlete population. The mean ages of the samples were 21 and 23 respectively. This should be taken into consideration when applying the findings to other levels of sport, different nationalities, or samples. Furthermore, the multi-sport samples could also be considered as a limitation. Thus, in this research there are athletes of major sports (e.g., soccer, ice hockey, skiing) who have faced much greater competition to reach the national teams than others, and are therefore likely to display an extremely high standard of performance. This compares with athletes from sports in which Switzerland is considered as a small sporting nation (e.g., golf), so that athletes are not likely to have developed comparable performance standards in order to reach the international level. However, with this in mind the majority of the sports selected for this thesis are from sports that are very popular in Switzerland.

A further limitation of this thesis is the lack of an experimental study, in which an intervention (some possible interventions have been discussed in the empirical chapters) was tested for reducing life-sport conflicts. This is an obvious direction for future study. Overall one can say that in sport psychology literature there are hardly any randomised controlled trials investigating the effectiveness of intervention programmes using elite athletes as participants (Röthlin, Birrer, Horvath, & grosse Holtforth, 2016). I believe that this gap should be bridged in the near future.

Future research directions

A number of specific future research directions have been highlighted in the empirical chapters. From a more general perspective with regards to life-sport conflicts, the results of

the empirical chapters have shown that it would be fruitful to include an assessment of the intensity of conflict experienced by the athletes. In Chapter Three for example it seems that family-sport conflict was more resistant to influence by potential moderating factors than work/study-sport conflict and free time-sport conflict. This may be because family-sport conflict is experienced more intensively than work/study-conflict and free time-sport conflict. Thus, a research question would be, do athletes perceive family-sport conflict more intensively than work/study-sport conflict and free time-sport conflict?

A further direction of research may be a person-oriented approach in analyses of life-sport conflicts data compared to the variable-oriented approach used in this thesis. The benefits of the person-oriented approach is that one can examine complex interaction patterns between more than two variables (e.g., the six life-sport conflicts) within the individual (Bergman & Andersson, 2010). The person-oriented approach could identify different clusters or profiles of individuals based on their conflict profiles. The utilisation of a person-oriented approach may provide a complementary and exclusive insight in the underlying patterns of life-sport conflicts. According to Lindwall et al. (2015) two forms of person-oriented analysis have been used in different fields of research: cluster analysis and latent profile analysis. Marsh, Lüdtke, Trautwein, and Morin (2009) identified a number of weaknesses with cluster analysis compared to the latent profile analysis when utilising the person-oriented approach. For instance, although both latent profile analysis and cluster analysis are exploratory in their nature, latent profile analysis is a model-based technique that enables more flexibility in terms of model specification. Pastor, Barron, Miller, and Davis (2007) suggest that cluster analysis can be regarded as a very restricted form of latent profile analysis. Additionally, latent profile analysis provides several fit indices, offering researchers an important tool when comparing profile models (Marsh et al., 2009). The use of these fit indices helps researchers make less arbitrary and potentially biased choices in terms of determining the number of profiles (Lindwall et al., 2015).

To my knowledge no study exists in organisation psychology that has investigated work-life conflict profiles. However, in organisational psychology the person-oriented approach has been used to explore work-family fit and work-family profiles (e.g., Moen, Kelly, & Huang, 2008; Robinson, Magee, & Caputi, 2016). Work-family fit can be regarded as an antecedent to work-life balance (Casper, De Hauw, & Wayne, 2013). Work-family fit emerged because an intermediary concept was needed to explain how domain demands and resources can be linked to work-family balance, or how experiencing conflict and enrichment

can have an impact on life-work balance (Clarke, Koch, & Hill, 2004; Voydanoff, 2005). According to Moen et al. (2008) work-family fit is a dynamic interplay between demands and resources, which changes over time and across contexts. Thus Moen et al. (2008) utilised a person-oriented approach to investigate the pattern of work-family fit that has implications for well-being.

Robinson et al. (2016) used latent profile analysis on work-family conflict and work-family enrichment to identify work-family profiles of working mothers. Further, they performed regression analyses to examine whether profiles were related to burnout. They identified five work-family profiles: harmful, negative active, active, beneficial, and fulfilled. All five profiles had differing associations with burnout. The regression analyses revealed that the harmful profile had significantly higher burnout level than the other profiles (Robinson et al., 2016). Such findings in organisational psychology research support the proposition of adopting a person-oriented approach using latent profile analysis for life-sport conflicts and sport-life conflicts data. It would be helpful to assess whether different life-sport conflict profiles may have different implications for motivation, burnout, life satisfaction, and performance among elite athletes.

The life-sport conflict measure developed in this thesis is robust. As noted above, it is based on the *resource drain* linking mechanism (Edwards & Rothbard, 2000), whereby conflicts develop between two domains as a result of insufficient resources being available to fulfil demands in both roles. However, there are other possibilities for assessing life-sport conflicts. Consistent with the *work-family conflict* linking mechanism, Carlson, Kacmar, and Williams (2000) developed an instrument to assess conflicts between the two domains of work and family. Greenhaus and Beutell (1985) identified three forms of work-family conflicts: behaviour-based conflict, strain-based conflict, and time-based conflict. Behaviour-based conflict occurs when specific behaviours required in one role are incompatible with behavioural expectations in another role, strain-based conflict suggests that strain experienced in one role intrudes into and interferes with participation in another role, and time-based conflict may occur when time devoted to one role makes it difficult to participate in another role. It might be worthwhile developing a life-sport conflict measure based on the *work-family conflict* linking mechanism to gain an alternative view of life-domain conflicts.

Conclusion

This thesis applied the substantial knowledge from organizational research of work-life conflict to a new context: elite sport. The findings of the thesis support the conceptualisation and structure of the measures for life-sport conflicts and life-sport conflicts in elite sport. Further these findings support the applicability of the life domain conflict framework derived from organisational psychology to the elite sport context, providing exciting new directions for research. Clearly further research is needed for a greater understanding how life-sport conflicts are detrimental to elite athletes and how to manage the balance between the domains to benefit the athlete. Nevertheless, the research reported in this thesis provides a solid foundation and should act as a catalyst for future investigations of this vitally important aspect of athletes' lives. Furthermore, the prominence of BSEM and the elite nature of the samples in the thesis represent a "call to arms" for the wider sports psychology research community to address the proverbial "elephant in the room"; the lack of quantitative findings gleaned from elite athletes within the discipline of sports psychology!

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List of Appendices

APPENDIX A – Example of participant information sheet.

INFORMATION SHEET FOR POTENTIAL PARTICIPANTS IN A RESEARCH PROJECT OR EXPERIMENT

Do life conflicts moderate the relationship between perfectionism and self-determined motivation?

Information Sheet:

You are being invited to take part in a research study. Before you agree to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Ask us if there is anything that is not clear or if you would like more information about. Take your time to decide whether you wish to take part, or not.

The aim of this study is to explore the sport-life conflicts experienced by athlete. You will be asked to complete a number of questionnaires which will take around 30 minutes.

It is up to you to decide whether or not to take part. If you do decide to take part you will be asked to sign a consent form. If you decide to take part, you are free to withdraw at any time and without giving a reason. This will not affect your sporting career in any way.

All information which is collected about you during the course of the research will be kept strictly confidential. As we will not be recording your name, it will not be possible to identify you in any report or publication of the study.

This study has been reviewed by the Sports Science (SSHES) department's ethics committee at Bangor University, Wales and FOSP ethics committee in Magglingen, Switzerland.

SSHES and FOSP are always keen to hear the views of research participants about their experience. If you would like to feedback, please ask your researcher to provide you with a Participant Feedback Form. Completion of this form is optional. The completed form should be returned to Prof Andrew Lemmey, Chair, SSHES Ethics Committee, SSHES, Bangor University, Bangor LL57 2PZ, or to Dr André Gogoll, FOSP Ethics Committee, FOSP, 2532 Magglingen, Switzerland. All information will be treated in a strictly confidential manner.

Please ask us if you have any questions. You should not sign the form consenting to take part in the study if you still have unanswered questions or any doubts.

Many thanks

Gareth Morgan
gareth.morgan@baspo.admin.ch

APPENDIX B – Example of informed consent from.

Do life conflicts moderate the relationship between perfectionism and self-determined motivation?

Informed consent

Name and e-mail address(es) of all researcher(s):

Gareth Morgan: gareth.morgan@baspo.admin.ch
Georgette Pleisch: f00351@baspo.admin.ch
Daniel Birrer: Daniel.birrer@baspo.admin.ch
James Hardy: j.t.hardy@bangor.ac.uk
David Markland: d.a.markland@bangor.ac.uk

Please tick boxes

1. I confirm that the primary investigator has provided me with information regarding the requirement of this study prior to handing out questionnaires. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason. If I do decide to withdraw I understand that it will have no influence on my future sporting career.	
3. I understand that I may register any complaint I might have about this experiment with the Head of the School of Sport, Health and Exercise Sciences, or the FOSP and that I will be offered the opportunity of providing feedback on the experiment using the standard report forms.	
4. I agree to take part in the above study.	

Name of Participant …….

Signature …… Date ……..

APPENDIX C – Example of letter to performance directors.

Dear Mr/Ms_____,

I am writing to you with regard to research as part of my PhD, conducted together with the Swiss Federal Office of Sport (FOSP) and the School of Sport, Health and Exercise Sciences at Bangor University, UK.

The aim of the study is to assess the impact of the potential for conflicts between pursuing sport goals and living everyday life on the sports person's perfectionism and self-motivation. Both perfectionism and self-motivation are widely seen as key factors in success in elite sport. However, sport is not isolated from the rest of an athlete's life. Other activities or interests can be a source of conflict in the athlete's priorities and could negatively influence the athlete's involvement in sport (e.g., leading to dropout). To conduct this study we need participants to fill in six questionnaires (total maximum duration 30 min). We would be grateful if we could carry it out with the co-operation of your athletes, who are 18-23 years old and Swiss Olympic Card holders or are elite athletes within their sport.

Surprisingly, to date there is no research on this issue. The outcome of this study could be very useful for managers, coaches and sport psychologists and not least associations that invest a lot of money in young athletes. The outcome should also help us understand motivational problems which lead either to performance stagnation or to dropout of talented athletes from their sport. A goal of our study is to find ways to help athletes address their motivational conflicts. As a result, we would be better informed on how to intervene effectively.

To collect data for the study we need your help, because we want to carry it out with elite athletes. It is not our intention to interfere with any work done by staff or sport psychologists at your club. I also want to stress that the highest levels of confidentiality will be maintained for the storage and use of the data: no personal data is at risk. A number of clubs have already participated and we are looking for more to have broad input.

Our research is high quality from two renowned institutions in sports psychology and not an undergraduate or master's level thesis. We realise you have other requests for research, but stress that our research results will be shared with you and would have minimal impact on participants' time. Further, either the PhD student or our research assistant will visit your training centre to explain and help fill out the questionnaire painlessly.

We would be very grateful for your participation. Please do not hesitate to contact us if you have any question or for clarification and follow-up.

Yours faithfully
Gareth Morgan

APPENDIX D – Life-sport conflicts measure.

Life-sport conflicts measure

INSTRUCTIONS: Below are statements with which you may agree or disagree. Using the 1 – 5 scale below, indicate your agreement with each statement by circling the appropriate number. The word "sport" refers to all activities (practice, competition, match, team events, sponsor events, media skills, etc.) that you do as part of being an athlete. There are no right or wrong answers so please don't spend too much time on any one statement; simply choose the answer that best describes how you view each statement. If you are a student cross out "work", and if you are an employee cross out "study".

The following statements are designed to assess your feelings about how your **life outside of sport interacts with your sport**.

To what extent do you agree or disagree with the following statements?	1 = strongly disagree 5 = strongly agree				
Often my involvement with my…					
1. …study/work prevents me from giving my sport enough attention.	1	2	3	4	5
2. …leisure activities means that I have insufficient time for my sport.	1	2	3	4	5
3. …friends means that I am too tired to do my sport effectively.	1	2	3	4	5
4. …family means that I do not have enough time for my sport.	1	2	3	4	5
5. …study/work means that I lack the energy to do my sport effectively.	1	2	3	4	5
6. …friends prevents me from giving my sport enough attention.	1	2	3	4	5
7. …leisure activities means that I lack the energy to do my sport effectively.	1	2	3	4	5
8. …family prevents me from giving my sport enough attention.	1	2	3	4	5
9. …friends means that I have insufficient time for my sport.	1	2	3	4	5

10. …leisure activities prevents me from giving my sport enough attention.	1	2	3	4	5
11. …study/work means that I have insufficient time for my sport.	1	2	3	4	5
12. …family means that I am too tired to do my sport effectively.	1	2	3	4	5

APPENDIX E – Sport-life conflicts measure.

Sport-life conflicts measure

INSTRUCTIONS: Below are statements with which you may agree or disagree. Using the 1 – 5 scale below, indicate your agreement with each statement by circling the appropriate number. The word “sport” refers to all activities (practice, competition, match, team events, sponsor events, media skills, etc.) that you do as part of being an athlete. There are no right or wrong answers so please don’t spend too much time on any one statement; simply choose the answer that best describes how you view each statement. If you are a student cross out “work”, and if you are an employee cross out “study”.

The following statements are designed to assess your feelings about how your **sport interacts with your life outside sport**.

To what extent do you agree or disagree with the following statements?	1 = strongly disagree 5 = strongly agree				
Often my involvement in sport…					
1. …prevents me from giving my study/work enough attention.	1	2	3	4	5
2. …means that I have insufficient time for leisure activities.	1	2	3	4	5
3. …means that I am too tired to enjoy meeting my friends.	1	2	3	4	5
4. ...means that I do not spend enough time with my family.	1	2	3	4	5
5. …means I lack the energy to study/work effectively.	1	2	3	4	5
6. …prevents me from giving my friends enough attention.	1	2	3	4	5
7. …means that I lack the energy to enjoy leisure activities.	1	2	3	4	5
8. …prevents me from giving my family enough attention.	1	2	3	4	5
9. …means that I have insufficient time for my friends.	1	2	3	4	5
10. …prevents me from giving my leisure activities enough attention.	1	2	3	4	5

11. …means that I have insufficient time to study/work effectively.	1	2	3	4	5
12. …means that I am too tired to enjoy family activities.	1	2	3	4	5

APPENDIX F – Sport Multidimensional Perfectionism Scale-2.

Competitive Orientations Scale (Sport-MPS-2)

INSTRUCTIONS The purpose of this questionnaire is to identify how players view certain aspects of their competitive experiences in sport. Please help us to more fully understand how players view a variety of their competitive experiences by indicating the extent to which you **agree or disagree** with the following statements. (Circle one response option to the right of each statement). Some of the questions relate to your sport experiences in general, while others relate specifically to experiences on the team that you have most recently played with. **There are no right or wrong answers** so please don't spend too much time on any one statement; simply choose the answer that best describes how you view each statement.

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1.	If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player.	1	2	3	4	5
2.	My parents set very high standards for me in my sport.	1	2	3	4	5
3.	I feel like my coach criticizes me for doing things less than perfectly in competition.	1	2	3	4	5
4.	In competition, I never feel like I can quite meet my parents' expectations.	1	2	3	4	5
5.	I hate being less than the best at things in my sport.	1	2	3	4	5
6.	Only outstanding performance during competition is good enough in my family.	1	2	3	4	5
7.	Only outstanding performance in competition is good enough for my coach.	1	2	3	4	5
8.	My parents have always had higher expectations for my future in sport than I have.	1	2	3	4	5

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
9.	It is important to me that I be thoroughly competent in everything I do in my sport.	1	2	3	4	5
10.	I feel like I am criticized by my parents for doing things less than perfectly in competition.	1	2	3	4	5
11.	I think I expect higher performance and greater results in my daily sport-training than most players.	1	2	3	4	5
12.	I feel like I can never quite live up to my coach's standards.	1	2	3	4	5
13.	I feel that other players generally accept lower standards for themselves in sport than I do.	1	2	3	4	5
14.	In competition, I never feel like I can quite live up to my parents' standards.	1	2	3	4	5
15.	My coach sets very high standards for me in competition.	1	2	3	4	5
16.	My parents expect excellence from me in my sport.	1	2	3	4	5
17.	My coach expects excellence from me at all times: both in training and competition.	1	2	3	4	5
18.	I have extremely high goals for myself in my sport.	1	2	3	4	5
19.	I feel like my coach never tries to fully understand the mistakes I sometimes make.	1	2	3	4	5
20.	I set higher achievement goals than most athletes who play my sport.	1	2	3	4	5

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
21.	I feel like my parents never try to fully understand the mistakes I make in competition.	1	2	3	4	5
22.	My parents want me to be better than all other players who play my sport.	1	2	3	4	5

Sport-MPS-2 Scoring Instructions (42 Items)

Sum the scores for the following items to obtain composite subscale scores:

Personal Standards (7 items): 1, 5, 9, 11, 13, 18, 20 (Possible score range: 7 – 35)

Perceived Parental Pressure (9 items): 2, 4, 6, 8, 10, 14, 16, 21, 22 (Possible score range: 9 – 45)

Perceived Coach Pressure (6 items): 3, 7, 12, 15, 17, 19 (Possible score range: 6 – 30)

APPENDIX G – Behavioural Regulation in Sport Questionnaire.

Why Do You Participate in Your Sport?

Below are some reasons why people participate in sport. Using the scale provided, please indicate how true each of the following statements is for you. When deciding if this is one of the reasons why you participate, please think about all the reasons why you participate. There are no right or wrong answers, so do not spend too much time on any one question and please answer as honestly as you can. Some items may appear similar but please respond to all the statements by filling the appropriate circle completely (e.g., ●).

I participate in my sport…	**Subscale**
1. because I enjoy it.	IM
2. because it's a part of who I am.	IG
3. because its an opportunity to just be who I am.	IG
4. because I would feel ashamed if I quit.	IJ
5. but the reasons why are not clear to me anymore.	AM
6. because I would feel like a failure if I quit.	IJ
7. but I wonder what's the point.	AM
8. because what I do in sport is an expression of who I am.	IG
9. because the benefits of sport are important to me.	ID
10. because if I don't other people will not be pleased with me.	EX
11. because I like it.	IM
12. because I feel obligated to continue.	IJ
13. but I question why I continue.	AM
14. because I feel pressure from other people to play.	EX
15. because people push me to play.	EX
16. because it's fun.	IM
17. because it teaches me self-discipline.	ID
18. because I would feel guilty if I quit.	IJ
19. because I find it pleasurable.	IM
20. because I value the benefits of my sport.	ID
21. but I question why I am putting myself through this.	AM
22. because it is a good way to learn things which could be useful to me in my life.	ID
23. in order to satisfy people who want me to play.	EX
24. because it allows me to live in a way that is true to my values.	IG

7-point Likert scales should be used. 1=Not at all true, 4=Somewhat true, 7=Very True

APPENDIX H – Athlete Burnout Questionnaire.

Athlete Burnout Questionnaire

Directions:
Please read each statement carefully and decide if you ever feel this way about your current sport participation. Your current sport participation includes all the training you have completed during this season. Please indicate how often you have had this feeling by circling a number 1 to 5, where 1 means, "I almost never feel this way" and 5 means, "I feel that way most of the time." There are no rights or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

How often do you feel this way?	1 = almost never 5 = almost always				
1. I'm accomplishing many worthwhile things in sport.	1	2	3	4	5
2. I feel so tired from my training that I have trouble finding energy to do other things.	1	2	3	4	5
3. The effort I spend in sport would be better spent doing other things.	1	2	3	4	5
4. I feel overly tired from my sport participation.	1	2	3	4	5
5. I am not achieving much in sport.	1	2	3	4	5
6. I don't care as much about my sport performance as I used to.	1	2	3	4	5
7. I am not performing up to my ability in sport.	1	2	3	4	5
8. I feel "wiped out" from sport.	1	2	3	4	5
9. I'm not into sport like I used to be	1	2	3	4	5
10. I feel physically worn out from sport.	1	2	3	4	5

11. I feel less concerned about being successful in sport than I used to.	1	2	3	4	5
12. I am exhausted by the mental and physical demands of sport.	1	2	3	4	5
13. It seems that no matter what I do, I don't perform as well as I should.	1	2	3	4	5
14. I feel successful at sport.	1	2	3	4	5
15. I have negative feelings toward sport.	1	2	3	4	5

APPENDIX I – Satisfaction with Life Scale.

Satisfaction with Life Scale (SWLS)

Please read each statement carefully and indicate to what extent you agree to the following five statements. Using the 1 – 7 scale below, indicate your agreement with each statement by circling the appropriate number. There are no rights or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

	1 = strongly disagree 7= strongly agree						
1. In most ways my life is close to my ideal	1	2	3	4	5	6	7
2. The conditions of my life are excellent.	1	2	3	4	5	6	7
3. I am satisfied with my life.	1	2	3	4	5	6	7
4. So far I have gotten the important things I want in life.	1	2	3	4	5	6	7
5. If I could live my life over, I would change almost nothing.	1	2	3	4	5	6	7

APPENDIX J – Social Support Questionnaire.

Social Support Questionnaire (modified version)

Please read each question carefully and indicate to what extent you are satisfied with the support you receive. Social support is the perception and actuality that one is cared for, has assistance available from other people, and that one is part of a supportive social network. Support can come from many sources, such as family, friends, coaches, sport directors, teachers, etc. Using the 1 – 6 scale below, indicate your satisfaction circling the appropriate number. There are no rights or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

To what extent are you satisfied with the overall support you receive…	1 = very dissatisfied 6 = very satisfied					
1. When you feel under stress and need to be distracted from your worries?	1	2	3	4	5	6
2. When you need to feel relaxed because you are under pressure and feel tense?	1	2	3	4	5	6
3. When you need to feel accepted by others for who you are including both your good and bad characteristics?	1	2	3	4	5	6
4. When you need to feel cared about, regardless of what is happening to you?	1	2	3	4	5	6
5. When you are feeling generally down-in-the-dumps and need to feel better?	1	2	3	4	5	6
6. When you are very upset and need to be comforted?	1	2	3	4	5	6

APPENDIX K – Sport commitment.

Klein et al., Unidimensional, Target-Free (KUT)

Please read each question carefully and indicate to what extent you are committed to your sport. Using the 1 – 5 scale below, indicate your commitment by circling the appropriate number. There are no rights or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

	1 = not at all 5 = extremely				
1. How committed are you to your sport?	1	2	3	4	5
2. To what extent do you care about your sport?	1	2	3	4	5
3. How dedicated are you to your sport?	1	2	3	4	5
4. To what extent have you chosen to be committed to your sport?	1	2	3	4	5

APPENDIX L – General autonomy support.

Friendship Autonomy Support Questionnaire (FASQ)

This questionnaire contains items that are related to your perceptions and experiences of your support network. Support networks have different styles of interacting, and we would like to know more about how you perceive and relate to your support network. There are no rights or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

	1 = strongly disagree 7= strongly agree						
1. I feel that my support network provides me with choices and options.	1	2	3	4	5	6	7
2. I believe my support network is very understanding of me.	1	2	3	4	5	6	7
3. My support network conveys confidence in my abilities.	1	2	3	4	5	6	7
4. I feel that my support network accepts me.	1	2	3	4	5	6	7
5. I believe my support network trusts me.	1	2	3	4	5	6	7
6. My support network listens to my thoughts and ideas.	1	2	3	4	5	6	7
7. My support network encourages me to express my true emotions.	1	2	3	4	5	6	7
8. I feel that my support network cares about me as a person.	1	2	3	4	5	6	7
9. My support network tries to understand how I see things.	1	2	3	4	5	6	7
10. I feel able to share my feelings with my support network.	1	2	3	4	5	6	7

APPENDIX M – Example of the Mplus input for the BSEM model (three-factor model life-sport conflicts) with cross-loadings and residual correlations.

```
TITLE:      BAYES life to sport
DATA:       FILE IS lifesport nov.dat;
VARIABLE:   NAMES ARE wrk1 wrk2 wrk3 frnds1 frnds2 frnds3 leis1
            leis2 leis3 fam1 fam2 fam3;

ANALYSIS:   ESTIMATOR = bayes;
            FBITER = 100000;

MODEL:      WORK BY wrk1-wrk3*;
            FREETIME BY frnds1-leis3*;
            FAMILY BY fam1-fam3*;

            WORK @1;
            FREETIME @1;
            FAMILY @1;

            WORK BY frnds1-fam3*0 (A1-A9);
            FREETIME BY wrk1-wrk3*0 (B1-B3);
            FREETIME BY fam1-fam3*0 (B4-B6);
            FAMILY BY wrk1-leis3*0 (C1-C9);

            wrk1 ON wrk2@0;

            wrk1-fam3 (P1-P12);
            wrk1-fam3 with wrk1-fam3 (P13-P78)  !K+(K*(K-1)/2)

MODEL PRIORS:
            A1-A9 ~ N(0,.01);
            B1-B6 ~ N(0,.01);
            C1-C9 ~ N(0,.01);

            P1-P12~IW(1,18);     ! Inverse Wishart (method 2) df = K + 6
            P13-P78~IW(0,18);

OUTPUT:     TECH1 TECH8 CINTERVAL STDYX svalues;
PLOT:       TYPE = PLOT2;
```

APPENDIX N – Example of the Mplus input for the BSEM model (three-factor model life-sport conflicts) with highly informative priors.

```
TITLE:      BAYES life to sport
DATA:       FILE IS zlifetosportrep.dat;
VARIABLE:   NAMES ARE wrk1 wrk2 wrk3 frnds1 frnds2 frnds3  leis1
            leis2 leis3 fam1 fam2 fam3;

ANALYSIS:   ESTIMATOR = bayes;
            FBITER = 100000;

MODEL:      WORK BY wrk1-wrk3* (L1-L3);
            FREETIME BY frnds1-leis3*(L4-L9);
            FAMILY BY fam1-fam3* (L10-L12);

            WORK @1;
            FREETIME @1;
            FAMILY @1;

            WORK BY frnds1-fam3*0 (A1-A9);
            FREETIME BY wrk1-wrk3*0 (B1-B3);
            FREETIME BY fam1-fam3*0 (B4-B6);
            FAMILY BY wrk1-leis3*0 (C1-C9);

            wrk1 ON wrk2@0;

            wrk1-fam3 (P1-P12);
            wrk1-fam3 with wrk1-fam3 (P13-P78)  !K+(K*(K-1)/2)

MODEL PRIORS:
            L1 ~ N (.81,.01);
            L2 ~ N (.84,.01);
            L3 ~ N (.86,.01);
            L4 ~ N (.81,.01);
            L5 ~ N (.93,.01);
            L6 ~ N (.90,.01);
            L7 ~ N (.80,.01);
            L8 ~ N (.89,.01);
            L9 ~ N (.88,.01);
            L10 ~ N (.86,.01);
            L11 ~ N (.88,.01);
            L12 ~ N (.88,.01);

            A1-A9 ~ N(0,.01);
            B1-B6 ~ N(0,.01);
            C1-C9 ~ N(0,.01);

            P1-P12~IW(1,18);     ! Inverse Wishart (method 2) df = K + 6
            P13-P78~IW(0,18);

  OUTPUT:   TECH1 TECH8 CINTERVAL STDYX svalues;
  PLOT:     TYPE = PLOT2;
```

APPENDIX O – Example of the Mplus input for the hybrid structural equation model – Study 2.

```
TITLE:      zconflict perfectionism br path model DS CORRELATED
DATA:       FILE IS zsemjan15.dat;
VARIABLE:   NAMES ARE
            worktosport  freetimetosport familytosport    PS    PPP   PCP
            IM    IG    ID    IJ    EX    AM;

ANALYSIS:   ESTIMATOR = MLR;
            TYPE=RANDOM;
            ALGORITHM=INTEGRATION;

MODEL:      worktosport @ .09;
            WORK BY worktosport @1;
            !freetimetosport @ .02;
            !FREETIME BY freetimetosport @1;
            !familytosport @ .03;
            !FAMILY BY familytosport @1;
            PS @ .09;
            PRSNLSTND BY PS @1;
            PPP @ .06;
            PARPRES BY PPP @1;
            PCP @ .11;
            COACHP BY PCP @1;
            IM @ .06;
            IG @ .2;
            ID @ .24;
            IJ @ .22;
            EX @ .1;
            AUTO BY IM IG ID;
            CONT BY IJ EX;
            AMOT BY AM @1;
            AM @ .12;

            WRKxPP | WORK XWITH PARPRES;
            WRKxCP | WORK XWITH COACHP;
            WRKxST | WORK XWITH PRSNLSTND;
            !FRTxPP | FREETIME XWITH PARPRES;
            !FRTxCP | FREETIME XWITH COACHP;
            !FRTxST | FREETIME XWITH PRSNLSTND;
            !FAMxPP | FAMILY XWITH PARPRES;
            !FAMxCP | FAMILY XWITH COACHP;
            !FAMxST | FAMILY XWITH PRSNLSTND;

            AUTO ON WORK  PRSNLSTND PARPRES COACHP WRKxPP WRKxCP WRKxST;
            !WRKxPP WRKxCP  FRTxPP FRTxCP  FAMILY FAMxPP;
            CONT ON WORK PRSNLSTND PARPRES COACHP WRKxPP WRKxCP WRKxST;
            !WRKxPP WRKxCP FREETIME FRTxPP FRTxCP FRTxST FAMILY FAMxPP;
            AMOT ON WORK PRSNLSTND PARPRES COACHP WRKxPP WRKxCP WRKxST;
            !WRKxPP WRKxCP FREETIME FRTxPP FRTxCP FRTxST FAMILY FAMxPP;

            AUTO CONT AMOT WITH AUTO CONT AMOT @0;
OUTPUT:     sampstat tech1 cinterval;
```

APPENDIX P – Research Curriculum Vitae.

Research Experience

Published full papers

Birrer, D., & **Morgan, G.** (2010). Psychological skills training as a way to enhance an athlete's performance in high-intensity sports. *Scandinavian Journal of Medicine & Science in Sports*, *20*, 78-87.

Birrer, D., Wetzel, J., Schmid, J., & **Morgan, G.** (2012). Analysis of sport psychology consultancy at three Olympic Games: Facts and figures. *Psychology of Sport and Exercise*, *13*, 702-710.

Birrer, D., Röthlin, P., & **Morgan, G.** (2012). Mindfulness to enhance athletic performance: Theoretical considerations and possible impact mechanisms. *Mindfulness*, *3*, 235-246

Birrer, D., Lienhard, D., Williams, C. A., Röthlin, P., & **Morgan, G**. (2013). Prevalence of non-functional overreaching and the overtraining syndrome in Swiss elite athletes. *Schweiz Z Sportmedizin Sporttraumatol*, *61*, 23-29.

Conference oral and poster presentations

Morgan, G., Markland, D., Hardy, J., Birrer. D. (2010). *The Relationship between Perfectionism and Self-Determined Motivation and their Influence on Training Behaviors and Lifestyle of Young Swiss Elite Athletes*. Paper presented at the 42nd Jahrestagung of the Arbeitsgemeinschaft für Sportpsychologie in Deutschland e.V., Salzburg, Austria.

Morgan, G., Birrer. D. (2012). *Exploring the relationship between perfectionism and training effort in junior ice hockey players*. Poster presented at the 4th Jahrestagung of the Sportwissenschaftliche Gesellschaft der Schweiz, Magglingen, Switzerland.

Morgan, G., Markland, D., Hardy, J., Birrer. D. (2013). *When worlds collide: Conflicts between life domains among elite athletes.* Poster presented at the Association for Applied Sport Psychology Annual Conference, New Orleans, Louisiana.

Morgan, G., Markland, D., Hardy, J., Birrer. D. (2014). *Conflict and Motivation: The Influence of Life to Sport Conflicts on Motivation and Training Behaviours and Attitudes.* Paper presented at the International Conference on Motivation, Helsinki, Finland

Grant Capture

Eidgenössische Sportkommission (ESK), Bern. CHF. 77'780.00 December 2009
APPLICANTS: Birrer, D., **Morgan, G.**, Hardy, L., Markland, D., & Hardy, J.
PROJECT: The Relationship between Perfectionism and Self-Determined Motivation and their influence on Training Behaviours and Lifestyle of Young Swiss Elite Athletes.