

Underlying Mechanisms of Thriving in Youth Sport

Keita Kinoshita

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School of Human Kinetics
Faculty of Health Sciences
University of Ottawa

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Abstract

Participation in sport has well-documented physical, psychological and social benefits that can lead to positive youth development (c.f., Eime, Young, Harvey, Charity, & Payne, 2013; Hebert, Møller, Andersen, & Wedderkopp, 2015; Vandell, Larson, Mahoney, & Watts, 2015) as well as youths' thriving (Zarrett & Lerner, 2008). However, evidence continues to demonstrate that the number of sport participants in Canada and Japan continues to decline (Canadian Heritage, 2013, Statistics Canada, 2019; Nippon Junior High School Physical Culture Association, 2017). Such trends indicate the importance of understanding the psychological factors and the mechanisms of the relationships which may be important in determining how to keep young people in sport and optimally functioning. As thriving has been a popular topic in psychology research for two decades (Seligman & Csikszentmihalyi, 2000), recent evidence suggests that the concept of *thriving* is a positive predictor of desired outcomes such as retention, well-being, and performance (e.g., Porath, Spreitzer, Gibson, & Garnett, 2012; Ren, Yunlu, Shaffer, & Fodchuk, 2015). *Self-Determination Theory* (Ryan & Deci, 2000, 2017), a well cited tenet explaining human motivation and function, has concomitantly been utilized to explain the relationship between motivational factors and thriving (Ryan & Deci, 2017; Spreitzer & Porath, 2014). Since motivation is a key element for sport continuation and positive functioning (Roberts, 2012), the current dissertation focused on the investigation of the psychological mechanism underlying youth athletes' thriving by examining self-determination theory.

The overall purpose of this dissertation was to examine the psychological mechanism underlying thriving within a youth sport context. To do so, the current dissertation involved three different studies. Study 1 investigated the mechanism underlying youth athletes' thriving with specific consideration regarding personal predictable factors and the consequences. Study 2 tested the buffering effect of mental toughness on the negative

indirect relationships between basic psychological need thwarting and important outcomes for youth athletes' positive functioning (intention to continue, subjective well-being in sport, and goal progress) through thriving. Study 3 examined how personal and social factors are related to thriving, in turn associating with important outcome variables of interest.

In Study 1, the results revealed that basic psychological need satisfaction are positively associated with intention to continue in sport, subjective well-being in sport, and goal progress through thriving. Furthermore, both hedonic and eudaimonic motives were indirectly related to thriving through basic psychological need satisfaction. Lastly, hedonic and eudaimonic motives were positively related to intention to continue in sport, subjective well-being in sport, and goal progress through basic psychological need satisfaction and thriving. The findings from study 1 contribute to nurturing the body of literature in the self-determination theory by presenting a comprehensive model to enhance the understanding of the underlying mechanisms of thriving within the youth sport context. In addition, hedonic and eudaimonic motives have been rarely applied to the sport context and the youth participants in particular. As motives are more broadly defined than the reasons for behaviors (Cambridge University, 2001), the present study indicated that youth athletes' motivational orientations (e.g., hedonic seeking or eudaimonic seeking for their sport participation) would have important meanings in their sport participation to increase the experience and thriving and positive functioning.

In Study 2, the results demonstrated significant moderating effects of mental toughness on the indirect associations between basic psychological need thwarting and the outcomes through thriving. In other words, the negative impacts of basic psychological need thwarting on important outcomes were weakest for those participants who showed high mental toughness and strongest for the individuals with low mental toughness. The results demonstrated novel findings in that the mediating role of thriving between a motivational

factor and outcome variables were moderated by the degree of mental toughness.

Lastly, in Study 3, the results demonstrated that the social factors (i.e., autonomy supportiveness of both coaches and parents) were positively related to thriving and intrinsic regulation three months later through increased basic psychological need satisfaction. Additionally, hedonic motives did not predict thriving while eudaimonic motives indirectly predicted thriving and intrinsic regulation through basic psychological need satisfaction. Eudaimonic motives, but not hedonic motives, positively predicted intrinsic motivation three months later through basic psychological need satisfaction. Although previous research demonstrated significant relationships with high degrees of self-determined motivation regulation (e.g., intrinsic regulation) and both hedonic and eudaimonic experience (i.e., Waterman et al., 2008), our research demonstrated only eudaimonic motives were positively related to intrinsic regulation. Furthermore, the study found that hedonic motives did not indirectly predict thriving through basic psychological need satisfaction while eudaimonic motives predicted thriving through basic psychological need satisfaction. Since both social factors were significantly associated with intrinsic regulation and thriving through basic psychological need satisfaction, hedonic motives were not an important predictor of the enhancement in youth athletes' intrinsic regulation and thriving when comparing with another personal factor (eudaimonic motives) and the social factors (i.e., autonomy supportiveness of coaches and parents).

Overall, this thesis provides a greater theoretical understanding of the comprehensive mechanism underlying thriving within a youth sport context by using a theory of motivation. As the dissertation examined both personal and social factors affecting youth thriving, the results provide insight into the ways in which youth can thrive and thus, implications are also drawn for important stakeholders in sport.

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Table of Contents

Abstract.....	ii
Acknowledgements	v
Chapter I: Introduction.....	1
Literature Review	5
Thriving	6
<i>Distinction between similar concepts (e.g., flourishing, resilience, self-actualization).....</i>	<i>8</i>
<i>Thriving and Outcomes</i>	<i>9</i>
Self-Determination Theory	13
<i>Basic psychological needs for human thriving.....</i>	<i>16</i>
<i>Basic psychological need satisfaction.....</i>	<i>16</i>
<i>Thriving as a mediator.</i>	<i>18</i>
Hedonia and Eudaimonia	18
Mental Toughness.....	21
<i>Dimensionality of mental toughness.....</i>	<i>22</i>
<i>Distinctiveness of three similar personality traits.....</i>	<i>24</i>
<i>Buffering effects of mental toughness.....</i>	<i>25</i>
<i>Mental toughness and thriving</i>	<i>25</i>
Interpersonal Behaviours: Autonomy Support	27
Summary	30
The Current Doctoral Thesis.....	31
Dissertation Objectives, Research Questions, and Hypotheses	31
<i>Study 1</i>	<i>31</i>
<i>Study 2.....</i>	<i>34</i>
<i>Study 3.....</i>	<i>35</i>
Chapter II: Article 1	40
Abstract	41
Introduction	42
<i>Concept of Thriving.....</i>	<i>43</i>
<i>Thriving and Outcomes</i>	<i>44</i>
<i>Self-Determination Theory and Thriving</i>	<i>45</i>
<i>Hedonia and Eudaimonia.....</i>	<i>47</i>
Methods	50
<i>Participants</i>	<i>50</i>
<i>Instruments</i>	<i>51</i>
Data analysis	53
Results.....	54
Discussion	55
<i>Theoretical Contribution.....</i>	<i>58</i>
<i>Practical Implication.....</i>	<i>59</i>
Limitation.....	61
Reference	63
Tables.....	74
Figures	77
Chapter III: Article 2.....	79
Abstract	80
Introduction	81
<i>Self-Determination Theory and Thriving</i>	<i>82</i>
<i>Mental Toughness</i>	<i>85</i>
<i>Present study and the hypotheses.....</i>	<i>86</i>
Method.....	87
<i>Participants and procedures</i>	<i>87</i>

<i>Instruments</i>	87
<i>Data Analyses</i>	89
Results	90
<i>Mediating role of thriving</i>	90
Discussion	92
<i>Mediating role of thriving</i>	92
<i>Moderating role of mental toughness</i>	93
<i>Practical Implication</i>	95
Limitations and conclusion	97
Reference	98
Tables	105
Figure	109
Chapter IV: Article 3	110
Abstract	111
Introduction	112
<i>The concept of thriving</i>	112
<i>Self-determination theory and thriving</i>	112
<i>Hedonic and eudaimonic motives</i>	115
<i>Autonomy support</i>	116
<i>Mental toughness</i>	116
<i>Present study and hypotheses development</i>	117
Method	118
<i>Participants and procedures</i>	118
<i>Measurements</i>	119
<i>Data analysis</i>	122
Results	123
<i>Hypothesis Testing</i>	123
Discussion	124
<i>Practical implication</i>	128
Limitations	129
Conclusion	131
Reference	132
Chapter V: General Discussion	145
Key Findings and Contributions from Study 1	148
Key Findings and Contributions from Study 2	150
Key Findings and Contributions from Study 3	152
Implication	156
<i>Theoretical Implication</i>	156
<i>Practical Implication</i>	159
Limitation and Future Direction	165
Chapter VI: Conclusion	167
Statement of Contributions	168
References for Chapter I & V	169
Appendix A: An Integrative Model of Human Growth at Work	194
Appendix B: Ethics Approval	195
Appendix C: Ethics Approval of Modification	196
Appendix D: Template of Consent Form for Athletes	198
Appendix E: Template of the Letter of Information to Organizations	208

Appendix F: Demographic Questionnaires	210
Appendix G: Basic Psychological Need Satisfaction (Study 1 & 3).....	213
Appendix H: Thriving (Study 1, 2, & 3)	216
Appendix I: Intention to Continue (Study 1, 2, & 3)	219
Appendix J: Satisfaction in Athletic Life (Study 1, 2, & 3).....	220
Appendix K: Positive Affect (Study 1, 2, & 3).....	222
Appendix L: Goal Progress (Study 1, 2, & 3).....	224
Appendix M: Hedonic and Eudaimonic Motives (Study 1 & 3).....	226
Appendix N: Basic Psychological Need Thwarting (Study 2).....	229
Appendix O: Mental Toughness (Study 2 & 3)	231
Appendix P: Autonomy Support from Coaches and Parents (Study 3)	234
Appendix Q: Self-Determined Motivation (Study 3).....	237

Chapter I: Introduction

How can we keep youth more physically active and assist them to experience the desirable outcomes from sport participation?

This is a critical question, since participation in sport has well-documented physical, psychological and social benefits that can lead to the development of healthy behaviours (Eime, Young, Harvey, Charity, & Payne, 2013; Hebert, Møller, Andersen, & Wedderkopp, 2015; Janssen, & Leblanc, 2010; Vandell, Larson, Mahoney, & Watts, 2015). As evidence indicates that termination of sport participation negatively affects individuals' physical, psychological, and social well-being, the continued decline in sport participation rates amongst youth are a cause for concern (Biddle, Sallis, & Cavill, 1998; Vella, Cliff, Magee, & Okely, 2014, 2015). It is therefore important to understand the factors that facilitate sport continuation and other salient outcomes such as subjective well-being and goal progress in sport.

Since 1992, sport participation rates of Canadians, including adolescents, have been declining (Canadian Heritage, 2013, Statistics Canada, 2019). The same problem is occurring among Japanese adolescents. According to the Nippon Junior High School Physical Culture Association (Nippon Junior High School Physical Culture Association, 2017), the number of the sport participants in the middle school age group decreased 7%, from 3,600,000 to 3,360,000, in the past 10 years. Regarding this problem, Yoshitomo Tsutsugo, a Japanese Major League Baseball player, mentioned that there is a problem with players' winning orientations and coaches' controlling interpersonal style, even at the youth level (Allen, 2019).

One of the possible reasons for sport participation decline is the competitive nature of sport which induces extensive stressors for youth with undeveloped coping skills (e.g., Kristiansen & Roberts, 2010; Mellalieu, Hanton, & Fletcher, 2006). In this setting, youth

athletes vary in the degree to which they struggle or thrive. *Thriving*, defined as “a psychological state composed of the joint experience of vitality and learning (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005, p. 537),” is one of the desired psychological states by which youth guide themselves to adaptive behaviours which overcome stressful circumstances. This desirable psychological state provides a positive direction for human functioning (Porath, Spreitzer, Gibson, & Garnett, 2012; Spreitzer et al., 2005). Therefore, thriving may offer reasonable insight into the problem of sport continuation and positive functioning in younger people.

The emergence of positive psychology was declared by Seligman in his President’s Address at the American Psychology Association (APA)’s 107th Annual Convention in 1999 (Seligman, Steen, Park, & Peterson, 2005). The President’s Address indicated that psychological science has turned to a different pathway whereby “a psychology of positive human functioning will arise that achieves a scientific understanding and effective interventions to build *thriving* in individuals, families, and communities” (Seligman & Csikszentmihalyi, 2000, p. 13). Ever since Seligman’s Presidential Address declared the new movement in the field of psychology, *thriving* has been a prevalent topic in research as the concept is linked to the maintenance of human well-being and performance (Pfeffer, 2010).

Previous research, in fact, has demonstrated that thriving is a positive predictor of salient outcomes including greater retention, well-being, and performance (e.g., Porath et al., 2012; Ren, Yunlu, Shaffer, & Fodchuk, 2015). Although studies regarding human thriving have increased due to the positive psychology movement, the number of studies conducted to understand the psychological mechanism underlying thriving in youth athlete samples is limited to date (e.g., Brown, Arnold, Standage, & Fletcher, 2017b; Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015; Gucciardi, Stamatis, & Ntoumanis, 2017).

In sport, competitive athletes often experience extensive stressors, especially younger athletes that may have underdeveloped coping skills (Bebetsos & Antoniou, 2003; Holt, Hoar, & Fraser, 2005; Kristiansen & Roberts, 2010). The enhanced stressors may lead youth to dropping out from their sport, and have further negative consequences on their well-being and performance (e.g., Appleton, Hall, & Hill, 2009; Raedeke & Smith, 2004; Weber, 2009). Many of the studies conducted in the field of sport psychology have demonstrated that motivational factors are critical for greater sport continuation as well as for well-being and sport performance (Balish et al., 2014; Crane & Temple, 2015; Gould, 1987; Ullrich-French, & Smith, 2009; Vallerand, Deci, & Ryan, 1987). Given that thriving is represented as a psychological state relating to motivational factors, it would be significantly affected by motivational factors such as satisfaction of ones' basic psychological needs (Ryan & Deci, 2017; Spreitzer & Porath, 2014), but it is also impactful on well-being and performance. Consequently, thriving may help mitigate sport dropout and enhance athletes' well-being and performance.

Although various studies have indicated a significant relationship between motivational factors and sport continuation (e.g., Jõesaar, Hein, & Hagger, 2011; Jõesaar & Hein, 2011; Pelletier, Fortier, Vallerand, & Brière, 2001; Rottensteiner, Tolvanen, Laakso, & Konttinen, 2015; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002), no study to date has investigated the relationship between the concept of thriving and sport continuation or ones' intention to continue. Since the concept of thriving is relatively new to sport psychology literature, little is known about the potential antecedents and outcomes of the psychological state. *Self-Determination Theory* (Ryan & Deci, 2000) assumes that people are optimally motivated when their basic psychological needs are satisfied (Ryan & Deci, 2000, 2017). More specifically, since the evidence shows that the satisfaction of basic psychological needs is a positive antecedent of subjective vitality (e.g., Cheval, Chalabaev, Quesed, Courvoisier,

& Sarrazin, 2017; 2018; Reinboth & Duda, 2006; Tsoi, de Boer, Croiset, Koster, van der Burgt, & Kusurkar,) and learning (Ryan, Koestner, & Deci, 1991; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004), which are components of thriving, self-determination theory would have the potential to explain the mechanism underlying thriving.

Research by Spreitzer and Porath (2014) indicated that basic psychological needs (Ryan & Deci, 2002) are important predictors in the state of thriving. In fact, past studies have demonstrated that motivational orientation (*hedonic* or *eudaimonic motives*: Huta & Waterman, 2014) is a personal indicator of basic psychological need satisfaction (Saunders, Huta, & Sweet, 2018). Several studies have also examined social factors (e.g., autonomy supportiveness vs controlling behaviours) as an indicator of basic psychological need satisfaction (Gaudreau, Morinville, Gareau, Verner-Filion, Green-Demers, & Franche, 2016). Consequently, the investigation of how personal factors predict youths' thriving compared with social factors can help further explain the important underlying the mechanisms of youth athletes' thriving.

Although researchers claim the importance of thriving in youth sport context and the conceptualization of thriving in sport psychology (Brown, Arnold, Fletcher, and Standage, 2017a) and positive youth development literature in particular (Zarrett and Lerner, 2008; Vest Ettekal, Lerner, Agans, Ferris, & Burkhard, 2016), the empirical investigation of the psychological mechanism underlying thriving in the youth sport context is still limited. Consequently, the overall purpose of this dissertation was to examine the psychological mechanism underlying thriving within a youth sport context. In addition, the dissertation examines the influence of thriving on youth athletes' intention to continue sport, their subjective well-being, and subjective performance (i.e., perceived goal progress). This dissertation focuses on youth athlete samples aged 14-18 years old in Canada and Japan.

To achieve these ends, the dissertation examined self-determination theory in relation to the concept of thriving. Specifically, this dissertation investigated whether thriving mediates the relationship between basic psychological need satisfaction and the outcome variables of interest (see Spreitzer & Porath, 2014). Finally, this dissertation examined hedonic and eudaimonic motives (Huta & Ryan, 2010) to determine if and how those motives were related to thriving and the salient outcomes for youth athletes (i.e., intention to continue, subjective well-being, goal progress) through the satisfaction of basic psychological needs in Study 1.

The present dissertation also investigated the buffering effect of a personal resource (e.g., mental toughness) on a maladaptive type of motivation (Gucciardi et al., 2017). Specifically, Study 2 examined the buffering effect of mental toughness on the negative direct and indirect relationships between basic psychological need thwarting and important outcome variables for youth athletes (i.e., intention to continue, subjective well-being, and goal progress) through thriving.

Lastly, this dissertation studied how personal motives (i.e., hedonic and eudaimonic motives) and social environmental factors (i.e., autonomy support from coaches and parents) are related to youth athletes' thriving and other salient outcomes over time by using a semi-longitudinal study design in Study 3.

Literature Review

This dissertation examines several theories within sport psychology to help understand the mechanisms underlying thriving. In this section, literature pertaining to thriving, motivation and mental toughness are reviewed to help frame the study and to understand the overall contribution of the dissertation.

Thriving

The origin of the concept of thriving dates back to the classical works conducted by researchers who were interested in human thriving and positive functioning (e.g., Alderfer, 1972; Maslow, 1943; Rogers, 1961). Traditional psychology has been focused on the dark side of mental aspects, namely psychopathologies such as anxiety, depression, and burnout (Seligman, 2002). The focus on the clinical side of psychology research has considerably contributed to people's maintenance of their mental health or bouncing back from their mental illness (e.g., Keyes, 2002). However, those works were insufficient to shed light on the brighter side of mental aspects, such as human strength. The lack of contributions in psychology literature led recent scholars to shift the direction to paying more attention to positive human functioning. This movement is called positive psychology movement (Seligman & Csikszentmihalyi, 2000). Consequently, how and when people can thrive is one of the most important research questions in the currently literature stream in the psychology science.

In the last two decades, many studies have been conducted to examine how people can thrive in our society. As a result, scholars have demonstrated that the concept of thriving is associated with salient outcomes regarding positive human functioning in a variety of domains including work, education, and sport (e.g., Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015; Walumbwa, Muchiri, Misati, Wu, & Meilian, 2018). For example, thriving predicted retention of employees and students (Ren, Yunlu, Shaffer, & Fodchuk, 2015; Spreitzer, Porath, & Gibson, 2012), subjective well-being (Flinchbaugh, Luth, & Li, 2015; Zhai, Wang, & Weadon, 2017), and goal progress or job performance (Gucciardi et al., 2015; Spreitzer et al., 2012; Walumbwa et al., 2018). However, the concept has rarely been applied to sport psychology literature to investigate the relationships between thriving and athletes' positive functioning.

Recently, Brown, Arnold, Fletcher, and Standage (2017a) defined the concept of thriving within an elite youth sport context, but the definition differs from Spreitzer et al.'s definition of thriving at work (2005). According to the Brown and colleagues' definition (2017a, 2018), the characteristics of *thriving* contain high levels of both *well-being* and *performance*. Accordingly, those researchers have claimed that thriving involves the subjective perception and experience of a high level of well-being and performance. Whereas, Spreitzer et al. (2005) defined thriving as "a psychological state composed of the joint experience of vitality and learning (p. 537)." Hence, this definition of thriving, which includes *learning* as an important component, has a similarity with Brown et al.'s (2017a) concept in that it specifies *development* as fundamental for thriving; being consistent with the perspective of personal growth (Rogers, 1961).

However, the difference between those two definitions is that Brown and colleagues (2017a) include the experience of high *performance* as an essential part of thriving, whereas Spreitzer and colleagues (2005) takes a standpoint that *vitality* is another essential part of thriving, which in turn sustains health, well-being, performance, and development (Pfeffer, 2010; Spreitzer & Porath, 2014). In the conceptualization of Spreitzer and colleagues' thriving (2005), *vitality* can be defined as a sense of being energized (Nix, Ryan, Manly, & Deci, 1999) and passionate for life (Miller & Stiver, 1997), whereas learning refers to the establishment of capacity by acquiring and applying knowledge and skills (Edmondson, 1999), and the sense of continually getting better (Spreitzer et al., 2005). These are essential aspects in personal growth (Spreitzer & Porath, 2014), as prior researchers have claimed the importance of affective and cognitive dimensions for human growth (Carver, 1998; Ryff, 1989).

Although Brown et al.'s definition included the perception of high *performance* as an essential part of thriving, in this dissertation, the position is taken that higher performance

should be an outcome of the state of thriving based on the social embeddedness thriving at work model (Spretizer et al., 2005). In this model, Spretizer and colleagues claimed that *development* and *health* would be consequences of experienced thriving. Also, while Brown et al (2017a) did include *development* as an essential part of their conceptual definition of thriving, the research (Brown, Arnold, Standage, & Fletcher, 2017b) only included an affective aspect of human growth (i.e., vitality and positive affect) in the construct to test the relationships with other variables. Although ones' perception of high performance may be considered as a cognitive aspect of human thriving in Brown's research (2017b), performance should be one of the outcomes of thriving rather than an element of human thriving as learning is an imperative cognitive aspect of human growth (Rogers, 1961; Ryff, 1989; Spretizer et al., 2005).

Hence, we considered Spreitzer et al.'s (2005) concept which contains both affective and cognitive components as a central tenet of thriving. Consequently, based on their work (Spreitzer et al., 2005), we operationalized thriving in the present dissertation as a desired psychological estate that guides youth athletes' positive functioning. This point is congruent with the contention that high performance would occur as a result of experiencing the state of thriving (Spreitzer & Porath, 2014). Therefore, we adapted Spreitzer et al.'s (2005) concept of thriving in this study.

Distinction between similar concepts (e.g., flourishing, resilience, self-actualization)

There are some concepts similar to thriving which are widely studied in psychology. It is important to note the distinction between thriving and these related concepts. Flourishing is similar to the concept of thriving; however, flourishing is a much broader term than thriving because it consists of three types of well-being: emotional, psychological, and social well-being (Keyes, 1998). Further, the definition of flourish expresses positive mental health or a psychologically and socially well-functioning state (Keyes, 2002). Hence, if individuals

achieve emotional, psychological, and social well-being, they can flourish without the sense of learning. Since learning is a unique essential indicator of thriving (Spreitzer et al., 2005), thriving can be distinguished from the concept of flourishing.

Resilience is also viewed as a similar concept to thriving. Resilience is the behavioural capacity to bounce back from adversity (Ryff, Singer, Dienberg Love, & Essex, 1998). It is therefore central for resilience to positively adjust a difficult situation. Whereas, thriving can occur without such a difficult situation (Robert, Dutton, Spreitzer, Heaphy, & Quinn, 2005). Moreover, resilience focuses more on behavioural aspects to overcome a negative event, while the concept of thriving only focuses on the desirable psychological experience consisting of learning and vitality for growth in a specific domain.

Lastly, self-actualization is also considered as a similar concept to thriving. Self-actualization refers to a person obtaining their full potential (Maslow, Stephens, & Heil, 1998). The concept originated from Maslow's work (1943), arguing that self-actualization occurs only when human beings satisfy all basic needs (physiological, safety, belongingness, self-esteem). According to a study investigating the concept, self-actualization occurs for only 2% of people (Maslow et al., 1998). Whereas, thriving more commonly occurs in our society as most people have experienced the feeling of thriving at some point in their lives (Sonenshein, Dutton, Grant, Spreitzer, & Sutcliffe, 2005). Also, scholars have clarified that thriving could occur even when their basic needs (e.g., physiological) are not fulfilled (Tedeschi, & Calhoun, 2004).

Thriving and Outcomes

Thriving influences important outcomes for positive human functioning. Past research has shown impacts of thriving on different domains including sport, work, and education (e.g., Gucciardi et al., 2015; Porath et al., 2012; Walumbwa et al., 2018). A number of studies

revealed the significant relationships of thriving with a) retention/sport continuation, b) well-being and, c) performance/goal progress.

a) Thriving and sport continuation. Understanding who drops out and who continues playing sport has been the object of a substantial body of sport motivation research (Roberts, 2012). According to a researcher, *sport dropout* occurs when “... the individual no longer is active in sport in a sports club” (Patriksson, 1988, p. 31). In contrast, *sport continuation* indicates that sport participants keep playing their sport over a long period of time. Research has clarified that motivation is key in predicting sport continuation or dropout (e.g., Balish et al., 2014; Crane & Temple, 2015; Gould, 1987; Ullrich-French, & Smith, 2009; Vallerand et al., 1987). More specifically, past research has shown that motivational components such as satisfaction of basic psychological needs are negatively and strongly related to sport dropout (see Balish et al., 2014 for a review). Therefore, since thriving is considered a positive psychological state that would be greatly influenced by the satisfaction of basic psychological needs (Ryan & Deci, 2017; Spreitzer & Porath, 2014), thriving would have an important role in explaining the relationships between motivational factors (e.g., basic psychological need satisfaction) and sport continuation.

Although no study to date has been conducted to examine if thriving is related to sport continuation or dropout, past studies have shown that the degree of thriving predicts retention of employees and students (Ren et al., 2015; Spreitzer et al., 2012). Since thriving is considered as a psychological state relating to motivation and is likely to reduce burnout (Maslach, 2003; Porath et al., 2012), thriving could explain the mechanism underlying sport continuation. The results suggest that it is plausible to apply the concept of thriving to test athletes’ retention in the sport context.

Additionally, in sport and exercise psychology literature, empirical studies have shown that intention to continue is a substantial predictor of actual behaviours (see Hagger, &

Chatzisarantis, 2009; Hagger, Chatzisarantis, & Biddle, 2002; McEachan, Conner, Taylor, & Lawton, 2011 for reviews). Due to the accessibility of the measurement of sport continuation, a number of sport psychology studies have assessed intention to sport continuation instead of the actual behaviour of sport continuation (e.g., Gucciardi & Jackson, 2015; Guzmán & Kingston, 2012; Nache, Bar, Eli, Perrin, & Laurencelle, 2005; Prins, van Empelen et al., 2010). Hence, the current dissertation measured intention to continue sport, and expected that higher levels of thriving would be related to higher levels of intention to sport continuation.

b) *Thriving and subjective well-being.* Thriving is particularly important for individuals to maintain their well-being, as past research has showed that thriving in specific domains (e.g., work or sport) influences individuals' physical and psychological health including subjective well-being (e.g., Porath et al., 2012). Life satisfaction and positive affect are traditionally considered as indicators of well-being, also called subjective well-being (Diener, 1984). Since previous research suggests that a sense of both vitality and learning is positively associated with well-being (Ettner & Grzywacz, 2001; Keyes, 2002), thriving should be positively related to subjective well-being.

In sport, scholars advocate that subjective well-being (e.g., satisfaction in sport and positive affect) is one of the most salient outcomes for athletes' positive functioning (c.f., Lundqvist, 2011). Subjective well-being is defined as people's evaluation of their lives (Diener & Lucas, 1999) and it is an indicator of mental health (Keys, 2006). By adapting this definition in the sport context, subjective well-being in sport can be considered as athletes' evaluation of their athletic lives, and a potential indicator of mental health for athletes (Foster & Chow, 2019). Furthermore, since the notion of social embeddedness of thriving at work claims that health should be an outcome of thriving (Spretizer et al., 2005) it is reasonable to consider that subjective well-being in sport would be an important outcome variable of youth athletes' positive functioning.

Researchers, in fact, have argued that thriving is important for individuals to maintain their subjective well-being (e.g., Porath et al., 2012). Additionally, both vitality and learning are positively associated with subjective well-being (Ettner & Grzywacz, 2001; Keyes, 2002) and studies have found thriving was truly an antecedent of subjective well-being (Flinchbaugh, Luth, & Li, 2015; Zhai, Wang, & Weadon, 2017; Rozkwitalska, & Basinska, 2015). Consequently, subjective well-being in sport (e.g., satisfaction in athletic life, positive affect in sport) should be an outcome of thriving.

c) *Thriving and Performance.* Even though few studies have endeavoured to understand the relationship between thriving and sport performance or achievement-related outcomes (e.g., goal progress) in sport, many studies showed that higher levels of thriving are associated with higher levels of performance in the work domain (e.g., Spreitzer et al., 2012; Walumbwa et al., 2018). Further, Gucciardi et al. (2015) clarified that thriving is positively correlated with students' academic and social goal progress in university student samples. This indicates a positive relationship between thriving and performance outcomes (e.g., goal progress). However, there is a dearth of research on this relationship within the context of sport specifically.

Grant and Ashford (2008) explained that thriving can enhance performance because it is adopted as an internal resource for self-regulation. Hence, individuals with the more sense of thriving would behave more proactively and control themselves to accomplish their goals (Spreitzer et al., 2005). In addition, people who are thriving can generate positive resources for performance enhancement by acquiring new knowledge and skills (Spreitzer et al., 2005) since the proactive behaviours can energize the individual to establish the positive personal resources (Hobfoll, 2002). In fact, vitality itself is a salient predictor of high performance based on Fredrickson's (2001) broaden-and-build theory. Furthermore, learning is also an essential factor for better performance (e.g., Gibson & Vermeulen, 2003; Porath &

Bateman, 2006; Zellmer-Bruhn & Gibson, 2006). Therefore, the evidence and the conceptualization indicate that thriving would be positively associated with athletes' goal progress in sport.

Self-Determination Theory

Self-Determination Theory (Ryan & Deci, 2000, 2017) has been utilized to explain the relationship between motivational factors and thriving or positive human functioning (Ryan & Deci, 2017; Spreitzer & Porath, 2014). Self-determination theory is one of the most cited motivation theories, which has been applied to a variety of contexts including sport and physical activities (e.g., Teixeira, Marques, et al., 2020 for a review). The uniqueness of this theory is that the focus is mainly on the quality of motivation rather than the quantity of motivation (Ryan & Deci, 2000). More specifically, a central component of the tenet is the distinction between self-determined or autonomous, and non-self-determined or controlled types of motivation (Ryan & Deci, 2017). In other words, self-determination theory describes the reason why a person engages in behaviour by using the continuum of the qualities of *self-determined motivation* (Ryan & Deci, 2000, 2017).

The theory argues the degree of *internalization* within an intrinsic-external regulation continuum. "*Internalization*" is defined as the process of improving the quality of self-determined motivation (Ryan, Connell, & Deci, 1984). In other words, the degree of internalization demonstrates the extent to which the individuals' behaviours (e.g., participation in sport) are fully self-endorsed by themselves. Thus, self-determination theory is the theory that identifies different types of motivation underlying behaviour regulation (Ryan & Deci, 2017).

Accordingly, intrinsic regulation refers to participating in certain behaviours for enjoyment or interest, whereas external regulation is individuals' engagement in gaining an external reward or avoiding punishments. In self-determination theory, there are three other

types of regulations between intrinsic and external regulations: integrated, identified, and introjected regulations (Ryan & Deci, 2000). Integrated regulation, the second highest regulation in terms of the degree of internalization, is participating in a certain behaviour whose values are absorbed as a part of self. Identified regulation denotes that engaging in a behaviour is perceived as important for personal goals. Lastly, introjected regulation refers to involvement in a behaviour motivated by avoiding the feeling of guilt or shame to maintain self-esteem.

An extensive meta-analysis showed that the motivation continuum from intrinsic to external clearly explains behavioural outcomes including performance (e.g., Cerasoli, Nicklin, & Ford, 2014), Ryan and Deci (2017) and others have noted that a higher quality of motivation, relative to lower quality of motivation, would be associated with greater performance, persistence, and creativity (Deci & Ryan, 1991; Sheldon, Ryan, Rawsthorne, & Ilardi, 1997), vitality (Nix et al., 1999), self-esteem (Deci & Ryan, 1995), and general well-being (Ryan, Deci, & Grolnick, 1995). Therefore, the quality of motivation uniquely predicts outcomes in the context of sport. For example, previous studies showed that lack of enjoyment is a significant predictor of sport dropout (Crane & Temple, 2015; Ullrich-French & Smith, 2009; Gardner, Magee, & Vella, 2017). As Ryan & Deci (2000) argued that intrinsically motivated behaviours are regulated by interest and entail the feeling of enjoyment, enjoyment is a central concept in intrinsic motivation (Kahneman, Diener, & Schwarz, 1999). In fact, many studies have shown intrinsic motivation as a leading predictor of sport continuation. For instance, Pelletier and colleagues (2001) revealed that the persistent athletes scored significantly higher on intrinsic motivation compared to the dropout athletes. Researchers similarly replicated the results (e.g., Jõesaar, Hein, & Hagger, 2011; Jõesaar & Hein, 2011; Rottensteiner et al., 2015; Sarrazin et al., 2002).

In addition to the degree of intrinsic motivation, research clarified that persistent athletes scored significantly lower on introjected and external regulation than those who dropped out (Calvo, Cervelló, Jiménez, Iglesias, & Murcia, 2010; Pelletier et al., 2001). Jõesaar and Hein (2011) showed that identified regulation was significantly higher in the group of persistent athletes than dropout athletes. Furthermore, self-determined motivation and non-self-determined motivation are associated differently with well-being and sport performance (e.g., Behzadnia, Adachi, Deci, & Mohammadzadeh, 2018; Smith, Ntoumanis, Duda, & Vansteenkiste, 2011). Thus, research has elucidated that not only intrinsic motivation, but also different levels of behavioural regulation within the self-determined motivation continuum, would be key determinants of sport continuation, well-being, and performance. Ultimately, self-determination theory explains the significant relationships between the quality of ones' motivation and important outcomes for youth athlete positive functioning.

Further, self-determination theory is based on the assumption that all human beings have an inherent need for growth and development, being in line with Rogers (1961) and Ryff (1989). In a critical component of self-determination theory, the theory assumes that all human beings possess three basic psychological needs, and the satisfaction of these needs is essential for growth and development. The three basic psychological needs are *autonomy*, *competence*, and *relatedness*. *Autonomy* refers to the desire to experience self-determination and psychological freedom (Deci & Ryan, 1985; DeCharms, 1968). *Competence* refers to the desire to demonstrate and improve one's capabilities (Deci, 1975; White, 1959). Lastly, *relatedness* refers to the desire to be valued, respected, and desired by important others (Baumeister & Leary, 1995; Deci & Ryan, 2000; Ryan, 1995). Accordingly, growth occurs when the three basic psychological needs are satisfied. In contrast, when individuals

experience the frustration (thwarting) of basic psychological needs, this can lead to negative outcomes such as psychopathology (Ryan & Deci, 2017; Ryan et al., 1995).

A number of studies have shown that the satisfaction of the three psychological needs is also positively associated with substantial outcomes such as retention/sport continuation, well-being, and performance (e.g., see Balish et al., 2014; Cerasoli, Nicklin, & Nassreelgrawi, 2016; Ryan & Deci, 2000. 2017 for reviews). For instance, empirical research has demonstrated that higher basic psychological need satisfaction and higher self-determined motivation were present in the persistent group compared to dropout group (Jõesaar & Hein, 2011). More interestingly, Jõesaar et al. (2011) clarified, in a different study, that basic psychological need satisfaction was positively related to intrinsic motivation, which in turn positively predicted persistence in sport participation. Other research also replicated the result that a person's satisfaction of basic psychological needs is related to their sport participation, well-being, or performance through improved self-determined motivation (e.g., Behzadnia, et al., 2018; Rottensteiner, et al 2015; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002; Smith et al., 2011). These results also support the idea that fulfillment of basic psychological needs for youth athletes would be an essential part of youth athletes' development (Behzadnia, et al., 2018; Smith et al., 2011) and prevention against their dropout (Jõesaar et al., 2011).

Basic psychological needs for human thriving

Basic psychological need satisfaction. One of the basic assumptions of self-determination theory is that individuals are more likely to experience growth and emanate psychological energy when their fundamental basic psychological needs are satisfied (Deci & Ryan, 2000; Ryan, Curren, & Deci, 2013; Spreitzer & Porath, 2014). Researchers have in fact claimed that thriving itself would be affected by ones' basic psychological need satisfaction (Ryan & Deci, 2017; Ryan et al., 2013; Spreitzer & Porath, 2014). Empirical research has

also shown that people are more vitalized when experiencing basic psychological need satisfaction (e.g., Cheval et al., 2017; Tsoi et al., 2018). Although studies of the relationship between basic psychological need satisfaction and learning have been few, some researchers found that learning is facilitated by basic psychological need satisfaction (Ryan et al., 1991; Vansteenkiste et al., 2004). In fact, empirical research has demonstrated that thriving was predicted by the satisfaction of the fundamental psychological needs and explained 54% of variance (Porath et al., 2012). Therefore, the conceptual and empirical evidence suggests that athletes are likely to experience thriving when their basic psychological needs are satisfied.

Basic Psychological Need Thwarting (Frustration). As shown above, basic psychological needs (Ryan & Deci, 2002) are one of the concepts that help clarify the psychological mechanism to reach the outcome variables (e.g., thriving or depleting). Scholars have more recently proclaimed the importance of distinguishing the satisfaction of basic psychological needs from the frustration/thwarting of basic psychological needs (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011; Costa, Ntoumanis, & Bartholomew, 2015) as the feeling of frustration of basic psychological needs does not necessarily coexist with low levels of basic psychological need satisfaction. Thus, the assessment of basic psychological need thwarting should better indicate outcomes in the motivational process in sport and exercise contexts (Vansteenkiste & Ryan, 2013).

Recent researchers have claimed that lack of basic psychological need satisfaction and basic psychological need thwarting differently explain outcome variables; thus, it is important to differentiate the two concepts (Bartholomew et al., 2011; Costa et al., 2015). Empirical research, in fact, has shown that people are less vitalized when experiencing the frustration (thwarting) of basic psychological needs (Nix et al., 1999; Vansteenkiste et al., 2004).

Therefore, the conceptual renderings and the empirical evidence suggest that athlete may experience thriving when their basic psychological needs are satisfied, whereas they will be less likely to experience thriving when their basic psychological needs are thwarted. Hence, self-determination theory would have the potential to explain the mechanism underlying thriving.

Thriving as a mediator. As mentioned above, research has found that people who experience a higher level of thriving demonstrate a higher level of performance and other important outcomes such as life satisfaction and persistence in work (e.g., Gucciardi et al., 2015; Porath et al., 2012; Walumbwa et al., 2018). Moreover, an environment which provides basic psychological needs in a sport context was significantly influential on athletes' thriving (Brown et al., 2017). Accordingly, thriving is suggested to be positively predicted by the satisfaction of basic psychological needs and positively associated with substantial outcome variables for athletes (e.g., performance, well-being, persistence, etc.). Hence, it is plausible to hypothesize that the positive (negative) relationship between the satisfaction (frustration/thwarting) of basic psychological needs and salient outcome variables for young athletes (e.g., sport continuation, well-being, and goal progress) would be mediated by thriving. These hypotheses are also consistent with the *Integrative Model of Human Growth at Work* (Spreitzer & Porath, 2014), which is presented in *Appendix A* (p. 187).

Hedonia and Eudaimonia

People seek “*true happiness*,” but many people are not able to find the answer for what *true happiness* is. Well-being refers to “optimal psychological experience and functioning” (Deci & Ryan, 2008, p.1), is used interchangeably with happiness and is one of the most successful outcomes people pursue. In the field of positive psychology, the concept has inspired many researchers to study the mystery of *true happiness* (Seligman, 2002). However, well-being is more complex than mere happiness. As a potential answer for the

epic question: “*What is true happiness?*” Aristotle mentions that “the happy man both lives well and does well” (Rowe & Broadie, 2002, p. 103). Aristotle’s perspective here is known as *eudaimonia*, which refers to “a way of living that is focused on what is intrinsically worthwhile to human beings” (Ryan, Huta, & Deci, 2008, p. 147). Well-being has been traditionally argued as a psychological state, positive feeling, or a cognitive appraisal of satisfaction, which is known as *hedonia* (e.g., Diener, 1984; Kahneman et al., 1999). However, researchers have recently started to claim that focusing only on the hedonic side of well-being is not enough to understand “*true happiness*” (e.g., Deci & Ryan, 2000; Ryan et al., 2008). As a result, researchers have argued two concepts of well-being: *hedonia* and *eudaimonia* (Deci & Ryan, 2000; Ryan et al., 2008) to more comprehensively explain happiness.

In addition to empirical support for the conceptual distinctions of well-being (Huta & Ryan, 2010), Huta and Waterman (2014) classified the two types of well-being into orientations (motives) and experiences (emotional and cognitive appraisals). Motives demonstrate why you do what you do and are an essential indicator of human behaviours. Hedonic and eudaimonic motives are personal orientations towards behaviours in specific activities (Huta & Waterman, 2014). Specifically, *hedonic motives* refer to the orientations that seek pleasure, fun, and comfort while *hedonic well-being* is defined as the subjective experience of life satisfaction and carefreeness (Huta & Waterman, 2014). In contrast, *eudaimonic motives* are defined as the orientation that seeks to develop one’s best and excellence, whereas *eudaimonic well-being* is the experiences of the concept of meaning, elevating experience, and interest (Huta & Waterman, 2014). Thus, *hedonia* and *eudaimonia* are also conceptually distinguished as orientations and experiences. Huta and Ryan (2010) showed that both hedonic and eudaimonic motives are related to specific types of well-being. For instance, vitality is considered a eudaimonic type of well-being (Ryan & Deci, 2001)

whereas life satisfaction is a hedonic type of well-being (Kahneman et al., 1999). In addition, individuals with both high hedonic and eudaimonic motives showed higher well-being than individuals who scored either high hedonic or eudaimonic motives (Huta & Ryan, 2010; Peterson, Park, & Seligman, 2005). Hence, it is considered that life satisfaction and positive affect are the central concepts of the *hedonic* side of well-being, whereas personal growth and vitality are essential in the *eudaimonic* side of well-being (Deci & Ryan, 2008).

Self-determination theory also argues the pursuit of hedonic and eudaimonic well-being (i.e., hedonic and eudaimonic motives) as essential personal factors for human thriving (Ryan & Deci, 2001; Ryan et al., 2008). In particular, self-determination theory researchers have argued the concept of hedonia and eudaimonia has a strong connection with basic psychological needs (Huta & Ryan, 2010; Ryan & Deci, 2001; Ryan et al., 2008). Basic psychological needs are critically affected by social environmental factors (Ryan & Deci, 2000, 2017), but athletes cannot necessarily control those social environmental elements themselves. Hence it is imperative for athletes to find more controllable antecedents of basic psychological needs, which can be an important implication in sport psychology literature. As self-determination theory has discussed hedonia and eudaimonia (Ryan & Deci, 2001), the concept of hedonia and eudaimonia may have the potential to elucidate a relationship with basic psychological needs. Self-determination theory was first posited to argue for the concept of intrinsic motivation (e.g., Deci, 1975). The satisfaction of basic psychological needs is essential for intrinsic motivation and has been debated as a key component of personal growth rather than the subjective experience of one's life satisfaction (Deci & Ryan, 2000). Indeed, Ryan et al. (2008) recently indicated that both hedonic and eudaimonic well-being should be explained by both hedonic and eudaimonic motives through psychological need satisfaction. Moreover, they suggested that eudaimonia should be more strongly related to basic psychological needs since Aristotle's concept of eudaimonia is strongly related to the

central concept of self-determination theory (Ryan et al., 2008). In fact, a recent empirical study showed that both hedonic and eudaimonic well-being were predicted by hedonic and eudaimonic motives through basic psychological need satisfaction, but the relationship was stronger for the association between eudaimonic motives and eudaimonic well-being (Niemiec, Ryan, & Deci, 2009; Saunders, Sweet, & Huta, 2018).

Mental Toughness

Mental toughness is defined as “a personal capacity to produce consistently high levels of subjective or objective performance despite everyday challenges and stressors as well as significant adversities” (Gucciardi et al., 2015, p.28). Mental toughness has both trait-like and state-like characteristics (Gucciardi et al., 2015), whereas thriving can be referred to as a state-like variable (Spreitzer et al., 2005). In line with the previous study (Walumbwa et al., 2018), trait-like variables (e.g., personality characteristics) tremendously impact the state of thriving. It is therefore critically important to understand how mental toughness impact thriving. For example, individuals with higher levels of mental toughness were more likely to experience the state of thriving in undergraduate sport science student samples from an Australian university (Gucciardi et al., 2015). Although few studies to date have investigated thriving in the sport context, approximately a decade ago, the concept of thriving in sport was studied under the investigations of mental toughness in elite athletes (see Bull, Shambrook, James, & Brooks, 2005; Jones, Hanton, & Connaughton, 2002). Hence, mental toughness may be a salient variable to determine the state of thriving.

In addition, mental toughness can be positively associated with a number of outcomes important for athletes’ positive functioning such as performance, subjective well-being, and intention to continue sport. For example, mental toughness is positively related to positive affect and race time (Mahoney, Gucciardi, Ntoumanis, & Mallet, 2014). Jing and Wang (2018) also showed that mental toughness was a predictor of life satisfaction. In

addition, as traditionally argued by many sport psychology researchers, a number of mental toughness studies have demonstrated its importance for athletes' performance (e.g., Crust, Earle, Perry, Earle, Clough, & Clough, 2014; Gucciardi et al., 2015; Mahoney et al., 2014; Otte, Konradt, Garbers, & Schippers, 2017; St Clair- Thompson, Bugler, Robinson, Clough, McGeown, & Perry, 2015). Therefore, many studies have indicated the importance of mental toughness for positive human functioning.

Gucciardi (2016) argued that, "since 'perseverance' is a key behavioural signature of mentally tough individuals, there is reason to believe that this personal resource may foster the translation of intentions into behaviour" (p. 455). As such, mental toughness is a personal resource that is positively related to behavioural perseverance (e.g., Gucciardi, Peeling, Ducker, & Dawson, 2016). Hannan, Moffitt, Neumann, and Thomas (2015) showed that mental toughness was correlated with intention of physical activity and when individuals' mental toughness was higher, the relationship between intention and physical activity behaviour was significantly stronger. Moreover, Gucciardi (2016) demonstrated that higher intention predicted higher exercise behaviour only for people with higher mental toughness. Thus, mental toughness is a popular concept in the sport psychology literature, and its significance is acknowledged in the sport context (see Gucciardi & Gordon, 2011 for reviews). However, there are some controversial arguments regarding its dimensionality and distinction from other similar concepts such as *resilience* and *grit* (see Gucciardi, 2017).

Dimensionality of mental toughness

Traditionally, the importance of mental toughness has been realized by many researchers, athletes, coaches, and parents beyond the sport context. Despite the popularity of the terminology, the concept, especially its dimensionality, is still controversial. Some researchers argue that mental toughness is a multidimensional concept (e.g., Clough, Earle, & Sewell, 2002; Sheard, Golby, & van Wersch, 2009). Yet, the methodologies to develop a

questionnaire have not been sufficiently discussed (Clough et al., 2002). Gucciardi, Hanton, and Mallett (2012) reviewed articles and argued the multidimensional structure was not adequate to define mental toughness. For instance, Crust and Swann (2011) showed that the internal consistency of two subscales of the 48-item-Mental Toughness Questionnaire (MTQ48; Clough et al., 2002) as well as two subscales of Sport Mental Toughness Questionnaire (SMTQ; Sheard et al., 2009) were considered to be inadequate in their factor structures (Emotional control = .45, Life control = .50; Constancy = .56, Control = .60). These issues commonly occurred in other studies using those multidimensional questionnaires (e.g., Crust & Keegan, 2010; Crust & Swann, 2011; Kaiseler, Poleman, Nicholls, 2009; Levy, Polman, Clough, Marchant, & Earle, 2006; Nicholls, Levy, Polman, & Crust, 2011; Nicholls, Polman, Levy, & Backhouse, 2008; Nicholls, Polman, Levy, & Backhouse, 2009; Perry, Clough, Crust, Earle, & Nicholls, 2013; St Clair-Thompson, Bugler, Robinson, Clough, McGeown, & Perry, 2015). In addition, Vaughan, Hanna, and Breslin (2018) recently revealed the largest degree of misspecification in the factor structure of the multidimensional mental toughness assessment when using it in athlete samples. Therefore, the multidimensionality of mental toughness has been criticized by some researchers in sport psychology (See Gucciardi et al., 2012).

In contrast, according to the researchers who claim that mental toughness is a unidimensional concept, they have demonstrated excellent psychometric properties for the Mental Toughness Inventory (MTI; Gucciardi et al., 2015). This inventory has been applied to a number of contexts including sport, business, education, and military (e.g., Cowden, 2018; Gucciardi et al., 2015; Hannan et al., 2015; Mahoney, Ntoumanis, Gucciardi, Mallett, & Stebbings, 2016; Otte, Konradt, Garbers, & Schippers, 2017). Researchers have largely supported the unidimensional factor structure of mental toughness. Consequently, we applied the unidimensional concept of mental toughness in the current dissertation.

Distinctiveness of three similar personality traits

Recently, resilience, grit, and mental toughness have often been debated as significant personality traits for athletes (Larkin, O'Connor, & Williams, 2016; Martin, Byrd, Watts, & Dent, 2015; Sarkar & Fletcher, 2014). Resilience, “the capacity of a dynamic system to adapt successfully to disturbances that threaten its function viability, or development” (Masten, 2014, p. 10), is often used interchangeably with mental toughness. Although these traits share some similarities, they could be distinguished in other characteristics. Mental toughness is always argued as a personal resource, while resilience can be applied to more contexts than an individual characteristic alone, such as organizational resilience (e.g., Lengnick-Hall, Beck, & Lengnick-Hall, 2011). Additionally, resilience is a reactive concept that is critical when encountering adversities or stressors (Bonanno, Romero, & Klein, 2015), whereas mental toughness is a concept that has both proactive and reactive aspects and is essential for goal-directed behaviours requiring intensity, duration, and frequency to achieve one's goals (Gucciardi, 2017). Lastly, “resilience is not necessarily about superior functioning or flourishing” (Windle, 2012, p. 159) while functioning is essential for mental toughness (Gucciardi et al., 2015). These arguments point towards the subtle nuance of the terms.

Grit, known as “the disposition to pursue long-term goals with ‘passion and perseverance” (Duckworth, Peterson, Matthews, & Kelly, 2007, pp. 1087-1088), has been increasingly discussed as a similar concept to mental toughness. Among growing popular use of term grit, it is one of the crucial personality traits to achieve one's goals (see Duckworth, 2016). The difference between those two concepts should be addressed. Although they share some similarities such as being innately purposeful and perseverant (Gucciardi, Peeling, Ducker, & Dawson, 2016), grit and mental toughness can do differ. First, grit reflects consistent passion and perseverance to a specific long-term goal in particular situations,

contexts, and times (McAdams, 2013; McAdams, & Pals, 2006), whereas mental toughness can be applied to more variable situations and over time (Gucciardi et al., 2015). Further, grit primarily focuses on a specific singular object or goal (Eskreis-Winkler, Gross, & Duckworth, 2016). In contrast, mental toughness pays attention to the goal-directed behaviours requiring variety of efforts for the achievement of the goals (Gucciardi, Gordon, & Dimmock, 2009; Hardy, Bell, & Beattie, 2014). Thus, mental toughness can be distinguished from the concept of grit.

Buffering effects of mental toughness

Within the framework of self-determination theory, positive human functioning can occur only when the three basic psychological needs are satisfied (Ryan & Deci, 2000). In contrast, when the psychological needs are undermined or thwarted, people are less likely to thrive. Mental toughness is considered to be an impairing factor for stressors that negatively affect positive human functioning (e.g., Gucciardi, 2016). Further, individuals with higher mental toughness are less affected by stressors because mental toughness entails adaptive developed coping skills, facilitating positive human functioning (Gucciardi et al., 2015). Therefore, as thriving is influenced by motivational factors (Spreitzer & Porath, 2014), the negative impacts of maladaptive motivational factors (e.g., basic psychological need thwarting) on thriving should be buffered by the level of mental toughness.

Mental toughness and thriving

Mental toughness also can be an important resource to affect the experience of thriving, since the construct has been developed under the studies and practices of elite athletes' functioning (e.g., Jones et al., 2002). This fact suggests the significant relationship between mental toughness and the experience of thriving. A previous study clarified that adolescent athletes with higher mental toughness showed greater thriving, even in situations where they perceived higher controlling behaviours from coaches (Gucciardi et al., 2017).

Thus, mental toughness would be a positive antecedent of thriving. Although a previous study claimed that mental toughness is an antecedent of greater self-determined motivation (i.e., identified and intrinsic regulation: Cowden, Crust, Jackman, & Duckett, 2019), a more mentally tough athlete does not necessarily embrace an intrinsic type of behavioural regulation (e.g., I play the sport because it is fun: Lonsdale, Hodge, & Rose, 2008). Rather, mental toughness should work more on less self-determined types of motivational regulation than on intrinsic regulation such as identified regulation or introjected regulation (e.g., because it is important to me, because I feel obligated to do, respectively).

Although some intervention studies showed the trainability of mental toughness (e.g., Bell, Hardy, & Beattie, 2013; Fitzwater, Arthur, & Hardy, 2018), the psychological mechanism of development in mental toughness is still not clear. As a potential mechanism of the improvement in mental toughness, researchers have argued that basic psychological need satisfaction may be an antecedent of mental toughness (e.g., Mahoney et al., 2014a) since basic psychological need satisfaction can positively impact the degree to which people will experience psychological growth and development (Ryan & Deci, 2000, 2017). Indeed, Mahoney et al. (2014b) provided evidence that the satisfaction of basic psychological needs was positively related to mental toughness in youth athlete samples. Further, mental toughness and the concept of thriving are reciprocally interactive. (Mahoney et al., 2014a). However, few studies to date have tested the relationship between the satisfaction of basic psychological needs and mental toughness, or examined the relationship between mental toughness and thriving. Hence, the relationship between satisfaction (frustration/thwarting) of psychological needs and thriving would be positively (negatively) mediated by mental toughness, indicating mental toughness would be a positive predictor of thriving.

Interpersonal Behaviours: Autonomy Support

Self-determination theory argues that social environmental factors strongly impact the satisfaction of basic psychological needs. Ryan and Deci (2017) mention that “*self-determination theory* is centrally concerned with the social conditions that facilitate or hinder human flourishing” (p. 3). Moreover, self-determination theory assumes that an interpersonal style (e.g., autonomy supportiveness, controlling behaviours) of significant others (e.g., coaches, parents, peers) is an important determinant of individuals’ positive development (Grolnick, Ryan, & Deci, 1991). Therefore, the significant social agents’ behaviours would be an imperative factor for the determination of the degree of basic psychological needs satisfaction.

Autonomy support is the supportive behaviour that coaches or parents provide to develop students’ or athletes’ inner motivational resources (e.g., Reeve, Deci, & Ryan, 2004). Coaches and parents who are autonomy supportive provide youth athletes choices and more structured guidance, and try to make good relationships with others, resulting in more satisfied psychological needs. Previous studies have shown that parents’ and coaches’ interpersonal styles (e.g., autonomy-supportive vs controlling) are strong determinants of youth athletes’ basic psychological needs and other outcomes including sport continuation and well-being (e.g., Amorose & Anderson-Butcher, 2007; Smith, et al., 2011). Additionally, parents and coaches with a winning emphasis style put more pressure on youth athletes, which in turn influences youth athletes to be externally regulated and decrease long-term involvement in the youth sport context (Wang, Sproule, McNeill, Martindale & Lee, 2011). Recent literature has claimed the importance of building an autonomy supportive environment by important figures for youth athletes (e.g., Gaudreau et al., 2016). As a result, coaches’ or parents’ autonomy supportiveness is a significant determinant of youth athletes’ basic psychological need satisfaction and other outcomes regarding athletes’ functioning

including sport continuation (Pelletier et al., 2001), well-being (Adie, Duda, & Ntoumanis, 2012; Smith et al., 2011), and performance (Behzadnia et al., 2018). Hence, autonomy support from coaches or parents is an influential social factor for youth athletes.

Despite understanding the importance of autonomy support from significant others, research in the youth sport setting is still limited. Although Gaudreau and his colleagues (2016) examined the difference of coaches' and parents' autonomy support on youth athletes' psychological need satisfaction, the differences in the effects of each social agent (e.g., coaches, parents) on basic psychological needs have rarely been compared, and their impact on sport continuation never investigated. Moreover, no study to date has been designed to determine which personal resources (e.g., hedonic or eudaimonic motives) or social environment factors (autonomy support) are related to youth athletes' basic psychological needs satisfaction and other important variables (e.g., thriving, intention to continue sport, subjective well-being, goal progress). This research gap should not be ignored, and the examination of these factors would contribute to sport psychology and management regarding factors associated with sport continuation. Gardreau et al. (2016) also concluded that autonomy support from parents seems to be more important for younger athletes' thriving regardless of the perception of autonomy support from coaches.

Although the research investigating the relationship between autonomy supportiveness of coaches or parents and thriving in the youth sport context is limited, some studies suggest a significant relationship. Kasser and Ryan (1999), for instance, demonstrated that autonomy support was positively related to vitality, an indicator of thriving. Especially in the sport context, Healy, Ntoumanis, Veldhuijzen van Zanten, and Paine (2014) clarified that autonomy support from coaches was a positive predictor of athletes' vitality. Research regarding autonomy support has been conducted relatively more frequently in physical education and exercise settings. Mouratidis, Vansteenkiste, Sideridis, and Lens (2011)

demonstrated that students experienced higher enjoyment and vitality when the class was more autonomy supportive. Moustaka, Vlachopoulos, Kabitsis, and Theodorakis (2012) showed that an autonomy-supportive program guided by the exercise instructor facilitated participants to experience more psychological need satisfaction, more autonomous motivation, and higher subjective vitality. In addition, Taylor and Lonsdale (2010) found that autonomy support from physical education teachers was positively associated with the satisfaction of basic psychological needs, which in turn increased subjective vitality. Thus, autonomy support would be a positive precursor of vitality through the satisfaction of basic psychological needs.

Moreover, autonomy support should be related to learning, another component of thriving, because an autonomy supportive environment provides high structure and facilitates positive connection with others (e.g., Assor, Kaplan, Feinberg & Tal, 2009). As a result, high-quality learning is more likely to occur (e.g., Reeve, Ryan, Deci, & Jang, 2008). For instance, Black and Deci (2000) also investigated the effectiveness of an autonomy supportive style of teaching for college students studying chemistry on learning effectiveness, and found that the autonomy supportive teaching was positively related to students' higher learning at the end of semester. In addition, Vansteenkiste, Sierens, et al. (2012) investigated students' perceptions of teachers' autonomy support and clarified that high autonomy support was associated with more effective learning strategies. Hence, autonomy support should be also positively related to the learning dimension of thriving through the satisfaction of basic psychological needs. In conclusion, the positive relationship between autonomy supportiveness of coaches and parents would be positively associated with thriving, and the relationships should be mediated by the satisfaction of basic psychological needs.

Summary of Literature Review

In summary, thriving can be an antecedent of a number of important outcome variables such as retention, subjective well-being, and goal progress (e.g., Porath et al., 2012). Basic psychological need satisfaction may be an important precursor of thriving as self-determination theory mentions that the satisfaction of basic psychological needs facilitates personal growth and development, and a significant relationship has been revealed by some of the evidence (Porath et al., 2012; Ryan & Deci, 2000, 2017; Spreitzer & Porath, 2014). In addition, the motives for hedonic and eudaimonic experiences are important predictors of personal growth through the satisfaction of basic psychological needs (Ryan et al., 2008; Saunders et al., 2018).

Moreover, youth athletes are vulnerable to thwarting of their basic psychological needs due to their undeveloped coping skills (Bebetsos & Antoniou, 2003; Holt et al., 2005). Hence, a personal resource such as mental toughness has a crucial role to prevent the thwarting of youth athletes' psychological needs. Indeed, since the negative effect of controlling coaches' behaviour on thriving was buffered by higher level of mental toughness in the past research (Gucciardi et al., 2017), mental toughness can be an important moderator on the negative effect of basic psychological need thwarting on important outcomes for youth athletes including thriving, intention to continue, subjective well-being, and goal progress.

Lastly, in addition to the positive effect of personal resources on thriving, social environment factors are largely influential on human thriving based on self-determination theory (Ryan & Deci, 2000, 2017). Therefore, both personal and social factors would be related to thriving through basic psychological need satisfaction, which in turn eventually predict imperative outcome variables for youth athletes' positive functioning. Consequently, it is important to understand the mechanism underlying youth athletes' thriving by considering both individual and social environmental factors.

The Current Doctoral Thesis

The overall purpose of this dissertation was to examine psychological mechanisms underlying thriving within a youth sport context. To do so, the current dissertation involved three different studies with separately collected quantitative data and samples. The studies investigated youth thriving and considered the personal hedonic and eudaimonic motives, perceptions of autonomy support from parents and coaches, basic psychological need satisfaction and thwarting, mental toughness, intention to continue sport, subjective well-being, and goal progress. The collected data collected from samples in Canada (Study 1, 2, & 3) and Japan (Study 3) and were tested by path analyses to examine the hypothesized models advanced in each study.

Dissertation Objectives, Research Questions, and Hypotheses

Study 1

The objective of Study 1 was to determine whether thriving mediated the relationship between basic psychological needs satisfaction and the outcome variables of intention to continue sport, subjective well-being in sport, and goal progress. Another objective was to investigate how hedonic and eudaimonic motives are related to thriving and the salient outcomes for youth athletes through the satisfaction of basic psychological needs. To this end, one of the research questions for Study 1 was as follows:

RQ1: Does thriving mediate the relationships between the satisfaction of basic psychological needs and salient outcome variables for youth athletes?

This research question is based on the integrative model of human growth at work (Spreitzer & Porath, 2014). Hence, one of the purposes of this study was to examine if the model can be adapted to a sport context and if BPNS can predict sport continuation in addition to performance and well-being through increased thriving. In other words, Study 1 examined the mediating role of thriving on the relationship between BPNS and the outcome

variables (i.e., intention to continue, subjective well-being: SWB in sport, goal progress). Our hypotheses are as follows:

Hypothesis 1-1: BPNS is positively related to intention to continue sport, SWB in sport, and goal progress through thriving

Saunders et al. (2018) found both hedonic and eudaimonic well-being were predicted by hedonic and eudaimonic motives through the satisfaction of basic psychological needs. According to the researchers (Deci & Ryan, 2001), it is considered that subjective well-being is the key concept of the *hedonic* side of well-being, whereas personal growth and vitality are the essential parts in the *eudaimonic* side of well-being. This dissertation takes the stance that subjective well-being in sport (also known as a hedonic side of well-being) should be an outcome of thriving based on the model suggested by Spreitzer et al. (2005) which affirms that health could be an outcome of experiencing thriving. As subjective well-being is a critical indicator of mental health (e.g., Keyes, 2002), the current dissertation operationalized that subjective well-being should be an outcome of thriving. Also, based on Ryan and Deci's (2001) assertion, the eudaimonic motive would produce a stronger relationship with thriving. Therefore, the present thesis is primarily interested in how thriving can be predicted by hedonic and eudaimonic motives through the satisfaction of basic psychological needs. Hence, the second purpose of Study 1 was:

RQ2: Is thriving predicted by hedonic and eudaimonic motives through the satisfaction of basic psychological needs?

Then, the hypothesis for the research question is following:

Hypothesis 1-2a: Hedonic and eudaimonic motives are positively related to thriving through basic psychological need satisfaction.

Hypothesis 1- 2b: The relationship would be stronger for the relationship between eudaimonic motives and thriving.

The final purpose of Study 1 was to investigate the extended model based on RQ1 and RQ2. Hence, we expanded the models tested for RQ1 and RQ2 and examined the relationship between hedonic and eudaimonic motives and outcome variables (i.e., intention to continue, subjective well-being, goal progress) through both basic psychological need satisfaction and thriving (i.e., double mediations models). Research showed that hedonic motives did not predict important outcomes except subjective well-being, but eudaimonic motives predicted important outcomes including achievement in school and well-being (Kryza-Lacombe, Tanzini, & O'Neill, 2019). Therefore, the third research question and the hypotheses were as follows:

RQ3: Are hedonic and eudaimonic motives associated with salient outcomes for youth athletes through thriving and basic psychological need satisfaction?

Consequently, the third research hypotheses in Study 1 are as follow:

Hypothesis 1-3a: Hedonic motives are only positively related to subjective well-being in sport through both basic psychological need satisfaction and thriving.

Hypothesis 1-3b: Eudaimonic motives are positively related to intention to continue sport, subjective well-being in sport, and goal progress through both basic psychological need satisfaction and thriving.

Participants

Study 1 involved recruiting 196 active Canadian youth athletes aged 14 to 18 years in a variety of sports (e.g., baseball, track and field). The principle investigator and the supervisors contacted the organizations by an email and phone to recruit the participants. The official letter was created by the Ph.D. candidate and the supervisor in order to inquire if the organization is interested in the project and available to voluntarily partake in the study. Once we obtained permission, an email invitation to participate in Study 1 was sent to potential

participants through the organization with a direct link to an online consent form and the questionnaires.

The recruited Canadian youth athletes were assigned a demographic questionnaire and seven questionnaires to assess basic psychological needs satisfaction, thriving, intention to continue sport, positive affect, life satisfaction, goal progress, and hedonic, eudaimonic motives. The details of the demographic questionnaire and the measurements are described in Appendices (pp. 210-226). Measurements used in the study were contemplated by the researchers based on the validity and reliability of previously tested scales.

Study 2

In line with previous research that showed the buffering effect of mental toughness on the negative relationship between controlling coach behaviours and thriving (Gucciardi et al., 2017), we hypothesized that mental toughness would buffer the negative indirect and direct relationships. Hence, the purpose of Study 2 was to clarify if a high or moderate level of mental toughness buffers the negative impact of psychological need thwarting on intention to continue through thriving. Our research question and hypotheses for Study 2 were the following:

RQ4: Does mental toughness buffer the negative effect of psychological need thwarting on outcome variables? More specifically, does mental toughness moderate the indirect relationship between psychological need thwarting and outcome variables (i.e., intention to continue sport, subjective well-being in sport, goal progress) through thriving and the direct relationship between psychological need thwarting and the outcomes?

Then, the hypotheses for Study 2 are following:

Hypothesis 2-1: Basic psychological need thwarting is negatively related to outcome variables (intention to continue/subjective well-being in sport/goal progress) through the decreased feeling of thriving (simple mediation)

Hypothesis 2-2: The negative indirect relationships between basic psychological need thwarting and outcomes through thriving are buffered for the individuals with high mental toughness compared to moderate or low mental toughness (Moderated-mediation).

Participants

Similar to Study 1, Study 2 involved recruiting 188 active Canadian youth athletes aged 14 to 18 years in a variety of sports (e.g., hockey, football). The participants in Study 2 were completely different participants from the participants in Study 1. The principle investigator and the supervisors contacted the organization across Canada by an email and phone with the information letter created by the Ph.D. candidate and the supervisors. Once we obtained the permission to access to youth athletes from the coaches or the administrator, an email invitation to participate in Study 2 was sent to youth athletes through the organization with a link to the online consent form and the questionnaires.

The participants in Study 2 were assigned a demographic questionnaire and seven questionnaires to assess basic psychological needs thwarting, thriving, mental toughness, intention to continue sport, positive affect, life satisfaction, and goal progress. The details of the demographic questionnaire and the measurements are described in Appendices (pp. 210-231).

Study 3

One of the purposes of Study 3 was to more deeply understand the psychological mechanism underlying thriving in youth sport context. More specifically, we examined which factors (personal motivational orientations vs. social environmental factors) would best

predict subsequent outcome variables (e.g., mental toughness, intrinsic regulation). No study to date has investigated the strength of the impact of both personal and social factors simultaneously on important outcomes (e.g., intention to continue sport, subjective well-being in sport, goal progress) and the determinant variables for the salient outcomes (e.g., basic psychological need satisfaction, intrinsic regulation, and thriving). Thus, one of the research questions for Study 3 was as follows:

RQ5: Which factors (personal resources: hedonic or eudaimonic motives vs. social environment factors: autonomy support from coaches and parents) are more strongly related to youth athletes' thriving through basic psychological need satisfaction over a three-month time span?

As mental toughness research originated from the research on athletes' thriving (e.g., Bull et al., 2005; Jones et al., 2002), mental toughness and thriving should be significantly related (Gucciardi et al., 2015). In addition, past research has shown a significant connection between mental toughness and sport continuation, subjective well-being, and goal progress (e.g., Gucciardi et al., 2016; Hannan et al., 2015; Jing & Wang, 2018; Mahoney et al., 2014). Consequently, the second purpose of Study 3 was to examine the relationship between mental toughness, the outcome variables, and the mediating role of thriving on the relationships. The research question was as follows:

RQ6: How does mental toughness predict the outcome variables through thriving?

The final purpose of Study 3 was to combine the model investigating RQ5 and RQ6 over time. Personal resources and social environmental factors affecting basic psychological needs would be positively related to outcome variables in some way. Therefore, the final purpose of Study 3 was exploratory in nature and sought to test the relationship between resources affecting basic psychological needs and salient outcome variables for youth athletes over time. Then, the final research question of the current doctoral thesis was:

RQ7: How are personal resources and social factors at time 1 associated with salient outcomes at time 2 in the three-month time span?

The hypotheses for Study 3 were as follows.

Hypothesis 3-1: Personal (i.e., hedonic and eudaimonic motives) and the social factors (i.e., autonomy support from coaches and parents) would be positive predictor of basic psychological need satisfaction (H1a – H1d),

Hypothesis 3-2: Basic psychological need satisfaction would be positively related to thriving and intrinsic regulation (H2a, H2b).

Hypothesis 3-3: Basic psychological need satisfaction would mediate the relationships between the personal and social factors and thriving (H3a – H3d)

Hypothesis 3-4: Basic psychological need satisfaction would mediate the relationships between the personal and social factors and intrinsic regulation (H4a – H4d).

Hypothesis 3-5: Basic psychological need satisfaction would positively predict mental toughness (H5a), which is positively associated with thriving (H5b). Thus, the relationship between BPNS and thriving would be mediated by mental toughness (H5c).

Hypothesis 3-6: The relationship between basic psychological need satisfaction and the three outcomes regarding positive youth functioning (i.e., intention to continue, subjective well-being in sport, goal progress) would be mediated by mental toughness (H6a – H6c),

Hypothesis 3-7: The relationship between basic psychological need satisfaction and the three outcomes regarding positive youth functioning would be mediated by intrinsic regulation (H7a – H7c).

Hypothesis 3-8: The relationship between basic psychological need satisfaction and the three outcomes regarding positive youth functioning would be mediated by thriving (H8a – H8c).

The complicated hypotheses of Study 3 are depicted in Figure 1 (p. 142).

Participants

In Study 3, 507 youth sport participants (aged 14-18) in Canada and Japan answered an online survey at time 1, while 203 participants ($M_{\text{age}} = 15.81$; $SD = 1.76$; 79 female, 115 male, 9 preferred not to answer; Canada = 44, Japan = 159) completed an online survey at time 2. The response rate of the second time was 40.04%. The second data collection was conducted for the same participants three months after the first data collection. The youth sport participants in Canada and Japan were recruited by the assistance of youth sport clubs in Canada and Japan. The principle investigator and supervisors contacted the organizations by an email and phone to obtain the confirmation to conduct the project for the investigation of youth athletes' thriving. The participants were asked to indicate their date of birth, gender, and email address on each time point to enable questionnaires to be matched across two time points along with the research using similar research design (Smith et al., 2011). Since some cultural differences between Canada and Japan were expected based on cultural dimensions (i.e., Hofstede, 1984, 2011), we collected data from both countries. However, due to a lower Canadian sample, cultural comparison between the countries was not able to be calculated with equal group sizes.

Participants answered the questionnaires regarding personal (i.e., hedonic and eudaimonic motives) and social factors (i.e., autonomy supportiveness of coaches and parents) and basic psychological need satisfaction in Time 1, whereas mental toughness, intrinsic regulation, thriving, and outcomes (intention to continue, subjective well-being in sport, goal progress) were assessed in Time 2 (Appendices, pp. 210-239). Hence, the current

study only used the 203 participants who completed the survey for two times for the data analysis. Participants were from a wide range of sports (e.g., basketball, baseball, soccer, track and field). Participants listed themselves as either recreational (21.2%), regional (35.0%), provincial (18.2%), national (20.7%), or international (4.9%) level athletes, who weekly practice 16.49 ($SD = 9.31$) hours on average. All participants completed an online survey operated by Qualtrics. The survey for Japanese participants was translated into Japanese using the back-translation method by the first author and the third author who are both familiar with the concept and the questionnaires. The participants were provided a consent form outlining the voluntary nature of participation and their rights to withdraw from the study.

Chapter II: Article 1

Kinoshita, K., MacIntosh, E., & Sato, S. (under review). Thriving in Youth Sport: The Antecedents and Consequences

Abstract

Thriving “a psychological state composed of the joint experience of vitality and learning (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005, p. 537)” might offer further insight into the problem of youth sport development research. The purpose of the study was to investigate the mechanisms underlying thriving within a youth sport context. More specifically, the present study considered the perspective of Self-Determination Theory and in particular, how hedonic and eudaimonic motives, as antecedents of thriving, influenced youth athletes’ outcomes (i.e., intention to continue sport, subjective well-being in sport, and goal progress), consequences of thriving. 196 youth sport participants answered an online survey. Path analysis was conducted to test our hypotheses. We used the bias-corrected bootstrap procedure to examine the hypothesized indirect effects. Our results showed that both hedonic and eudaimonic motives were positively related to all outcome variables (intention to continue sport, subjective well-being in sport, and goal progress) through both the basic psychological need satisfaction and thriving. Thriving is an important psychological concept that can keep youth athletes more active in sport especially when people seek eudaimonia.

Key words: eudaimonia; hedonia; self-determination theory; thriving; youth athletes

Introduction

Participation in sport has well-documented physical, psychological and social benefits that can lead to positive youth development (c.f., Eime, Young, Harvey, Charity, & Payne, 2013; Hebert, Møller, Andersen, & Wedderkopp, 2015; Vandell, Larson, Mahoney, & Watts, 2015) as well as youths' thriving (Zarrett & Lerner, 2008). However, to date, the research that investigated the mechanism underlying youth athletes' thriving with the consideration of personal predictable factors and the consequences is still limited.

Recent evidence suggests that the concept of *thriving* is a positive predictor of desired outcomes such as retention, well-being, and performance (e.g., Porath, Spreitzer, Gibson, & Garnett, 2012; Ren, Yunlu, Shaffer, & Fodchuk, 2015). Seligman and Csikszentmihalyi (2000) remarked that “a psychology of positive human functioning will arise that achieves a scientific understanding and effective interventions to build *thriving* in individuals, families, and communities” (p. 13). Since then, thriving has been a popular topic in psychology research because the concept is linked to the maintenance of human well-being and performance (Pfeffer, 2010).

However, despite the emergence of the positive psychology movement, the number of the studies investigating the psychological mechanism underlying thriving particularly amongst youth athlete samples are limited (e.g., Brown, Arnold, Standage, & Fletcher, 2017b; Gucciardi, Stamatis, & Ntoumanis, 2017). Thus, the purpose of the present study was to better understand the mechanism (e.g., antecedents and consequences) underlying youth athletes' thriving. More specifically, the present study considered the perspective of Self-Determination Theory and in particular, how hedonic and eudaimonic motives (antecedents) influenced youth athletes' outcomes (i.e., intention to continue sport, subjective well-being in sport, and goal progress) as consequences through thriving and basic psychological need satisfaction.

Concept of Thriving

Recently, Brown and the colleagues (2017a) defined the concept of thriving within a sports context. According to their definition, the characteristics of *thriving* contains both high levels of well-being and performance (Brown, Arnold, Fletcher, & Standage, 2017a; Brown Arnold, Reid, & Roberts, 2018). This definition involves the subjective perception and experience of high levels of performance and well-being. However, the definition differs from other research on thriving. For example, within the context of work, researchers have defined thriving as “a psychological state composed of the joint experience of vitality and learning (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005, p. 537).” This definition of thriving, which includes *learning* as an important component, has a similarity with Brown et al.’s (2017a) concept in that it specifies *development* as fundamental for thriving; consistent with the perspective of personal growth (Rogers, 1961).

Although Brown et al.’s definition included the perception of high *performance* as an essential part of thriving, in our study, we argue that higher performance including goal progress in sport should be an outcome of the state of thriving based on the social embeddedness thriving at work model (Spretizer et al., 2005). In the model, the researchers have claimed that development and health would be consequences of experienced thriving. Moreover, the constructs of learning and vitality are fundamental cognitive and affective aspects in personal growth (Ryff, 1989). While Brown et al (2017a) did include *development* as an essential part of their conceptual definition of thriving, they created the construct of thriving by combining an affective aspect of human growth (i.e., vitality and positive affect) and one item measurement of subjective performance (Brown et al., 2017b). Thus, their conceptualization (i.e., Brown et al., 2017b) seems that the development part of thriving was not measured although the previous researcher mentioned the importance of sense of improvement (cognitive aspect) for the experience of thriving (Keyes, 2002). As learning is

an imperative cognitive aspect of human growth, we believe that ones' perception of high performance should be one of the outcomes of thriving rather than an element of human thriving. Hence, we considered Spreitzer et al.'s (2005) concept which contains both affective and cognitive components as a central tenet of thriving. Consequently, based on their work (Spreitzer et al., 2005), we operationalized thriving in this study as a desired psychological state that guides youth athletes' goal-directed behaviors. This point is congruent with the contention that high performance would occur as a result of experiencing the state of thriving (Spreitzer & Porath, 2014). Therefore, we adapted Spreitzer et al.'s (2005) concept of thriving in this study.

Thriving and Outcomes

Thriving influences important outcomes for positive human functioning. Past research has shown the effects of thriving on positive human functioning in a variety of domains including sport, work, and education (e.g., Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015; Porath et al., 2012; Walumbwa, Muchiri, Misati, Wu, & Meilian, 2018). For example, previous literature in the fields of work and education have demonstrated that the degree of thriving predicts retention of employees and students (Ren et al., 2015; Spreitzer, Porath, & Gibson, 2012). In sport, various studies have indicated a significant relationship between motivational factors and sport continuation or one's intention to continue sport (e.g., Balish et al., 2014; Jõesaar Hein, & Hagger, 2011). Yet, no study to date has investigated the relationship between thriving and sport continuation. Since thriving is considered as a psychological state relating to motivation and it is likely to reduce burnout (Maslach, 2003; Porath et al., 2012), thriving could explain the mechanism underlying sport continuation.

Sport psychology scholars advocate that subjective well-being (e.g., satisfaction and positive affect) is one of the most salient outcomes for athletes' positive functioning (c.f., Lundqvist, 2011). Subjective well-being (SWB) is defined as people's evaluation of their

lives (Diener & Lucas, 1999) and it is an indicator of mental health (Keys, 2006). By adapting this definition in the sport context, SWB in sport can be considered as athletes' evaluation of their athletic lives and it might be an indicator of mental health for athletes (Foster & Chow, 2019). Furthermore, since the notion of social embeddedness of thriving at work claims that health should be an outcome of thriving (Spreitzer et al., 2005) we reasoned that SWB in sport would be an important outcome variable of interest. In fact, researchers have argued that thriving is important for individuals to maintain their SWB (e.g., Porath et al., 2012). Additionally, both vitality and learning are positively associated with SWB (Ettner & Grzywacz, 2001; Keyes, 2002) and studies have found thriving was in fact an antecedent of SWB (Flinchbaugh, Luth, & Li, 2015; Zhai, Wang, & Weadon, 2017; Rozkwitalska, & Basinska, 2015). Consequently, SWB in sport (e.g., satisfaction in athletic life, positive affect in sport) should be an outcome of thriving.

To date, few studies have endeavored to understand the relationship between thriving and sport performance, although a number of studies have suggested that thriving is associated with higher performance (e.g., Spreitzer et al., 2012; Walumbwa et al., 2018). For instance, Gucciardi et al. (2015) found that thriving is positively correlated with students' academic and social goal progress. Spreitzer et al., (2005) also noted that people who thrive generate positive resources for performance enhancement by acquiring new knowledge and skills (Spreitzer et al., 2005). Hence, the evidence and the conceptualization show that thriving would be positively associated with athletes' goal progress in sport (performance).

Self-Determination Theory and Thriving

Thriving is a vital antecedent of positive human functioning; thus, it is important to understand how and when thriving occurs. *Self-Determination Theory* (SDT; Ryan & Deci, 2000, 2017) has been utilized to explain the relationship between motivational factors and thriving (Spreitzer & Porath, 2014). The SDT is based on the assumption that all human

beings have an inherent need for growth and development, which is in line with Rogers (1961). In addition, as a critical component of SDT, the theory assumes that all human beings possess three basic psychological needs, and the satisfaction of these needs is essential for growth and development. The three basic psychological needs are *autonomy*, *competence*, and *relatedness*. *Autonomy* refers to the desire to experience self-determination and psychological freedom (Deci & Ryan, 1985). *Competence* refers to the desire to demonstrate and improve one's capabilities (Deci, 1975). Lastly, *relatedness* refers to the desire to be valued, respected, and desired by important others (Baumeister & Leary, 1995). Accordingly, the growth occurs when the three basic psychological needs are satisfied (Ryan & Deci, 2017; Ryan, Deci, & Grolnick, 1995).

In the context of sport, athletes often experience extensive stressors, especially younger athletes that may have underdeveloped coping skills (Bebetsos & Antoniou, 2003; Holt, Hoar, & Fraser, 2005). The enhanced stressors negatively influences motivational factors, leading athletes to drop out from sport participation or; have negative consequences on their performance and well-being (e.g., Appleton, Hall, & Hill, 2009; Weber, 2009). Motivational factors are critical for sport continuation as well as for athletes' well-being and performance (e.g., Balish et al., 2014). For instance, many studies showed that the satisfaction of three psychological needs is positively associated with substantial outcomes such as retention/sport continuation, well-being, and performance (e.g., Balish et al., 2014; Cerasoli, Nicklin, & Nassrelgrawi, 2016; Ryan & Deci, 2017). Furthermore, researchers have shown that thriving itself is affected by ones' basic psychological need satisfaction (BPNS: Ryan & Deci, 2017; Ryan, Curren, & Deci, 2013; Spreitzer & Porath, 2014). The SDT assumes that people are optimally motivated when their BPNS are fulfilled (Ryan & Deci, 2000, 2017). Empirical research has also shown that people are more vitalized when experiencing BPNS (e.g., Cheval, Chalabaev, Quested, Courvoisier, & Sarrazin, 2017; Tsoi,

de Boer, Croiset, Koster, van der Burgt, & Kusurkar, 2018). Although the study of the relationship between BPNS and learning has been less conducted, some researchers evidenced that learning is facilitated by BPNS (Ryan, Koestner, & Deci, 1991; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). In fact, an empirical research study demonstrated that thriving was predicted by BPNS and explained 54% of the variance (Porath, Gibson, & Spreitzer, 2012). Therefore, conceptual and empirical evidence suggests that athletes may be also likely to experience thriving when their BPN are satisfied. Hence, the SDT would have the potential to explain the mechanism underlying thriving.

Individuals who experience a higher level of thriving demonstrate a higher level of retention, well-being, and performance (e.g., Gucciardi et al., 2015; Porath et al., 2012; Walumbwa et al., 2018). Moreover, the environment which provides BPNS for athletes was significantly influential on their thriving (Brown et al., 2017b). Accordingly, thriving is suggested to be positively predicted by the satisfaction of BPN, which in turn, being positively associated with substantial outcomes for athletes (e.g., intention to continue, well-being, goal progress, etc.). Consequently, thriving could be a positive psychological state, determined by the level of BPNS that may help enhance youth athletes' sport continuation, well-being, and goal progress. Thus, one of the objectives in the present study is to determine the mediating role of thriving on the relationship between BPNS and the outcome variables (i.e., intention to continue, subjective well-being: SWB in sport, goal progress). Our hypotheses are as follows:

Hypothesis 1: BPNS is positively related to intention to continue sport, SWB in sport, and goal progress through thriving

Hedonia and Eudaimonia

People seek “*true well-being*,” but many people are not able to find the answer for what the *true well-being* is. Well-being refers to “optimal psychological experience and

functioning” (Deci & Ryan, 2008, p.1), which is used interchangeably with happiness and is one of the most successful outcomes people pursue. In the field of positive psychology, the concept has inspired many researchers to study the mystery of *true well-being* (Seligman, 2002). Most of well-being has been traditionally argued as SWB (Diener, 1984), which consists of positive feeling, or a cognitive appraisal of satisfaction. This concept is a central tenet of *hedonia* (e.g., Kahneman, Diener, & Schwarz, 1999). However, researchers have recently started to claim that focusing only on the SWB, which is also known as a hedonic side of well-being, is not enough to understand “*true well-being*” (e.g., Ryan & Deci, 2001; Ryan, Huta, & Deci, 2008). As a potential answer for the epic question: “*What is true well-being?*”, Aristotle mentions that “the happy man both lives well and does well” (Rowe & Broadie, 2002, p. 103). Aristotle’s perspective here is known as *eudaimonia*, which refers to “a way of living that is focused on what is intrinsically worthwhile to human beings” (Ryan et al, 2008, p. 147). As a result, researchers have argued two concepts of well-being: *hedonia* and *eudaimonia* to more comprehensively explain happiness (Huta & Waterman, 2014).

Huta and Waterman (2014) further classified *hedonia* and *eudaimonia* into orientations (motives) and experiences (emotional and cognitive appraisals). Specifically, *hedonic motives* refer to the motives that seek pleasure, fun, and comfort, while *hedonic well-being* is defined as the subjective experience of life satisfaction and carefreeness (Huta & Waterman, 2014). In contrast, *eudaimonic motives* are defined as the orientation that seeks to develop one’s best and excellence, whereas *eudaimonic well-being* is the experiences of the concept of meaning, elevating experience, and interest (Huta & Waterman, 2014). According to the researchers (Deci & Ryan, 2008), it is considered that SWB are the key concept of the *hedonic* side of well-being, whereas personal growth and vitality are the essential parts in the *eudaimonic* side of well-being. Huta and Ryan (2010) further showed that both hedonic and eudaimonic motives are related to specific types of well-being as their study indicated that

individuals with both high hedonic and eudaimonic motives showed higher scores on both hedonic and eudaimonic well-being compared to individuals who scored either high hedonic or eudaimonic motives.

SDT also argues hedonic and eudaimonic motives as essential personal resources for human thriving (Ryan & Deci, 2001). In particular, researchers have argued the concept of hedonia and eudaimonia has a strong connection with BPNS (Huta & Ryan, 2010; Ryan et al., 2008). BPNS is also affected by social environmental factors (Ryan & Deci, 2000, 2017). Ryan et al. (2008) recently indicated that both hedonic and eudaimonic well-being should be explained by both hedonic and eudaimonic motives through the BPNS. Moreover, they suggested that eudaimonia should be more strongly related to BPNS since Aristotle's concept of eudaimonia is strongly related to the central concept of SDT (Ryan et al., 2008). In fact, empirical studies showed that eudaimonia is more affected by BPNS (Niemiec, Ryan, & Deci, 2009; Saunders, Sweet, & Huta, 2018). Saunders et al. (2018) found both hedonic and eudaimonic well-being were predicted by only eudaimonic motives through BPNS. However, the study had a small sample size ($n = 43$, Saunders et al., 2018), which might have some issues for verifying the relationships. Also, based on Ryan and Deci's (2000) assertion, the eudaimonic motive would produce a stronger relationship with thriving. Building on these propositions, the following hypotheses will be tested.

Hypothesis 2a: Hedonic and eudaimonic motives are positively related to thriving through basic psychological need satisfaction.

Hypothesis 2b: The relationship might be stronger for the relationship between eudaimonic motives and thriving.

The study also examines both hedonic and eudaimonic motives to determine if and how they are related to thriving and substantial outcomes (intention, SWB in sport, and goal progress) through BPNS. Consequently, the study also investigated the extension of the

examination of Hypothesis 1 and 2. Hence, we examined the indirect relationship between hedonic and eudaimonic motives and the outcome variables through both BPNS (*Mediator₁*) and thriving (*Mediator₂*). The full hypothesized theoretical model is shown in Figure 1

Additionally, previous research has demonstrated that hedonic motives did not predict important outcomes except SWB (Huta & Ryan, 2010; Peterson, Park, & Seligman, 2005), but eudaimonic motives predicted important outcomes including achievement in school and subjective well-being (Kryza-Lacombe, Tanzini, & O'Neill, 2019; Saunders et al., 2018). Consequently, the third research hypotheses are as follow:

Hypothesis 3a: Hedonic motives are only positively related to SWB in sport through both BPNS and thriving.

Hypothesis 3b: Eudaimonic motives are positively related to intention to continue sport, SWB in sport, and goal progress through both BPNS and thriving.

Methods

Participants

Canadian youth sport participants were recruited with the assistance of youth sport clubs in the city of Ottawa, Canada. One hundred and ninety-six youth sport participants answered an online survey ($M_{\text{age}} = 15.41$, $SD = 1.90$; 69 female, 105 male, 22 prefer not to answer). Participants were from a wide range of sports (e.g., basketball, baseball, swimming, tennis, track and field). In addition, participants listed themselves as either recreational (6.1%), regional (31.1%), provincial (34.2%), national (26.0%), or international (2.6%) level athletes, who weekly practice 9.93 ($SD = 5.63$) hours on average. All participants completed an online survey operated by Qualtrics. The participants were provided the informed consent, which had been approved by the institutional research ethics board (H-01-19-1444).

To detect an appropriate sample size for the hypothesized mediations model we conducted a power analysis using Med-Power (Kenny, 2017). Based on previous studies (e.g.,

Saunders et al., 2018; Guzmán, & Kingston, 2012), the values of each path with the weakest expected relationship (i.e., hedonic $\rightarrow$ BPNS $\rightarrow$ intention) was entered into the Med-Power to calculate the sample size ($\alpha = .05$, and power = .80). The power analysis showed that 193 participants were required as the minimum sample size in the present study.

Instruments

Basic Psychological Need Satisfaction (BPNS). To assess the satisfaction of three basic psychological needs, we used a 12- item version of Basic Need Satisfaction Scale (Deci & Ryan, 2000). The questionnaire measures three subscales: autonomy, competence, and relatedness. An example item is “I feel free to decide what is best for me. The participants were asked to answer BPNS items on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The three subscales can be combined to create a general index of BPNS. This procedure of a general and reliable index of BPNS is also consistent with past studies that the measurement has been applied to within a youth sport participants samples (Gaudreau, Morinville, Gareau, Verner-Filion, Green-Demers, & Franche, 2016; Verner-Filion & Vallerand, 2018). The result of a Confirmatory Factor Analysis (CFA) showed that one item suffered cross-loadings (less than .30; Hoyle, 2000). Thus, the item was removed, and the subsequent CFA showed acceptable fit indices of the general index of the scale ($\chi^2/df = 60.71/39$, $p < .05$; Comparative Fit Index: CFI = .96; Tucker-Lewis Index: TLI = .94; Root Mean Square error of Approximation: RMSEA = .08; standardized root mean square residual : SRMR = .06). The internal consistency for the present study was .87.

Thriving. We measured thriving by using the 10-item scale developed and validated by Porath et al. (2012). This scale was initially developed to assess thriving at work domain, but the measurement has been adapted to sport context (Gucciardi et al., 2017). The scale consists of two dimensions: vitality and learning (5 items each). Participants answered the scale items (e.g., “I find myself learning often”) on a 7-point scale (1 = strongly disagree to 7

= strongly agree). The results of CFA showed acceptable fit indices ($\chi^2/df = 68.20/32$, $p < .001$; CFI = .95; TLI = .92; RMSEA = .08; SRMR = .05). The alpha for the study was .89.

Intention to continue sport. Intention to continue the same sport during subsequent months or season was measured by two items adapted from Chatzisarantis, Biddle, and Meek (1997). Participants were asked to rate on a 7-Likert scale ranging from 1 (very unlikely) to 7 (very likely). The two items were: “I intend to play the sport in the next season/months.” “I am determined to play the sport in the next season/months.” Previous research reported acceptable reliability of the scale in sport participant samples (e.g., Behzadnia, Adachi, Deci, & Mohammadzadeh, 2018). The measurement showed a sufficient alpha ($\alpha = .91$)

Subjective well-being (SWB) in sport. Positive affect and life satisfaction in the sport domain were assessed as indicators of the SWB in sport of youth athletes in the previous sport psychology literature (e.g., Smith, Ntoumanis, Duda, & Vansteenkiste, 2011; Verner-Filion & Vallerand, 2018). We used the stem “In your main sport” to ask participant to rate their subjective well-being in their sport domain. Positive affect was measured using the five-item positive affect subscale from the Short-Form of Positive and Negative Affect Schedule (Thompson, 2007). The short form of PANAS was utilized in sport psychology research and showed adequate reliability (Felton & Jowett, 2013; $\alpha = .81$). Life satisfaction was assessed using the five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The items were slightly modified to measure the life satisfaction in sport contexts (e.g., “In most ways my life *as an athlete* is close to my ideal.”) to evaluate their athletic lives as conducted by previous research (e.g., Verner-Filion & Vallerand, 2018). For each participant, a composite subjective well-being score was created by averaging the responses to the two subscales. Each of the subscales was measured on a 7-point scale. The reliability for the composite score was adequate ($\alpha = .84$)

Goal progress. Goal Progress in sport was assessed using a three-item scale

developed by Dugas, Gaudreau, and Carraro (2012). The scale measures the extent to which participants have experienced their goal progress in sport. The items were slightly modified to adopt to sport contexts (e.g., “I have progressed on my sport/athletic goal.”). Each item was measured on a 7-point Likert scale ranged from 1 (*not at all*) to 7 (*totally*). Consistent with the past research indicating satisfactory internal consistency and factorial validity (Dugas et al., 2012), the internal consistency for the scale was sufficient ($\alpha = .90$).

Hedonic and Eudaimonic Motives. The Hedonic and Eudaimonic Motives for Activities (HEMA; Huta & Ryan, 2010) was used to measure the degree of both hedonic and eudaimonic motives in sport domain. The example of the hedonic motive item was “Seeking pleasure?” and the eudaimonic item was “Seeking to develop a skill, learn, or gain insight into something?” The scale is a 10-item scale using a 7-point Likert scale from 1 (not at all) to 7 (very much). The questionnaire assesses both hedonic and eudaimonic motives (five items for each). We used the stem “In your main sport” to adopt the questionnaire to be more accordance with the current research settings. The scale has shown adequate validity and reliability (Huta & Ryan, 2010), but no study has been conducted using the HEMA scales in youth sport context. We, therefore, conducted factor analysis for the measurement. The result showed that two items of the hedonic motives subscales had poor loadings (less than .30, Hoyle, 2000) on the corresponding factors. Hence, the two items were removed from analyses and the results of a CFA showed acceptable model fit indices ($\chi^2/df = 39.45/18$, $p < .01$; CFI = .96; TLI = .93; RMSEA = .08; SRMR = .05), indicating the scale can be used in the study. The reliabilities for hedonic and eudaimonic motives were .79 and .72, respectively.

Data analysis

Data analyses were executed by using IBM SPSS 26 and AMOS 26 statistics software. The path analysis was conducted by using maximum likelihood estimation to investigate the hypothesized model (Figure. 1). To examine the hypothesized mediation models, we applied

common goodness of fit indices, including Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), the Root Mean Square error of Approximation (RMSEA), and the standardized root mean square residual (SRMR). According to Kline (2005), good fit is indicated by values greater than CFI and TLI = .90, and less than .08 for RMSEA and SRMR, respectively.

Further, we used the bias-corrected bootstrap procedure to examine hypothesized indirect effects. Specifically, we report the bias-corrected confidence interval (i.e., 95% BC-CI) based on 5000 bootstrapped samples (Preacher & Hayes, 2004) to reveal the significant effect of the mediation model (If 95% BC-CI does not include zero, the path will be significant). The bias-corrected bootstrap procedure was recommended to use for computing confidence intervals in the mediation analysis because it removes bias that is caused by the distribution (Efron, 1987, MacKinnon, 2012). The bootstrap procedure is also statistically powerful, reducing the probability of making a type 2 error (Hayes, 2017).

Results

A missing data analysis revealed that the missing data was only 0.6%, indicating the influence of these missing data is negligible (Tabachnick & Fidell, 2013). Therefore, we used an expectation-maximization (EM) to treat the missing data (Tabachnick & Fidell, 2013). The reliabilities of the measurements were acceptable, ranging from .72 to .91. Descriptive statistics, reliabilities for variables, and correlations are presented in Table 1.

Hypothesis Testing

The proposed model showed a good fit to the data ($\chi^2/df = 7.25/3 = 2.42$; CFI = .99; TLI = .95; RMSEA = .09; SRMR = .03). To test the mediation hypotheses for the model, indirect effect tests were conducted with 5000 bootstrap samples. The results showed that BPNS was indirectly positively related to intention to continue ($\beta = .07$, SE = .03, 95% BC-CI = [.02, .15]), SWB in sport ($\beta = .07$, SE = .04, 95% BC-CI = [.01, .15]), and goal progress ($\beta = .10$, SE = .04, 95% BC-CI = [.03, .19]) through thriving, supporting the H1 (Table. 2).

Next, hedonic motives ($\beta = .09$, $SE = .03$, 95% BC-CI = [.03, .16]) and eudaimonic motives ($\beta = .18$, $SE = .05$, 95% BC-CI = [.10, .30]) significantly and positively were associated with thriving through BPNS. These statistically significant indirect relationships demonstrated support for H2a. Furthermore, as we expected, the standardized coefficient of the relationship between eudaimonic motives and thriving through BPNS was higher than the relationship between hedonic motives and thriving through BPNS. However, the BC-CIs were overlapped, which suggests that there is no statistical difference between the value of the relationships, indicating that the findings did not support H2b.

Lastly, we tested two double mediations paths in the same model, simultaneously ($IV \times 2$; $DV \times 3$). The mediators were BPNS (M_1) and thriving (M_2). According to the results, the hedonic and eudaimonic motives were positively related to intention (Hedonic: $\beta = .01$, $SE = .01$, 95% BC-CI = [.002, .03]; Eudaimonic: $\beta = .03$, $SE = .01$, 95% BC-CI = [.01, .06]), SWB in sport (Hedonic: $\beta = .01$, $SE = .01$, 95% BC-CI = [.002, .03]; Eudaimonic: $\beta = .02$, $SE = .01$, 95% BC-CI = [.004, .06]), and goal progress in sport (Hedonic: $\beta = .02$, $SE = .01$, 95% BC-CI = [.01, .05]; Eudaimonic: $\beta = .05$, $SE = .02$, 95% BC-CI = [.01, .11]) through both BPNS and thriving (Hedonic/Eudaimonic motives $\rightarrow$ BPNS (M_1) $\rightarrow$ Thriving (M_2) $\rightarrow$ Intention/SWB in sport/Goal progress). Accordingly, the examination of the complex indirect effects showed that both hedonic and eudaimonic motives were positively related to all outcome variables (i.e., intention, SWB in sport, goal progress) through both the BPNS and thriving. The results partially and fully supported H3a and H3b. All results were summarized in Table 2. The R^2 for BPNS and thriving were .19 and .63, respectively. Also, for the dependent variables, R^2 for intention, SWB in sport, and goal progress were .14, .64, and .46.

Discussion

The present study investigated the underlying mechanisms of thriving by testing the antecedents and consequences of thriving within a youth sport context. More specifically, the

study revealed that BPNS are positively associated with intention to continue in sport, SWB in sport, and goal progress through thriving (H1). Furthermore, both hedonic and eudaimonic motives were indirectly related to thriving through BPNS (H2a). Interestingly, the value coefficient in the relationship was greater for eudaimonic motives and thriving relative to hedonic motives and thriving (H2b), but was not statistically significant. Lastly, the two double mediations models (1. Hedonic motives $\rightarrow$ BPNS (M_1) $\rightarrow$ Thriving (M_2) $\rightarrow$ Intention/SWB/Goal progress; 2. Eudaimonic motives $\rightarrow$ BPNS (M_1) $\rightarrow$ Thriving (M_2) $\rightarrow$ Intention/SWB/Goal progress) were both statistically significant for all dependent variables (H3a, H3b).

In support of Hypothesis 1, thriving mediated the relationship between BPNS and the salient outcomes of interest (intention to continue sport, SWB in sport, and goal progress). However, two of the indirect effects were partially mediated; in other words, BPNS was still directly related to SWB in sport and goal progress, whereas the relationship between BPNS and intention to continue was fully mediated. This can potentially be explained due to the correlation between BPNS and thriving as it was statistically high ($r = .65$) even though the questions to assess those constructs were different. Spreitzer and colleagues (2005) noted that learning, a subcomponent of thriving, provides one with a continual sense of getting better. Similarly, competence satisfaction, a subcomponent of BPNS, refers to the desire to demonstrate and improve one's capabilities (Deci, 1975). Hence, the notion of improving is a central tenet in both cases which may explain the correlation between thriving and BPNS in our study.

Past studies have found that BPNS can be a predictor of sport continuation (e.g., Boiche & Sarrazin, 2009; Calvo et al., 2010). Our results found that thriving fully mediated the relationship between the BPNS and intention to continue sport. Interestingly, our results indicated that BPNS was not directly related to the youths' intention to continue sport in the

mediation model. In fact, our study findings regarding mediation have also been found in prior research where the relationship between BPNS and sport continuation was fully mediated by intrinsic motivation (Jõesaar et al., 2011). As such, these motivation-related psychological variables (e.g., intrinsic motivation, thriving) might appear to be more directly and strongly related to intention than BPNS. Thus, understanding a youth's intention to continue in sport would be enhanced by understanding the state of thriving.

Next, the present research examined whether both hedonic and eudaimonic motives are associated with thriving through the BPNS. The findings showed that both of the hypothesized indirect relationships were statistically significant (H2a). In other words, both hedonic and eudaimonic seeking in sport are important motives for youth athletes to thrive in their sport participation. This finding is consistent with previous studies that demonstrated that eudaimonic motives were positively related to well-being through BPNS (Saunders et al., 2018). While the past study did not find the significant indirect relationship (Saunders et al., 2018), the researchers hypothesized that hedonic motives would be positively related to well-being through BPNS. Hence, our finding that the significant indirect relationship between hedonic motives and thriving was detected, was consistent with Saunders et al.'s (2018) hypothesis although their study did not detect the significant relationship. However, the sample size in the previous study was very small (Saunders et al., 2018), suggesting that statistical power to detect significance might not have been sufficient. Hence, the present result is conceptually congruent with the previous work (Saunders et al., 2018).

Regarding the examination of our hypothesis 2b, the value of the standardized coefficient of the relationship between eudaimonic motives and thriving was twice as greater as the coefficient of the relationship between hedonic motives and thriving although the difference was not statistically significant (H2b). The result has at least showed the trend that the relations with thriving was stronger for with eudaimonic motives. This suggests that

although hedonic seeking is an essential psychological ingredient for being active (Huta, 2016), eudaimonic seeking may have more value to obtain salient outcomes for youth sport participation (e.g., intention to continue, SWB in sport, goal progress). Therefore, our results suggest that eudaimonic motives might be more likely to relate to BPNS than hedonic motives (Ryan & Deci, 2000).

We were also interested in investigating the relationship between hedonic and eudaimonic motives and the salient outcomes for youth athletes (i.e., intention to continue sport, SWB in sport, goal progress) through both BPNS (M_1) and thriving (M_2). The results of the double-mediation models found that both hedonic and eudaimonic motives were indirectly positively associated with intention to continue, SWB in sport, and goal progress through both were BPNS and thriving. While past research showed that hedonic motives predicted SWB, but not goal attainment or retention (Huta & Ryan, 2010; Peterson et al., 2005), the present findings showed hedonic motives can be a precursor of not only SWB in sport but also intention to continue and goal progress. Although we hypothesized that hedonic motives would be only related to SWB in sport through both BPNS and thriving (H3a), the motives are in fact, positively associated with all the dependent variables. Furthermore, as we expected, eudaimonic motives were also positively related to all dependent variables (H3b).

Theoretical Contribution

The results contribute to the growing body of literature investigating thriving within a sport context (e.g., Brown et al, 2017a, 2017b, 2018; Gucciardi et al, 2015; van Rens & Filho, 2019). First, the results showed that thriving positively mediated the relationships between BPNS and three important outcomes regarding youth athletes' positive functioning. The theoretical model also bolsters some of the assertions advanced within the literature of SDT (e.g., Spreitzer & Porath, 2014).

Second, our work demonstrated that thriving was predicted by both hedonic and eudemonic motives through BPNS. This result suggests that those personal resources (i.e., hedonic and eudaimonic motives) can be exogenous constructs of thriving through increased BPNS. While the results were partially consistent with past research (Saunders et al., 2018), our findings denoted that hedonic motives were positively related to not only SWB in sport, but also intention to continue and goal progress. The results also contribute to the development of the literature regarding thriving by adding evidence of importance antecedents (e.g., how youths' thriving can occur in the youth sport context).

Lastly, the results showed that both hedonic and eudaimonic motives are associated with three outcomes relating to youths' positive functioning in sport through increased experience of both BPNS and thriving. The findings contribute to understanding the underlying mechanism of thriving within youth sport and in particular, by showing what are the antecedents and the consequences of the desired psychological state: thriving. Our findings could help theoretical understanding of how thriving can occur in youth sport and what youth athletes can obtain as the result of experiencing thriving.

Practical Implication

Potential implications from the findings are two folds. First, thriving should be an important indicator of essential outcome variables such as intention to continue sport, well-being, and goal progress for youth athletes. To experience more thriving for youth athletes, they need to be satisfied with their basic psychological needs. Previous studies have indicated the importance of autonomy support to satisfy athletes' basic psychological needs (e.g., e.g., Smith et al., 2011). Moreover, more recent sport psychology literature suggests that autonomy support could be an imperative precursor of youth athletes' thriving (Gaudreau et al., 2016). The present results also suggest that the BPNS is essential for youth athletes' thriving and important outcome variables. Therefore, practitioners should emphasize the

importance of support and creating environments to satisfy youth athletes' basic psychological needs such as autonomy supportive environment (e.g., Reeve, Deci, and Ryan, 2004).

Second, athletes cannot necessarily control those social environmental elements themselves. Hence, it is imperative for athletes to find more personally controllable antecedents of BPNS, which can be an important implication in sport psychology literature. As hedonic and eudaimonic motives could be a personal resource that can be improved by themselves for young athletes, those motives could be the personally controllable antecedents. According to our findings, high levels of both hedonic and eudaimonic seeking lead youth athletes to gain more beneficial outcomes from sport participation. Coaches and parents need to understand the importance of both hedonic and eudaimonic pursuit. However, as past scholars have suggested that eudaimonic motives are more important for obtaining desired outcomes (e.g., Saunderson et al., 2018), eudaimonic motives (e.g., seeking the development, learning, values, meanings, or excellent) might be more important motives for youth sport participants. To increase the motives, for example, youth athletes may be required to cognitively understand the importance of growth mindset (e.g., Dweck, 2008), the concept of mindfulness (Kabat-Zinn, 2005), and excellence (Orlick, 2015). Besides, the motives should be affected by the environments that are built by significant others (e.g., coaches, parents, teammates); therefore, practitioners should educate not only the target participants but also their parents and coaches about the way to improve eudaimonic motives. Also, the present study showed that hedonic motives are an imperative indicator of thriving and other outcomes (intention to continue sport, SWB in sport, and goal progress). Therefore, hedonic seeking also should be considered as an essential ingredient of thriving.

Limitation

Since the data used in this study was cross-sectional, designing a longitudinal study will further help understand the importance of both hedonic and eudaimonic motives and reveal further causal relationship amongst the variables (Little, 2013). A longitudinal design would also reduce the common method variance found in cross-section research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Second, the assessment used in the present study only focused on the participants' subjective evaluation. Hence, future research should consider measuring more objective variables such as actual performance, perhaps evaluated by the coaches or parents. Third, the variance of the items to assess intention to continue sport participation was narrow. The samples were mostly competitive youth sport participants, so the questions to ask future intention to continue sport in the next season may have been too proximal for the athletes. Future research could use a longer-term orientation in the design of the study (e.g., "Will you continue to participate in your main sport in the future?": Gucciardi & Jackson, 2015). Moreover, due to the relatively small sample size in the present study, we analyzed the data using path analysis instead of a latent variable based structural equation modeling. Since path analysis uses averaged constructs, the information about the construct itself such as the subscales were combined into one variable. Future research would benefit from a larger sample size to enable more detailed explanations in the relationship among the variables. Lastly, this research only focuses on participants from Canada. Future research is needed to compare the perspectives and the model among the participants from different countries as past research suggest that each country has the uniqueness in the cultural dimensions (e.g., Long/Short Term Orientation: Hofstede, 2011). Such future research will gain more robust evidence for the theoretical model and can see the difference in the different culture, which can provide more useful implications for the people in different countries.

Conclusion

The psychological state of thriving appears to be a critical component of understanding important outcomes from sport participation. As demonstrated in the research, both hedonic and eudaimonic motives were influential on youth sport participants' intention to continue, well-being, and goal progress through BPNS and thriving. The present study revealed that thriving can be a key predictor in understanding important outcomes within a youth sport context and the positive impact of hedonic and eudaimonic motives on thriving through BPNS and on salient outcomes through increased thriving and BPNS.

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Tables

Table 1.

Descriptive statistics and correlations

	Mean	SD	1	2	3	4	5	6
1. HM	6.00	1.01						
2. EM	5.74	0.93	.52**					
3. BPNS	5.99	0.58	.43**	.53**				
4. Thriving	6.19	0.61	.45**	.60**	.65**			
5. Intention	6.72	0.80	.19**	.29**	.22**	.29**		
6. SWB	5.89	0.98	.49**	.59**	.68**	.61**	.42**	
7. GP	5.84	0.71	.43**	.59**	.51**	.57**	.35**	.65**

Note. HM = Hedonic Motives; EM = Eudaimonic Motives; BPNS = Basic Psychological Need Satisfaction; SWB = Subjective Well-being in Sport; GP = Goal Progress

* $p < .05$. ** $p < .01$.

Table 2.

The results of mediation analyses

Total effect	β	S.E.	95% BC-CI	<i>p</i> -value
HM → TH	0.19	0.06	[.05, .31]	**
EM → TH	0.51	0.07	[.37, .62]	***
BPSN → Intention	0.09	0.10	[-.12, .28]	0.38
BPNS → SWB	0.48	0.06	[.37, .59]	***
BPNS → GP	0.26	0.07	[.12, .40]	**
HM → Intention	0.05	0.10	[-.15, .25]	0.62
HM → SWB	0.25	0.08	[.09, .41]	**
HM → GP	0.17	0.07	[.03, .31]	*
EM → Intention	0.27	0.07	[.14, .41]	**
EM → SWB	0.47	0.07	[.31, .61]	**
EM → GP	0.50	0.06	[.36, .61]	**
Direct Effect (IVs → DVs)				
HM → Intention	0.01	0.09	[-.17, .20]	0.85
HM → SWB	0.13	0.07	[-.01, .27]	0.064†
HM → GP	0.10	0.07	[-.05, .24]	0.17
EM → Intention	0.18	0.10	[.01, .38]	*
EM → SWB	0.21	0.08	[.05, .36]	**
EM → GP	0.31	0.07	[.17, .44]	***
Path a (IVs → M₁ or 2)				
HM → BPNS	0.20	0.07	[.06, .34]	**
HM → TH	0.10	0.06	[-.02, .21]	0.097†
EM → BPNS	0.42	0.08	[.26, .57]	***
EM → TH	0.32	0.07	[.17, .46]	***
Path d (M₁ → M₂)				
BPNS → Thriving	0.43	0.07	[.28, .57]	***
Path b (Ms → DVs)				
BPNS → Intention	0.02	0.10	[-.18, .21]	0.83
BPNS → SWB	0.41	0.06	[.28, .53]	***
BPNS → GP	0.16	0.07	[.01, .31]	*
TH → Intention	0.16	0.07	[.02, .30]	*
TH → SWB	0.17	0.08	[.01, .33]	**
TH → GP	0.23	0.08	[.07, .39]	*
Indirect Effect (Path a × b)				
BPNS → TH → Intention	0.07	0.03	[.02, .15]	*
BPNS → TH → SWB	0.07	0.04	[.01, .15]	*
BPNS → TH → GP	0.10	0.04	[.03, .19]	**
HM → BPNS → TH	0.09	0.03	[.03, .16]	**
EM → BPNS → TH	0.18	0.05	[.10, .30]	***
HM → BPNS → Intention	0.003	0.02	[-.03, .04]	0.75
HM → BPNS → SWB	0.06	0.02	[.02, .11]	**
HM → BPNS → GP	0.03	0.02	[.004, .09]	*
HM → TH → Intention	0.01	0.01	[.00, .04]	0.059†
HM → TH → SWB	0.01	0.01	[.00, .04]	0.061†
HM → TH → GP	0.02	0.02	[.00, .06]	0.053†
EM → BPNS → Intention	0.01	0.04	[-.07, .09]	0.79
EM → BPNS → SWB	0.13	0.03	[.08, .20]	***

EM → BPNS → GP	0.07	0.04	[.01, .16]	*
EM → TH → Intention	0.05	0.03	[.01, .10]	*
EM → TH → SWB	0.04	0.03	[.004, .11]	*
EM → TH → GP	0.08	0.04	[.02, .18]	**
(Path a × d × b)				
HM → BPNS → TH → Intention	0.01	0.01	[.002, .03]	*
HM → BPNS → TH → SWB	0.01	0.01	[.002, .03]	*
HM → BPNS → TH → GP	0.02	0.01	[.01, .05]	**
EM → BPNS → TH → Intention	0.03	0.01	[.01, .06]	*
EM → BPNS → TH → SWB	0.02	0.01	[.004, .06]	*
EM → BPNS → TH → GP	0.05	0.02	[.01, .11]	**

Note. HM = Hedonic Motives; EM = Eudaimonic Motives; BPNS = Basic Psychological Need Satisfaction; SWB = Subjective Well-being in Sport; GP = Goal Progress

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

Figures

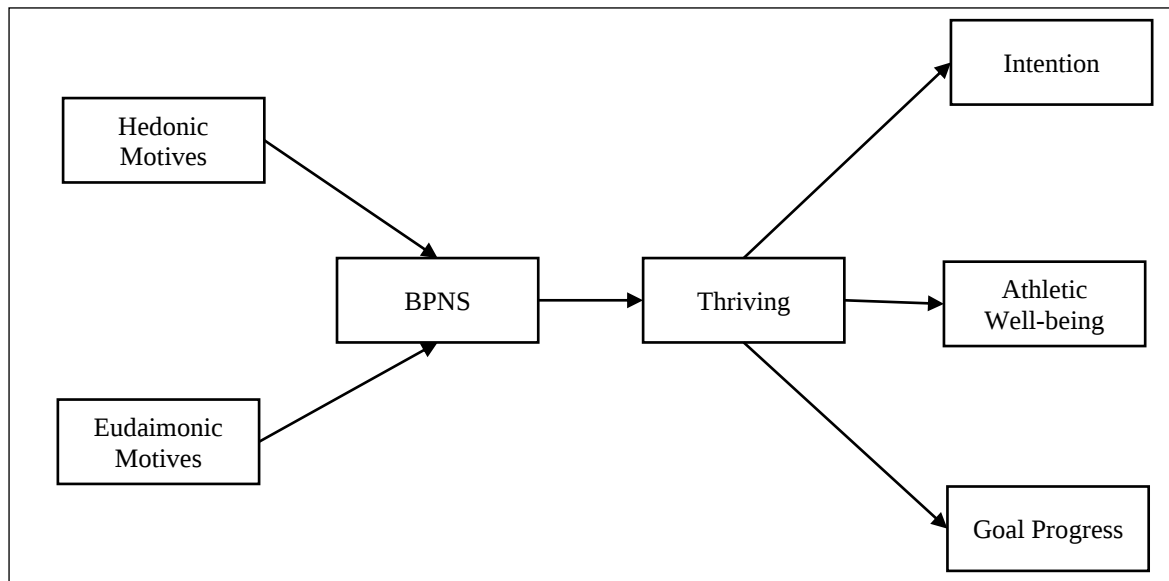


Figure 1. Proposed theoretical model

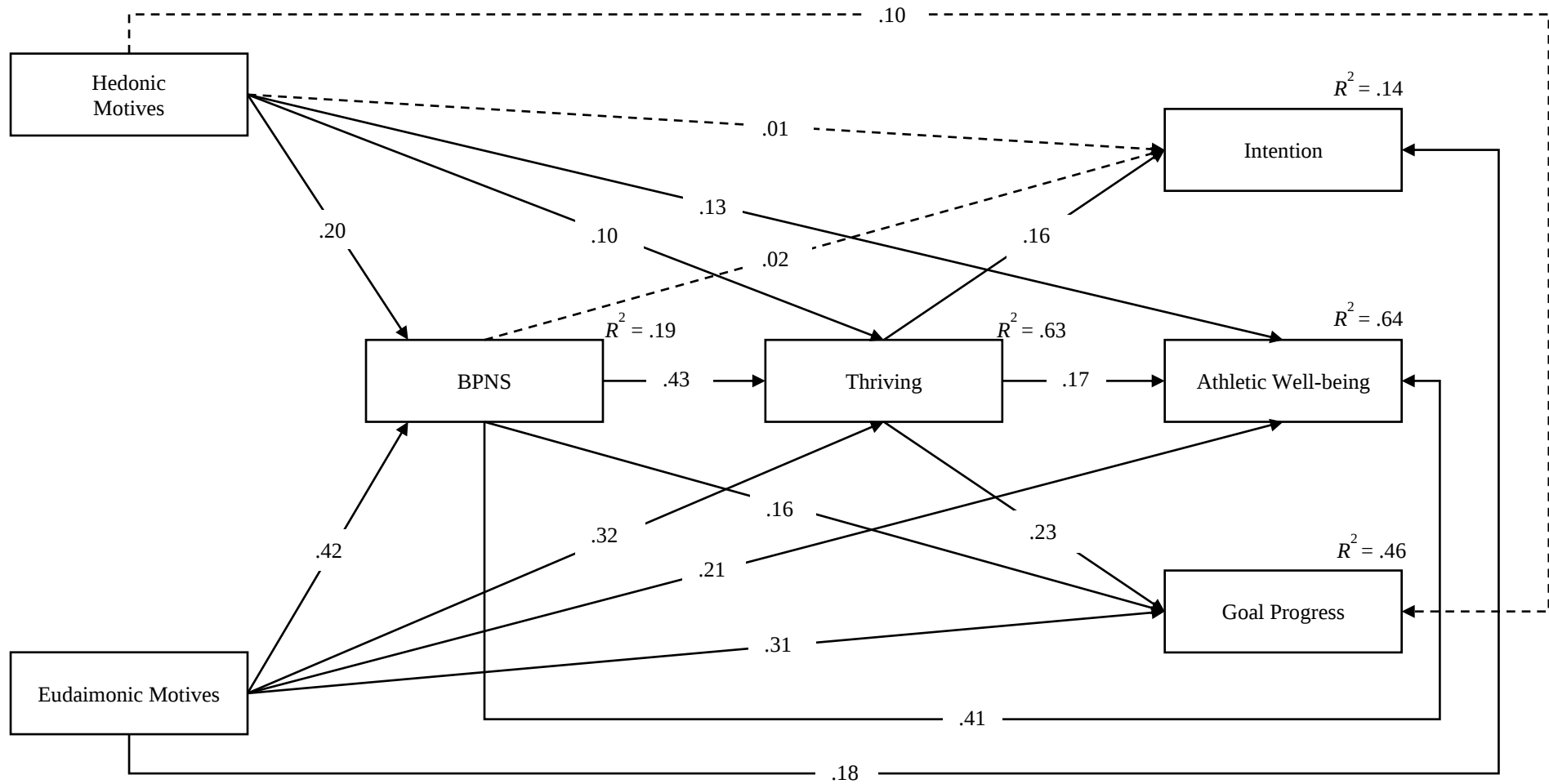


Figure 2. The result of mediation model with standardized coefficients demonstrate the influence of hedonic and eudaemonic motives on youth athletes' intention, well-being, and goal progress through basic psychological need satisfaction and thriving. The solid one-way lines with arrows represent significant direct path coefficients, while the one-way dotted lines with arrows depict non-significant effects.

Chapter III: Article 2

Kinoshita, K., MacIntosh, E., & Sato, S. (under review). A Buffering Effect of Mental Toughness on the Negative Impacts of Basic Psychological Need Thwarting on Youth Sport Participant Functioning.

Abstract

Introduction: Basic psychological needs (BPN) are the concept that helps clarify the psychological mechanism to reach desirable outcomes for youth sport participants. When BPNs are undermined or thwarted, people should be less likely to thrive. As mental toughness (MT) can reduce the negative effects of stressors, MT may buffer the negative effect of maladaptive motivation. This study investigated the buffering effect of mental toughness on the negative indirect relationships between basic psychological need (BPN) thwarting and important outcomes for youth athletes' positive functioning (intention to continue, subjective well-being in sport, and goal progress) through thriving.

Method: 188 Canadian youth sport participants ($M_{\text{age}} = 15.51$) answered an online survey. Mediation and moderated-mediation analyses were conducted to test our hypotheses.

Results: The results demonstrated some significant moderating effects of mental toughness on the indirect associations between BPN thwarting and intention to continue sport participation, subjective well-being, and goal progress through thriving. The indirect associations were weaker for participants with higher mental toughness whereas those with lower mental toughness showed a significant negative indirect association compared to participants with a moderate level of mental toughness.

Conclusion: The findings demonstrated the buffering effect of mental toughness on the negative impacts of BPN thwarting for young sport participants. Moreover, the significant direct effects on intention and subjective well-being in the model indicated that there could be possibility that the negative effect of BPN thwarting could be overlooked by the significant others surrounding youths.

Key words: mental toughness; self-determination theory; sport participation; thriving; youth

Introduction

All people have the potential to thrive while having vulnerabilities for also being depleted or even suffering from ill-being. The investigation of how youth thrive in relation to positive functioning gives us some potential solutions for the problems of declining sport participation (Statistics Canada, 2019). Alarming, sport participation rates of Canadians have been declining since 1992 (Statistics Canada, 2019), indicating a problematic circumstance as the advantages of participation in sport or exercise have been widely acknowledged amongst the youth population (c.f., Eime, Young, Harvey, Charity, & Payne, 2013; Hebert, Møller, Andersen, & Wedderkopp, 2015).

Basic Psychological Needs (BPN; Ryan & Deci, 2000, 2017) are one of the concepts that explain the psychological mechanism to reach important outcomes (e.g., thriving, well-being). Research has shown that satisfaction of BPN is related to greater sport continuation, well-being, and performance (e.g., Balish, McLaren, Rainham, & Blanchard, 2014; Cerasoli, Nicklin, & Nassreelgrawi, 2016; Ryan & Deci, 2017). Scholars have claimed the feeling of BPN thwarting does not necessarily coexist with low levels of the BPN satisfaction (Vansteenkiste & Ryan, 2013). This suggests the importance of distinguishing BPN satisfaction from BPN thwarting and more research is needed to clarify the unique negative relations with outcomes (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011; Costa, Ntoumanis, & Bartholomew, 2015). Thus, the assessment of the BPN thwarting should provide us with an important insight of the indicators of salient outcomes in the motivational process.

Empirical evidence can provide an understanding of the motivational processes that comprise how sport participants' functioning occurs from the satisfaction or thwarting of BPN (Haraldsen, Solstad, Ivarsson, Halvari, & Abrahamsen, 2019). However, since BPN are difficult for individual themselves to improve, it is crucial to find a controllable preventive

personal resource that can protect youth from the negative effects of BPN thwarting.

According to Gucciardi, Stamatis, and Ntoumanis (2017), mental toughness has the potential to be a personal resource that would buffer the maladaptive effect of uncontrollable factors (e.g., coaching behaviors) on a part of thriving (e.g., learning). Consequently, the purpose of the present study was to investigate the moderating effect of mental toughness on the indirect relationships between BPN thwarting and the outcomes regarding youth sport participants' positive functioning (i.e., intention to continue, subjective well-being: SWB, and goal progress) through thriving.

In order to examine these relations, we utilized the research on self-determination theory and thriving, as well as mental toughness to understand the motivational mechanism within a youth sport participant population. The hypothesized model was illustrated in Fig. 1. The following sections outline the theoretical foundation of the study.

Self-Determination Theory and Thriving

Self-Determination Theory (SDT; Ryan & Deci, 2000, 2017) suggests that all human beings have an inherent need for growth and development. The theory postulates that people possess three BPN and the satisfaction of these needs is essential for thriving (Spreitzer & Porath, 2014). The three BPN are *autonomy*, *competence*, and *relatedness*. *Autonomy* refers to the desire to experience self-determination and psychological freedom (Deci & Ryan, 1985; DeCharms, 1968). *Competence* refers to the desire to demonstrate and improve one's capabilities (Deci, 1975; White, 1959). Lastly, *relatedness* refers to the desire to be valued, respected, and desired by important others (Baumeister & Leary, 1995). Accordingly, the growth and development of a person would occur when the three BPN are satisfied while individuals would experience less thriving due to BPN thwarting (Ryan & Deci, 2017).

The origin of the concept of thriving dates back to the classical works conducted by Alderfer, (1972) and Rogers, (1961) in particular. Seligman (2002) argued that traditional psychology had mostly focused on the negative side of mental aspects such as psychopathology. However, the positive side of psychological dynamics has been gathering much attention since the positive psychology movement emerged in the last two decades (Seligman & Csikszentmihalyi, 2000). This movement has inspired the researchers to shed light on what factors are associated with people's thriving.

Thriving is defined as “a psychological state composed of the joint experience of vitality and learning (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005, p. 537).” This definition is widely applied to a variety of contexts (e.g., sport, business, education) and helps understand the precursors of human thriving including sport and exercise (e.g., Gucciardi et al., 2017; Ren, Yunlu, Shaffer, & Fodchuk, 2015). Thriving influences important outcomes for positive functioning. Past research has shown, for example, that increased experience of thriving predicted greater retention of employees and students (Ren et al., 2015; Spreitzer, Porath, & Gibson, 2012).

In sport, various studies have indicated a significant relationship between motivational factors and sport continuation (e.g., Balish et al., 2014; Jõesaar Hein, & Hagger, 2011). As thriving is a desirable psychological state that reduced burnout (Porath et al., 2012), it may help explain the mechanism underlying the association with sport continuation. In addition, thriving has been associated with subjective well-being (SWB: Lundqvist, 2011; Flinchbaugh, Luth, & Li, 2015; Porath et al., 2012; Zhai, Wang, & Weadon, 2017). Spreitzer and colleagues (2005) denoted positive health as an outcome of experienced thriving, SWB in sport, one of indicators of mental health (Keyes, 2006), should be explained by thriving. Lastly, while many studies have suggested that thriving is associated with higher performance (e.g., Spreitzer et al., 2012; Walumbwa, Muchiri, Misati, Wu, & Meiliani, 2018),

few studies have endeavored to understand the relationship between thriving and sport performance. Spreitzer and colleagues (2005) noted that people who are thriving generate positive resources for performance enhancement and positive development by acquiring new knowledge and skills; thus, thriving would predict subjective measures of performance such as goal progress.

A number of studies showed that the satisfaction of three BPN is positively associated with substantial outcomes (e.g., Balish et al., 2014; Cerasoli et al., 2016; Ryan & Deci, 2017). In fact, empirical research, has demonstrated that thriving was predicted by BPN satisfaction explaining 54% of the variance (Porath et al., 2012). However, although recent researchers have claimed that lack of BPN satisfaction and BPN thwarting differently explain outcome variables (Bartholomew et al., 2011; Costa et al., 2015), no studies were conducted to examine the relations of BPN thwarting and thriving in youth sport context. Given that research has shown that people are less vitalized when experiencing BPN thwarting (Gagné, 2003; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004), youth sport participants may also be less likely to experience thriving when their BPN are thwarted.

Ultimately, people who experience greater thriving demonstrate higher persistence in several important outcomes including SWB in sport and goal progress (e.g., Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015; Porath et al., 2012; Walumbwa et al., 2018). Further, past studies have found the negative impacts of BPN thwarting on various outcome variables (Bartholomew et al., 2011; Costa et al., 2015) and some studies imply that BPN thwarting may be negatively associated with the concepts that similar to thriving (Gagné, 2003; Vansteenkiste et al., 2004). Hence, we hypothesized that BPN thwarting would be negatively associated with thriving, which in turn affects intention to continue, SWB in sport as well as goal progress.

Hypothesis 1: BPN thwarting is negatively related to outcome variables (intention to continue/SWB in sport/goal progress) through the decreased feeling of thriving (simple mediation)

Mental Toughness

Sport participants often experience extensive stressors (demands), especially younger sport participants whose coping skills are underdeveloped (e.g., Kristiansen & Roberts, 2010; Mellalieu, Hanton, & Fletcher, 2006). Enhanced stressors often lead sport participants to dropout and; has a further negative consequence on their well-being and performance (e.g., Appleton, Hall, & Hill, 2009; Weber, 2009). However, some individuals are not susceptible to stressors whereas others are vulnerable, which suggests that there is a personal resource that may buffer the negative effects of enhanced stressors.

Mental toughness is defined as “a personal capacity to produce consistently high levels of subjective or objective performance despite everyday challenges and stressors as well as significant adversities (Gucciardi et al., 2015, p.28).” Moreover, Gucciardi (2016) argued that “since ‘perseverance’ is a key behavioral signature of mentally tough individuals, there is reason to believe that this personal resource may foster the translation of intentions into behavior” (p. 455). Hannan and colleagues (2015) showed that when individuals’ mental toughness was higher, the relationship between intention and physical activity behavior was significantly stronger. Gucciardi (2016) demonstrated that higher intention predicted higher exercise behavior only for people with higher mental toughness. As such, mental toughness is a personal resource that would be positively related to behavioral perseverance, suggesting the buffering effect on the negative impact of psychological distress on young sport participants’ perseverance.

Within the framework of the SDT, when BPNs are thwarted, people are less likely to thrive (Ryan & Deci, 2017). Moreover, mental toughness is considered to be an impairing

factor for negative effects of stressors (e.g., Gucciardi, 2016). Individuals with higher mental toughness, for instance, are less affected by negative stressors since mental toughness is positively related to coping skills (Gucciardi et al., 2015). Therefore, as thriving is influenced by motivational factors (Spreitzer & Porath, 2014), the negative impacts of maladaptive motivational factors (e.g., BPN thwarting) on thriving should be buffered by the level of mental toughness.

Present study and the hypotheses

Empirical evidence showed that BPNs are critically affected by social factors such as significant others including coaches and parents (Gardner, Magee, & Vella, 2016). However, sport participants are not able to directly change or control their coaches' or parents' behaviors, especially for youth populations. Recent studies clarified the trainability of mental toughness (e.g., Bell, Hardy, & Beattie, 2013; Fitzwater, Arthur, & Hardy, 2018), and the measurement availability in youth sport context (Gucciardi et al., 2015). Hence, the purpose of the present study was to examine the buffering effect of the trainable psychological trait (mental toughness) on the negative effects of BPN thwarting on important outcomes for youth sport participants' positive functioning through thriving. Specifically, the study investigated the moderating effect of mental toughness on the negative direct and indirect relationships between BPN thwarting and the outcome variables (i.e., intention to continue, SWB in sport, and goal progress) through thriving by using the test of moderated mediation analysis. In the present study, we only include BPN thwarting, not BPN satisfaction, to examine the relations with desired outcomes through thriving because our research question is if mental toughness buffers the negative effects of BPN thwarting, not if mental toughness facilitates the acquisition of BPN satisfaction. Hence, our works only focused on finding a preventive effect of personal resource on the negative associations

between BPN thwarting and outcomes for youth' positive functioning. The second hypothesis for the study is the following:

Hypothesis 2: The negative indirect relationships between BPN thwarting and outcomes through thriving are buffered for the individuals with high mental toughness compared to moderate or low mental toughness (Moderated-mediation).

[Please insert Figure 1 about here]

Method

Participants and procedures

One hundred and eighty-eight Canadian active youth sport participants (age 14-19) were recruited from several sport organizations in Canada and answered an online survey ($M_{\text{age}} = 15.51$, $SD = 1.63$; 91 females, 92 males; 5 prefer not to answer). The average of the practice hour of the sport participants per week was 10.82 ($SD = 5.68$). All participants completed an online survey operated by Qualtrics. This research had been approved by the institutional research ethics board (H-01-19-1444).

Instruments

BPN thwarting. Basic psychological need thwarting was measured by the 12-item Psychological Need Thwarting Scale (PNTS; Bartholomew et al., 2011). The instrument is divided into three 4-item subscales to measure the perception of thwarting and the three psychological needs: autonomy, competence and relatedness in sport. Participants were asked to rate their typical experience in their sport participation by using a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). For this study, in line with the calculating method conducted by Bartholomew et al. (2011), the psychological need thwarting variable was created by averaging those 12 items. This scale has been used and validated in youth samples (e.g., Curran, Hill, Ntoumanis, Hall, & Jowett, 2016). The alpha was acceptable at the .90 reliability.

Mental toughness (MT). Mental Toughness Inventory (MTI; Gucciardi et al., 2015) measures the degree of mental toughness using eight items. The measurement assesses mental toughness as a unidimensional construct, which is supported by a number of previous studies (e.g., Gucciardi et al., 2015). An example item is “I strive for continued success.” Participants rated how they typically thought, felt and behaved using a 7-point scale (1 = false, 100% of the time to 7 = true, 100% of the time). The reliability of the scale was .77.

Thriving in sport. Thriving in sport was measured using a 10-item scale developed and validated by Porath et al. (2012). This scale was initially developed to assess thriving at work, but the measurement has been adapted to the sport context (Gucciardi, 2017). The scale consists of two dimensions: vitality and learning (5 items each). Participants answered the scale items (e.g., “I find myself learning often”) on a 7-point scale (1 = strongly disagree to 7 = strongly agree). The internal consistency of the scale was .83.

Intention to continue sport. Intention to continue the same sport was measured by two items adapted from Gucciardi and Jackson (2015). Participants were asked to rate on a 7-Likert scale ranging from 1 (very unlikely) to 7 (very likely). The two items were: “I intend on continuing to participate in my main sport in the future.” “Will you continue to participate in your main sport in the future?” The scale showed a sufficient alpha ($\alpha = .89$).

Subjective well-being (SWB) in sport. Positive affect and life satisfaction in the sport domain were assessed as indicators of the SWB in sport for youth sport participants (e.g., Verner-Filion & Vallerand, 2018). We used the stem “In your main sport” to ask participants to rate their SWB in their sport domain. Positive affect was measured using the five-item positive affect subscale from the Short-Form of Positive and Negative Affect Schedule (PANAS) (c.f., Thompson, 2007). The short form of PANAS was utilized in sport psychology research and showed the adequate reliability (Felton & Jowett, 2013; $\alpha = .81$). Satisfaction in their athletic lives was assessed using the five-item Satisfaction with Life

Scale (SWLS: Diener, Emmons, Larsen, & Griffin, 1985). The items were slightly modified to measure the life satisfaction in sport contexts (e.g., “In most ways my life *as an athlete* is close to my ideal.”) as conducted by previous research (e.g., Verner-Filion & Vallerand, 2018). For each participant, a composite SWB score was created by averaging the responses to the two subscales. Each of the subscales was measured on a 7-point scale. The reliability of the composite score was .87.

Goal progress in sport. Goal Progress in sport was assessed using a three-item scale developed by Dugas, Gaudreau, and Carraro (2012). The scale measures the extent to which participants have experienced their goal progress in sport. The items were slightly modified to adapt to sport contexts (e.g., “I have progressed on my sport/athletic goal.”), which measured on a 7-point Likert scale ranged from 1 (*not at all*) to 7 (*totally*). The internal consistency was .89.

Data Analyses

Data analyses were executed using IBM SPSS 26.0 and Amos 26.0 statistics software. To investigate the hypothesized model (Figure. 1), path analysis with maximum likelihood estimation was conducted. To examine the hypothesized moderated-mediation models, we applied common goodness of fit indices, including Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), the Root Mean square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). According to Kline (2005), good fit is indicated by values greater than CFI and TLI = .90, and less than .08 for RMSEA and SRMR, respectively.

Furthermore, the bias-corrected bootstrap procedure was adopted to examine hypothesized conditional indirect effects. Specifically, we present the bias-corrected confidence interval (i.e., 95% BC-CI) based on 5000 bootstrapped samples (Preacher & Hayes, 2004) to reveal the significant effect of the moderated-mediation model (If 95% BC-

CI does not include zero, the conditional indirect effect will be significant). All the coefficients shown in the results were standardized.

Results

All variables were normally distributed based on the criteria (skewness and kurtosis between ± 2.58 ; Tabachnick & Fidell, 2013) as the range of skewness and kurtosis were from -1.54 to 2.16. A missing data analysis revealed that the missing data was only 2.1%, indicating that the missing data is negligible (Tabachnick & Fidell, 2013). Therefore, we used an expectation-maximization (EM) to treat the missing data (Tabachnick & Fidell, 2013). Descriptive statistics and correlations are presented in Table 1. To test the moderating role of mental toughness on the indirect relationship between BPN thwarting and three outcomes (i.e., intention to continue, SWB, goal progress) through thriving, we created an interaction term (BPN thwarting $\times$ mental toughness) and added the interaction term to the model. We tested all hypotheses in the model simultaneously. The proposed model showed a good fit to the data ($\chi^2/df = .92$; CFI = .99; TLI = .99; RMSEA = .01; SRMR = .01).

Mediating role of thriving

For the first hypotheses, the findings presented that BPN thwarting was significantly associated with thriving ($\beta = -.28$, SE = .06, 95% BC-CI [-.40, -.15]), and thriving was positively related to intention to continue ($\beta = .25$, SE = .08, 95% BC-CI [.09, .42]), SWB in sport ($\beta = .37$, SE = .07, 95% BC-CI [.23, .51]), and goal progress ($\beta = .32$, SE = .08, 95% BC-CI [.16, .46]).

Based on a bootstrap analysis, the indirect effect between BPN thwarting and intention to continue through thriving was significant ($\beta = -.07$, SE = .03, 95% BC-CI [-.14, -.02]). The direct effect ($\beta = -.22$, SE = .08, 95% BC-CI [-.37, -.05]) and the total effect ($\beta = -.29$, SE = .08, 95% BC-CI [-.44, -.13]) were also found to be significant. Further, the relationship between BPN thwarting and SWB in sport through thriving was found to be significant ($\beta = -$

.11, SE = .03, 95% BC-CI [-.18, -.05]). Also, the direct effect ($\beta = -.09$, SE = .05, 95% BC-CI [-.19, .02]) and the total effect ($\beta = -.19$, SE = .06, 95% BC-CI [-.30, -.08]) were significant. Lastly, the indirect association between BPN thwarting and goal progress through thriving was also significant ($\beta = -.09$, SE = .03, 95% BC-CI [-.15, -.04]). Although the direct effect ($\beta = .001$, SE = .06, 95% BC-CI [-.11, .13]) and the total effect ($\beta = -.08$, SE = .06, 95% BC-CI [-.20, .04]) was not significant. Consequently, the results showed that the three indirect relationships were significant as we expected (H1).

[Please insert Table 2, 3, & 4 about here]

Moderating role of mental toughness

To examine our second hypothesis of the buffering effect of mental toughness on the indirect relation of BPN thwarting and intention to continue, SWB in sport, as well as goal progress through thriving, we conducted a moderated-mediation analysis.

For the conditional indirect pathway to intention to continue, the index of moderated-mediation was found to be significant ($\beta = .05$, SE = .03, 95% CI [.01, .12]), meaning that the indirect effect was moderated by the level of mental toughness (Table 2). Specifically, the negative indirect relations of BPN thwarting with intention to continue through thriving was still significantly conditional at low (-1SD: $\beta = -.10$, SE = .03, 95% BC-CI [-.20, -.04]), at moderate (Mean: $\beta = -.07$, SE = .02, BC-CI [-.13, -.02]), and at high mental toughness (+1SD: $\beta = -.04$, SE = .02, 95% BC-CI [-.10, -.01]). However, the direct effect was not significantly moderated ($p = .72$).

Second, the level of mental toughness significantly moderated the indirect relationship between BPN thwarting and SWB in sport through thriving ($\beta = .05$, SE = .02, 95% BC-CI [.01, .10]). Specifically, the negative indirect effects were still significantly conditional at low (-1SD; $\beta = -.05$, SE = .02, 95% BC-CI [-.10, -.02]) and at moderate (Mean; $\beta = -.03$, SE = .01, 95% BC-CI [-.07, -.01]), and high mental toughness (+1SD; $\beta = -.02$, SE

= .01, 95% BC-CI [-.05, -.003]). Yet, the moderating role of mental toughness on the direct effect was found to be non-significant ($p = .99$).

Lastly, the result showed that the indirect association between BPN thwarting and goal progress through thriving was significantly moderated by the degree of mental toughness ($\beta = .05$, $SE = .02$, 95% BC-CI [.01, .11]). Specifically, the negative indirect effects of BPN thwarting on goal progress through thriving were significantly conditional at low (-1SD; $\beta = -.05$, $SE = .02$, 95% BC-CI [-.10, -.01]), moderate (Mean; $\beta = -.03$, $SE = .01$, 95% BC-CI [-.07, -.01]) and high levels (+1SD; $\beta = -.02$, $SE = .01$, 95% BC-CI [-.05, -.003]). However, the interactive effect of mental toughness on the direct path from BPN thwarting to goal progress was not significant ($p = .74$).

Discussion

The purpose of the present study was to investigate the buffering effect of mental toughness on the indirect relationships between BPN thwarting and important outcomes (intention to continue, SWB in sport, goal progress) through thriving. The study was conducted in the context of youth sport as Canadian sport participation rate has been declining for about three decades (Statistics Canada, 2019). According to the moderated-mediation analyses, the present study found some significant moderating effects of mental toughness on the indirect associations between BPN thwarting and the outcomes through thriving. In other words, the negative impacts of BPN thwarting on important outcomes were weakest for those of who showed high mental toughness and strongest for the individual with low mental toughness.

Mediating role of thriving

As is consistent with the SDT, all three negative indirect effects were found to be significant (H1). The results, more specifically, showed that BPN thwarting negatively associated with three important outcomes through less thriving. This is congruent with past

research that has demonstrated that BPN thwarting was negatively associated with outcome variables (e.g., Bartholomew et al., 2011). Therefore, our findings were theoretically in agreement with SDT that argues the negative impacts of BPN thwarting on outcomes (Ryan & Deci, 2000, 2017).

For the pathway to intention to continue from BPN thwarting, the direct effect was still significant after putting thriving as a mediator in the model. Moreover, the coefficient of the direct effect was more than three times as the coefficient of the indirect effect (direct = $-.22$; indirect = $-.07$). The results indicated that BPN thwarting still more explained young sport participants' intention to continue than thriving in the model. Hence, the finding suggests that BPN thwarting should be a critical negative predictor of intention of youth sport continuation even after including thriving on the model. Similarly, SWB in sport was significantly explained by BPN thwarting after containing thriving in the mediation model. However, the value of the coefficients of the indirect path and the direct path were close (direct = $-.09$; indirect = $-.11$), indicating BPN thwarting and thriving was similarly related to SWB in sport in the mediation model. Lastly, in terms of the pathway to goal progress, the direct path was not significant, which points out that BPN thwarting was not a significant direct predictor of goal progress after including thriving as a mediator. These results suggest that BPN thwarting was directly most related to the intention but least associated with goal progress in the mediation model, which is in line with the past scholars' works (Balish et al., 2014; Cerasoli et al., 2016).

Moderating role of mental toughness

The present research also, more interestingly, found some moderating effects of mental toughness on the negative indirect effects between BPN thwarting and outcome variables through thriving. The results demonstrated the moderating effect of mental toughness on the negative indirect relationships as we hypothesized (H2). The moderating

analyses showed that the negative associations between BPN thwarting and three outcome variables (intention to continue, SWB in sport, goal progress) through thriving were consistently the strongest when the participants had low mental toughness compared to moderate and high mental toughness. The result aligns with previous research that has demonstrated the negative effect of coaching control behaviors on the sport participants' learning (as a subcomponent of thriving) was stronger for the individuals with lower mental toughness (Gucciardi et al., 2017). Therefore, the individuals with lower mental toughness should be more vulnerable to the negative effects of maladaptive motivation.

The negative indirect effects tended to be weaker for the participants with higher mental toughness. As mental toughness conceptually helps an individual effectively cope with the stressors (Gucciardi et al., 2015), we expected that the people with high mental toughness would be less influenced by maladaptive motivational factors (e.g., BPN thwarting). The findings are aligned with past empirical research, demonstrating that higher mental toughness predicted greater perseverant behaviors (Gucciardi, 2016). Therefore, the buffering effect of mental toughness on the negative indirect relationships was theoretically understandable as Gucciardi (2016) claimed that 'perseverance' is a fundamental behavioral marker of the individuals with high mental toughness.

However, we also found non-significant moderating effects on the direct links between BPN thwarting and three important outcome variables. This suggests that the degree of mental toughness did not affect the direct relationships. Thus, for the two pathways in which the direct paths were still significant (for intention to continue and SWB in sport), BPN thwarting significantly predicted the two outcomes (i.e., intention to continue and SWB in sport) regardless of the level of mental toughness. From the evidence, it is a possibility that some participant intentions and SWB in sport were enhanced due to their high mental toughness; although their intention to continue and SWB in sport were still negatively

affected by BPN thwarting. Consequently, our findings suggest that high mental toughness might be occasionally detrimental for the youths who are in the circumstance in which their BPNs are highly thwarted. Since the youths have high mental toughness, they might be somehow able to endure the detrimental situations (e.g., high BPN thwarting). Therefore, our works not only enriched the evidence about BPN thwarting in the SDT literature but also sound an alarm for the significant others surrounding youth sport participants not to overlook the detrimental situation.

Practical Implication

The present study demonstrated the level of mental toughness gradually buffered the negative impacts of BPN thwarting on the state of thriving and the desirable outcomes (i.e., intention, SWB in sport, goal progress). The results suggest that the improvement of a person's mental toughness would be a key controllable factor to protect one from the negative impact of BPN thwarting. For youth, there may be a substantial benefit to having a mental performance consultants (MPCs) teach them mental skills training to prevent them from being vulnerable to the negative effects of BPN thwarting. As shown in past intervention research, mental toughness is a trainable personal resource that could be trained by mental skills training (Bell et al., 2013; Fitzwater et al., 2018).

However, significant others surrounding youth sport participants should be careful with the potential possibility that high mental toughness may become a cause of suffering from mental ill-being (e.g., burnout). The youth sport participants might somehow be able to continue sport participation due to the buffering effect of mental toughness on the indirect association between BPN thwarting and intention to continue. Consequently, there might be a possibility that the youths may keep being affected by the harmful environmental factors (e.g., controlling behavior) because of the increased intention, which is affected by high mental toughness. In other words, the environments negatively affecting their BPNs could be

overlooked since the individuals with high mental toughness can continue playing the sport even in the detrimental situations. The harmful environments should not be ignored, and the practitioner should keep paying attention to such environmental factors more than youth athletes' personal resource (e.g., mental toughness). From the findings in the present study, we can say mental toughness is a protective factor for detrimental effects of BPN thwarting on important outcomes for youth sport participants through the increased experience of thriving. However, the characteristics of environmental factors (e.g., if the coach's interpersonal style is autonomy supportive or controlling) are also needed to be considered by the practitioner.

To sum up, our works have demonstrated bidirected messages that are for youths and significant others. First, for youth sport participants, mental toughness can be a key personal resource to reduce their vulnerability for reducing the experience of thriving, intention to continue, SWB in sport, and goal progress. Whereas, for significant others (e.g., coaches and parents), the negative direct effects of BPN on youth sport participants' intention and SWB in sport were still significant even for the youths with high mental toughness. Although we did not directly measure the impact of significant others surrounding youths on BPN thwarting, the previous studies attested the negative impact of some coaches' behaviors on BPN thwarting (Behzadnia, Adachi, Deci, & Mohammadzadeh, 2018). The negatively affected BPN of high mental toughness individuals might provoke the possible case that the negative effect of BPN thwarting is possibly overlooked as the negative relationships were buffered by the level of mental toughness. Thus, the significant others should first need to improve their environmental factors (e.g., controlling or autonomy-supportive behavior) influencing youth sport participants' BPN rather than training youths' mental toughness. MPCs should be aware of both messages and conduct a consultation from both sides of perspectives.

Limitations and conclusion

There are some limitations to the present study. First, the study was a cross-sectional design, suggesting the relationships amongst variables tested in the study were not actual causal relationships. Future studies should conduct using longitudinal (more than three-time points) or experimental designs to clarify the causal relationships of mediation models and moderated-mediation models. Second, we only used questionnaires to measure the constructs of interest in the study. Behavioral or objective measurements could strengthen the evidence. Future study is needed to investigate the buffering effect of mental toughness on more objective outcome variables.

Our findings indicate that the negative relationships between BPN thwarting and outcomes were mediated by thriving, and the level of mental toughness moderated the indirect associations. Therefore, the results shed light on the importance of mental toughness; a trainable personal resource for youth to protect themselves.

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Tables

Table 1.

Descriptive Statistics and Correlations

	Mean	SD	1	2	3	4	5
1 BPN Thwarting	3.41	1.27					
2 Mental Toughness	5.78	0.65	-.26**				
3 Thriving	5.83	0.72	-.37**	.50**			
4 Intention	6.08	1.24	-.35**	.33**	.41**		
5 SWB in Sport	5.61	0.85	-.34**	.65**	.62**	.28**	
6 Goal Progress	5.78	0.99	-.20**	.49**	.49**	.25**	.64**

Note. BPN = Basic Psychological Needs; SWB = Subjective Well-Being

* $p < .05$. ** $p < .01$

Table 2.

Conditional Indirect Effects of BPN Thwarting on Intention Through Thriving

Conditional indirect effects of BPN Thwarting on Intention through Thriving at the value of Mental Toughness			
MT (moderator)			
Value	Effect	SE	BC-CI
Index of mod-med	.05	.03	[.01, .12]
-1SD	-.10	.03	[-.20, -.04]
Mean	-.07	.02	[-.13, -.02]
+1SD	-.04	.02	[-.10, -.01]

Note. BPN = Basic Psychological Needs; MT = Mental Toughness; SE = Standard Error; BC-CI = Bias Corrected Bootstrap Confidence Interval (BC-CIs not containing zero are interpreted as significant).

Table 3.

Conditional Indirect Effects of BPN Thwarting on SWB in Sport Through Thriving

Conditional indirect effects of BPN Thwarting on SWB in sport through Thriving at the value of Mental Toughness			
MT (moderator)			
Value	Effect	SE	BC-CI
Index of mod-med	.05	.02	[.01, .10]
-1SD	-.05	.02	[-.10, -.02]
Mean	-.03	.01	[-.07, -.01]
+1SD	-.02	.01	[-.05, -.001]

Note. BPN = Basic Psychological Needs; MT = Mental Toughness; SWB = Subjective Well-Being; SE = Standard Error; BC-CI = Bias Corrected Bootstrap Confidence Interval (BC-CIs not containing zero are interpreted as significant).

Table 4.

 Conditional Indirect Effects of BPN Thwarting on Goal Progress Through Thriving

**Conditional indirect effects of BPN Thwarting on Goal Progress
through Thriving at the value of Mental Toughness**
MT (moderator)

Value	Effect	SE	BC-CI
Index of mod-med	.05	.02	[.01, .11]
-1SD	-.05	.02	[-.10, -.01]
Mean	-.03	.01	[-.07, -.01]
+1SD	-.02	.01	[-.05, -.003]

Note. BPN = Basic Psychological Needs; MT = Mental Toughness; GP = Goal Progress; SE = Standard Error; BC-CI = Bias Corrected Bootstrap Confidence Interval (BC-CIs not containing zero are interpreted as significant).

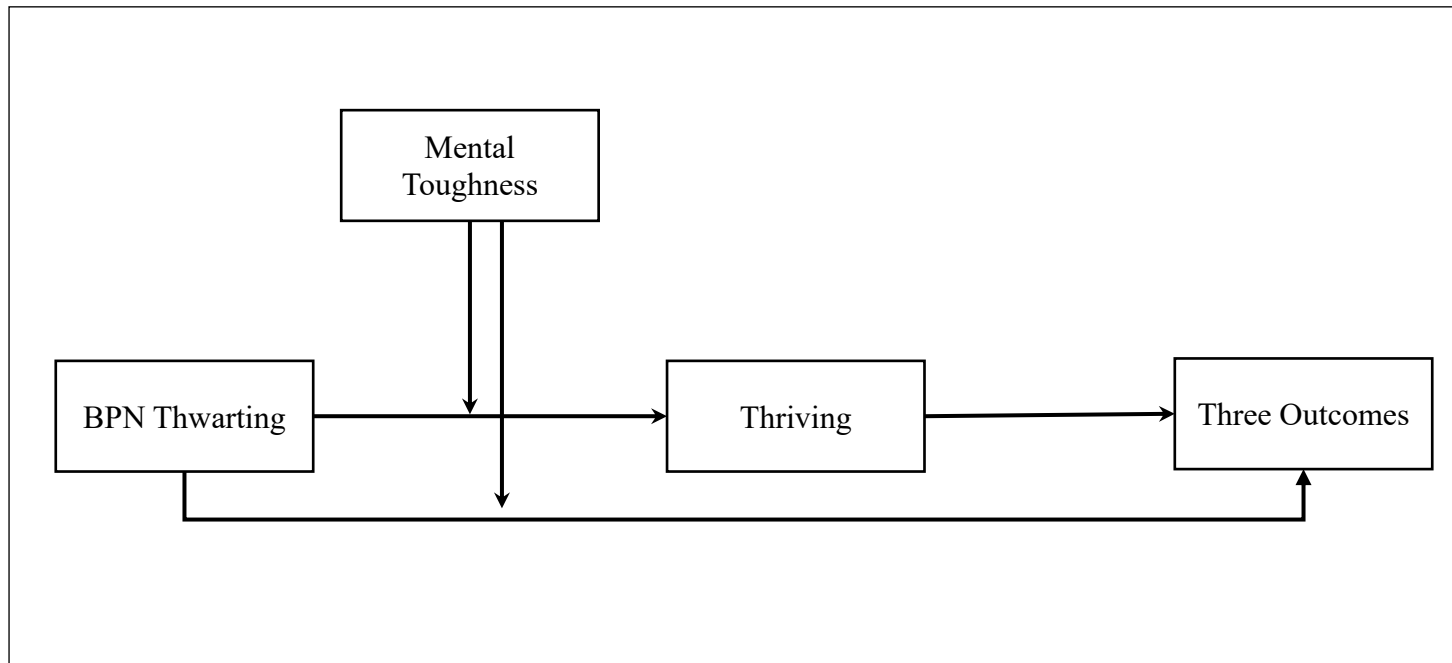
Figure

Figure 1. Hypothesized theoretical model of buffering effect of mental toughness on the associations between BPN thwarting and three important outcomes for youth sport participants (intention to continue, SWB in sport, and goal progress through thriving)

Chapter IV: Article 3

Kinoshita, K., MacIntosh, E., & Sato, S. (under review). The Effects of Individual and Environmental Factors on Youth Athletes' Thriving.

Abstract

Objectives: The concept of thriving has been of interest for the past two decades (Seligman & Csikszentmihalyi, 2000). Indeed, scholars have argued that personal motives (e.g., orientation of seeking growth in life) and social environmental factors are associated with thriving (Huta & Ryan, 2010; Ryan & Deci, 2017). The purpose of the study was to investigate how personal and social factors are related to the concept of thriving in youth sport. Further, this study examined important outcomes of interest regarding youth athlete functioning (i.e., intention to continue sport, subjective well-being in sport, and goal progress).

Method: The two-wave data were collected from youth sport participants ($M_{\text{age}} = 15.81$; $SD = 1.76$) in Canada and Japan. 203 participants completed the both first and second questionnaires. The second data collection was conducted for the same participants three months after the first data collection.

Results: The results demonstrated that the social factors (i.e., autonomy supportiveness of both coaches and parents) were positively related to thriving three months later. Although hedonic motives did not predict thriving, eudaimonic motives predicted thriving and intrinsic regulation indirectly and mental toughness, and goal progress directly.

Conclusion: In a youth sport setting, eudaimonic motives and autonomy supportiveness of coaches and parents were the significant personal and environmental factors for youth athletes' thriving three months later. Furthermore, increased intrinsic regulation, thriving, and mental toughness were uniquely related outcomes for youth athlete functioning (i.e., intention to continue, SWB in sport, goal progress).

Keywords: autonomy support; eudaimonia; hedonia; self-determination theory; thriving

Introduction

The concept of thriving has been of interest for the past two decades (Seligman & Csikszentmihalyi, 2000). Indeed, scholars have argued that personal motives (e.g., orientation of seeking growth in life) and social environmental factors are associated with thriving (Huta & Ryan, 2010; Ryan & Deci, 2017). Research has noted that individuals will develop their personal identity orientations during their adolescence (e.g., Berzonsky, & Neimeyer, 1994; Erikson, 1968) and youths are also influenced by social environmental factors like their parents or coaches (Gaudreau, Morinville, Gareau, Verner-Filion, Green-Demers, & Franche, 2016;). Despite the importance of personal and social factors, research incorporating both factors is limited. To fulfill the research gap, the purpose of the was to investigate how personal and social factors are related to the concept of thriving in youth sport. Further, this study examined important outcomes of interest regarding youth athlete functioning (i.e., intention to continue sport, subjective well-being in sport, and goal progress).

The concept of thriving

Thriving is defined as “a psychological state composed of the joint experience of vitality and learning (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005, p. 537).” Past research has shown the effects of thriving on positive functioning in a variety of domains including work, education, and sport (e.g., Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015; Walumbwa, Muchiri, Misati, Wu, & Meilian, 2018). For example, thriving is associated with retention of employees (Ren, Yunlu, Shaffer, & Fodchuk, 2015), subjective well-being (SWB; Zhai, Wang, & Weadon, 2017). In line with the current research context (i.e., youth sport), scholars have shown that thriving is positively related to youth athletes’ intention to continue sport, SWB, and goal progress (Kinoshita, MacIntosh, & Sato, 2020). As such, scholars in sport have provided some evidence indicating that thriving is an important psychological state for youth athletes’ positive functioning.

Recently, researchers have defined the concept of thriving within an elite youth sports context which argues that the characteristics of *thriving* involve the subjective perception and experience of both high levels of well-being and performance (Brown, Arnold, Fletcher, & Standage, 2017a; Brown Arnold, Reid, & Roberts, 2018). However, their definition of thriving included the perception of high *performance* as an essential component of thriving (Brown et al., 2017a; Brown et al., 2018). In contrast, our study positions higher performance as an outcome of the state of thriving based on the social embeddedness thriving at work model (i.e., Spreitzer et al., 2005). The model purports that both *development* and *health* would be consequences of experienced thriving. Research has shown that learning and vitality are fundamental cognitive and affective aspects in personal growth (Carver, 1998; Ryff, 1989). While Brown et al (2017a) did include *development* as an essential part of their definition of thriving, they only included an affective aspect of human growth (i.e., vitality and positive affect) and one item measurement of subjective performance to build the construct of thriving in their empirical study (Brown, Arnold, Standage, & Fletcher, 2017b). The created construct by the past study (Brown et al., 2017b) clearly lacked the assessment of sense of improvement (cognitive aspect of human growth) even though a previous positive psychology authority claims that a sense of improvement is an essential component of positive human functioning (Keyes, 2002). Hence, this article argues that learning, rather than ones' perception of high performance, is an imperative cognitive aspect of human growth consistent with past research (Keyes, 2002). Thus, such a performance outcome should instead be a consequence of thriving rather than an element of human thriving. Consequently, within our study, we considered Spreitzer et al.'s (2005) concept in which both affective and cognitive components are central tenets of thriving and operationalized that performance is an outcome of experienced thriving.

Self-determination theory and thriving

Self-Determination Theory (SDT; Ryan & Deci, 2000, 2017) is one of the theory that can explain the relation with thriving (Spreitzer & Porath, 2014). The theory assumes that all human has an inherent need for growth and development and three *basic psychological needs*. Accordingly, growth and development would occur when the basic psychological needs are fulfilled (Ryan & Deci, 2002, 2017). The three needs are *autonomy*, the desire to experience self-determination and psychological freedom (Deci & Ryan, 1985), *competence*, the desire to demonstrate and improve one's capabilities (Deci, 1975), and *relatedness*, the desire to be valued and respected by significant others (Baumeister & Leary, 1995).

A variety of studies revealed that satisfaction of the three basic psychological needs (BPNS) is positively related to desired outcomes such as retention/sport continuation, well-being, and performance (e.g., Balish, McLaren, Rainham, & Blanchard, 2014; Cerasoli, Nicklin, & Nassreelrgawi, 2016; Ryan & Deci, 2017). Additionally, as the process of positive impact of BPNS on outcomes, the SDT researchers argue that improvement in the quality of motivation, which is called *internalization*, occurs due to an increase in BPNS and the internalization develops the quality of human behaviors (Ryan & Deci, 2017). Moreover, the SDT is the theory that specifies the different types of motivation (self-determined vs non-self-determined) within behavioral regulatory process. Thus, an individual's motivation is regulated by how much their behavior is self-determined (Ryan & Deci, 2002). The most ideal type of behavior regulation is intrinsic motivation regulation, which is associated with behaviors for enjoyment and interest (Ryan & Deci, 2000). A meta-analytic study showed that self-determined motivation regulation can serve as a strong determinant of desired outcomes including performance (e.g., Cerasoli, Nicklin, & Ford, 2014). Other research has shown that BPNS predicts several important outcomes (e.g., sport continuation, well-being,

goal progress) through higher levels of self-determined motivation (e.g., intrinsic regulation) (e.g., Behzadnia, Adachi, Deci, & Mohammadzadeh, 2018; Jõesaar, Hein, & Hagger, 2011).

Researchers have suggested that thriving should be improved by ones' BPNS (Spreitzer & Porath, 2014), helping to optimize development (Ryan & Deci, 2000, 2017). Scholars also claim that people are more vitalized when experiencing BPNS; an assumption indeed supported by empirical findings (e.g., Cheval, Chalabaev, Quedest, Courvoisier, & Sarrazin, 2017). The evidence is mounting that BPNS predicts thriving (Porath, Gibson, & Spreitzer, 2012; Kinoshita et al., 2020). Hence, understanding SDT may explain further the mechanism's underlying thriving (Spreitzer & Porath, 2014).

Hedonic and eudaimonic motives

Hedonic and eudaimonic motives are personal orientation to pursue hedonic or eudaimonic experiences (Huta & Ryan, 2010). In the hedonic and eudaimonic perspectives, Huta and Waterman (2014) differentiated hedonic and eudaimonic perspectives into orientations (motives) and experiences (emotional and cognitive evaluations). Specifically, *hedonic motives* are defined as a personal orientation seeking pleasure, fun, and comfort, whereas *hedonic well-being* refers to the subjective experience of satisfaction in life and carefreeness (Huta & Waterman, 2014). Thus, the hedonic well-being is considered as a central component of subjective well-being (Ryan & Deci, 2001). In contrast, *eudaimonic motives* refer to a personal orientation seeking to develop one's best and excellence, while *eudaimonic well-being* is the individual experiences of meaning in life, elevating experience, and vitality (Huta & Ruan 2010). Researchers clarified that each orientation would predict unique outcomes (Huta & Ryan, 2010; Saunders, Sweet, & Huta, 2018) while high in both motives are an ideal orientation for a more positive functioning (Huta & Ryan, 2010; Kryza-Lacombe, Tanzini, & O'Neill, 2019).

In the past studies, both hedonic and eudaimonic motives are individually related to

BPNS (Niemic, Ryan, & Deci, 2009; Saunders et al., 2018); thus, we considered the two types of motivation are personal factors to predict thriving through BPNS. Furthermore, according to Waterman, Schwartz, and Conti (2008), hedonic and eudaimonic well-being were significantly predicted by higher self-determined motivation regulation (e.g., intrinsic regulation). Consequently, we expected the positive relations of hedonic and eudaimonic perspectives with the level of motivational regulation.

Autonomy support

The SDT also assumes that autonomy supportiveness of significant others (e.g., coaches, parents, peers) is an important determinant of individuals' positive development (Grolnick, Ryan, & Deci, 1991). *Autonomy support* (AS) is the supportive behavior that coaches or parents provide to develop students' or athletes' inner motivational resources (e.g., Reeve, Deci, & Ryan, 2004). Coaches and parents who are autonomy supportive provide youth athletes choices and more structured guidance and try to make good relationships with others, resulting in more satisfying their psychological needs. Thus, the importance of AS from such important figures for youth athletes has been claimed in the recent literature (e.g., Gaudreau et al., 2016). As a result, coaches' or parents' autonomy supportiveness are significant determinants of youth athletes' BPNS and other outcomes regarding athletes' functioning including sport continuation (Pelletier, Fortier, Vallerand, & Briere, 2001), well-being (Adie, Duda, & Ntoumanis, 2012; Smith, Ntoumanis, Duda, & Vansteenkiste, 2011), and performance (Behzadnia et al., 2018). Hence, AS from coaches or parents are influential social factors for youth athletes.

Mental toughness

Mental toughness (MT) is defined as “a personal capacity to produce consistently high levels of subjective or objective performance despite everyday challenges and stressors as well as significant adversities (Gucciardi et al., 2015, p.28).” Improvement in MT is

imperative for athletes' performance enhancement (e.g., Mahoney, Gucciardi, Ntoumanis, & Mallet, 2014) since MT is positively associated with a number of desired outcomes including retention, SWB, and performance (Jing & Wang, 2018; Mahoney, et al., 2014). Although some intervention studies showed the trainability of MT (e.g., Bell, Hardy, & Beattie, 2013; Fitzwater, Arthur, & Hardy, 2018), the psychological mechanism of the development in MT are still not clear. As a potential mechanism of the improvement in MT, researchers have argued that BPNS may be an antecedent of MT (e.g., Mahoney et al., 2014) since BPNS can positively impact the degree to which the people will experience psychological growth and development (Ryan & Deci, 2000, 2017).

MT also can be an important resource to affect the experience of thriving since the construct has been developed under the studies and practices of elite athletes functioning (e.g., Jones, Hanton, & Connaughton, 2002). The fact suggests the significant relationship between MT and the experience of thriving. A previous study clarified that the adolescent athletes with higher MT showed significant relationships with greater thriving even in the situation where they perceived higher controlling behaviors from coaches (Gucciardi, Stamatis, & Ntoumanis, 2017). Thus, MT would be a positive antecedent of thriving. Although a previous study claimed that MT is an antecedent of greater self-determined motivation (i.e., identified and intrinsic regulation: Cowden, Crust, Jackman, & Duckett, 2019), a more mentally tough athlete does not necessarily embrace an intrinsic type of behavioral regulation (e.g., I play the sport because it is fun: Lonsdale, Hodge, & Rose, 2008). Hence, MT could be a precursor of youth athletes' thriving, but not intrinsic regulation.

Present study and hypotheses development

In this study, we used a semi-longitudinal design to explain in detail the causal processes underlying youth athletes' thriving. Consequently, the purpose of the study was to examine the detailed causal process underlying thriving in youth sport context by using a

semi-longitudinal study design. Based on the extant literature, we generated eight hypotheses as follows:

Personal (i.e., hedonic and eudaimonic motives) and the social factors (i.e., AS from coaches and parents) would be positive predictor of BPNS (H1a – H1d), which results in an increase of thriving and intrinsic regulation (H2a, H2b). Hence, BPNS would mediate the relationships between the personal and social factors and thriving (H3a – H3d) and intrinsic regulation (H4a – H4d). Moreover, BPNS would positively predict MT (H5a), which is positively associated with thriving (H5b). Thus, the relationship between BPNS and thriving would be mediated by MT (H5c). As previous research demonstrated MT, intrinsic regulation, and thriving are significant predictors of salient outcomes (e.g., Cerasoli et al., 2014; Gucciardi et al., 2015), the relationship between BPNS and the three outcomes regarding positive youth functioning (i.e., intention to continue, SWB in sport, goal progress) would be mediated by MT (H6a – H6c), intrinsic regulation (H7a – H7c), and thriving (H8a – H8c). The hypothesized theoretical model is presented in Fig. 1.

Method

Participants and procedures

Youth sport participants (aged 13-19) in Canada and Japan were recruited by the assistance of youth sport clubs in Canada and Japan. Five hundred and seven youth sport participants were answered an online survey at time 1, while 203 participants ($M_{age} = 15.81$; $SD = 1.76$; 79 female, 115 male, 9 prefer not to answer; Canada = 44, Japan = 159) completed an online survey at time 2 (The response rate of the second time was 40.04%). The second data collection was conducted for the same participants three months after the first data collection. Participants answered the questionnaires regarding personal (i.e., hedonic and eudaimonic motives) and social factors (i.e., autonomy supportiveness of coaches and parents) and BPNS in Time 1, whereas MT, intrinsic regulation, thriving, and outcomes

(intention to continue, SWB in sport, goal progress) were assessed in Time 2. Hence, we only used the 203 participants who completed the survey for two times for the data analysis.

Participants were from a wide range of sports (e.g., basketball, baseball, soccer, track and field). Besides, participants listed themselves as either recreational (21.2%), regional (35.0%), provincial (18.2%), national (20.7%), or international (4.9%) level athletes, who weekly practice 16.49 ($SD = 9.31$) hours on average. All participants completed an online survey operated by Qualtrics. The survey for Japanese participants was translated into Japanese using the back-translation method by the first author and the third author who are both familiar with the concept and the questionnaires. The participants were provided a consent form outlining the voluntary nature of participation and their rights to withdraw from the study. The study protocol had been approved by the ethics board at the first author's university.

Measurements

Hedonic and Eudaimonic Motives. The Hedonic and Eudaimonic Motives for Activities (HEMA; Huta & Ryan, 2010) was used to measure the degree of both hedonic and eudaimonic motives in sport domain. The example of the hedonic motive item was "Seeking pleasure in your sport?" and the eudaimonic motives item was "Seeking to develop a skill, learn, or gain insight into something in your sport?" The scale is a 10-item scale using a 7-point Likert scale from 1 (not at all) to 7 (very much). The questionnaire assesses both hedonic and eudaimonic motives (five items for each). We conducted a confirmatory factor analysis (CFA) for the measurement since the scale does not well-validated in the sport context. The result showed that two items of the hedonic motives subscales had poor loadings (less than .30, Hoyle, 2000), which was consistent with the previous study in the youth sport context (Kinoshita et al., 2020). Hence, the two items were removed from the analyses. The subsequent CFA showed acceptable fit indices the scale ($\chi^2/df = 30.36/16$, $p < .05$;

Comparative Fit Index: CFI = .98; Tucker-Lewis Index: TLI = .96; Root Mean Square error of Approximation: RMSEA = .07; standardized root mean square residual : SRMR = .03).

The reliabilities for hedonic and eudaimonic motives were .78 and .81, respectively.

Autonomy Support (AS) from Coaches and Parents. Perceptions of AS from coaches and parents in the participants' sport experience were measured by the Sport Climate Questionnaire (SCQ), which is a sport-adaption of the Learning Climate Questionnaire (Williams & Deci, 1996). The measurement originally contains six items to measure the perception of AS from coaches. Hence, the same six items were slightly modified to assess the perception of AS from parents. Further, since participants may interact with more than one coach, we used plural (i.e., coaches) to ask the perception of AS from coaches. The result of a CFA showed acceptable fit indices regarding this measurement ($\chi^2/df = 76.05/40$, $p < .01$; CFI = .97; TLI = .95; RMSEA = .07; SRMR = .04). The internal consistency for coaches and parents were .86 and .88, respectively.

Basic Psychological Need Satisfaction (BPNS). To assess the BPNS, we used a 12-item version of Basic Need Satisfaction Scale (Deci & Ryan, 2000). The questionnaire measures three subscales: autonomy, competence, and relatedness. An example item is "I feel free to decide what is best for me. The participants were asked to respond by a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The three subscales can be combined to create a general index of BPNS. This procedure is also line with past studies that the measurement has been applied to youth sport contexts with adequate reliabilities (Gaudreau et al., 2016; Verner-Filion & Vallerand, 2018). We also conducted a CFA for the scale, indicating that tow items had poor loading (less than .30, Hoyle, 2000). Hence, we removed the two items from data analysis and the result of the CFA for the scale showed acceptable fit indices ($\chi^2/df = 49.19/30$, $p < .05$; CFI = .97; TLI = .95; RMSEA = .06; SRMR = .04). The internal consistency for the present study was .83.

Intrinsic Regulation. We assessed intrinsic regulation using the Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale et al., 2008). Participants were asked to rate how well the statements fit with their reasons for participating. Following the stem “I pursue my goals in my main sport...” participants answered four items of intrinsic regulation (e.g., because it is fun). Participants were asked to rate their agreement with questionnaire items on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The internal consistency of the scale was .94.

Thriving in sport. We measured thriving by using the 10-item scale developed and validated by Porath et al. (2012). This scale was initially developed to assess thriving at work domain, but the measurement has been adapted to sport context (Gucciardi, Stamatis, & Ntoumanis, 2017). The scale consists of two dimensions: vitality and learning (5 items each). Participants answered the scale items (e.g., “I find myself learning often”) on a 7-point scale (1 = strongly disagree to 7 = strongly agree). The result of a CFA showed acceptable fit indices ($\chi^2/df = 42.95/20$, $p < .01$; CFI = .97; TLI = .94; RMSEA = .08; SRMR = .04). The alpha for the study was .87.

Mental toughness (MT). Mental Toughness Inventory (MTI; Gucciardi et al., 2015) measures the degree of mental toughness using eight items. The measurement assesses mental toughness as a unidimensional construct, which is supported by a number of previous studies (e.g., Gucciardi et al., 2015). An example item is “I strive for continued success.” Participants rated how they typically thought, felt and behaved using a 7-point scale (1 = false, 100% of the time to 7 = true, 100% of the time). The result of a CFA for the measurement demonstrated acceptable fit indices ($\chi^2/df = 31.14/14$, $p < .01$; CFI = .98; TLI = .95; RMSEA = .08; SRMR = .04). The reliability of the scale was .87.

Intention to continue sport. Intention to continue the same sport was measured by two items adapted from Gucciardi and Jackson (2015). Participants were asked to rate on a 7-

Likert scale ranging from 1 (very unlikely) to 7 (very likely). The two items were: “I intend on continuing to participate in my main sport in the future.” “Will you continue to participate in your main sport in the future?” The scale showed a sufficient alpha ($\alpha = .88$).

Subjective well-being (SWB) in sport. Positive affect and life satisfaction in sport were measured as indicators of SWB in sport. Positive affect was measured using the five-item positive affect subscale from the Short-Form of Positive and Negative Affect Schedule (Thompson, 2007). Life satisfaction in sport was assessed using modified version of five-item Satisfaction with Life Scale (SWLS: Diener, Emmons, Larsen, & Griffin, 1985; Verner-Filion & Vallerand, 2018). The example of the item is: “In most ways my life *as an athlete* is close to my ideal.” For each participant, a composite SWB in sport score was created by averaging the responses to the two scales as previously conducted (Smith et al., 2011). Each of the scales was measured on a 7-point scale. The reliability for the composite score was .86.

Goal progress in sport. Goal Progress in sport was assessed using a three-item scale (Dugas, Gaudreau, & Carraro, 2012). The scale measures the degree to which participants have experienced their goal progress in sport (e.g., “I have progressed on my sport/athletic goal.”). Each item was measured on a 7-point Likert scale ranged from 1 (*not at all*) to 7 (*totally*). Consistent with the past research (Dugas et al., 2012), the internal consistency for the scale was sufficient ($\alpha = .85$).

Data analysis

Data analyses were executed by using IBM SPSS 26 and AMOS 26 statistics software. We used a path analysis with standardized estimation to examine the hypothesized relationships (Hypotheses 1–8). We adopted common fit indices, including CFI, TLI, RMSEA, and SRMR to assess the goodness of the model fit. According to Kline (2005), good fit is indicated by values greater than CFI and TLI = .90, and less than .08 for RMSEA and SRMR, respectively. Further, we used the bias-corrected confidence interval (i.e., 95%

CI_{BC}) based on 5000 bootstrapped samples (Preacher & Hayes, 2004) to test the significant effect of the indirect effects (The 95% CI_{BC} does not contain zero, indicating the path is significant).

Results

A missing data analysis revealed that the missing data was only 0.6%, indicating the influence of these missing data is negligible (Tabachnick & Fidell, 2013). The missing data was treated using an expectation-maximization (Tabachnick & Fidell, 2013). Descriptive statistics, reliabilities for variables, and correlations are presented in Table 1.

Hypothesis Testing

We conducted a path analysis to examine our Hypotheses 1-8. The results showed that the hypothesized model showed adequate model fit indices ($\chi^2/df = 57.70/22 = 2.62$; CFI = .97; TLI = .92; RMSEA = .09; and SRMR = .06). The overall results were shown in Table 2 and Figure 2. For the Hypotheses 1, hedonic motives (H1a; $\beta = -.08$, CI_{BC} [-.21, .04]) were negatively related to BPNS as unexpected. Eudaimonic motives (H1b; $\beta = .16$, CI_{BC} [.01, .30]), AS from coaches (H1c; $\beta = .37$, CI_{BC} [.24, .49]), and parents (H1d; $\beta = .29$, CI_{BC} [.15, .42]) were positively associated with BPNS. Next, BPNS were positively related to intrinsic regulation (H2a; $\beta = .25$, CI_{BC} [.14, .37]) and thriving (H2b; $\beta = .10$, CI_{BC} [.01, .19]).

The indirect effect tests demonstrated that the indirect relationships between hedonic motives and intrinsic regulation (H3a; $\beta = -.02$, CI_{BC} [-.07, .01]) and thriving (H4a; $\beta = -.01$, CI_{BC} [-.02, .001]) were not significant. However, eudaimonic motives (H3b; $\beta = .04$, CI_{BC} [.01, .11]), AS from coaches (H3c; $\beta = .09$, CI_{BC} [.03, .12]), and AS from parents (H3d; $\beta = .07$, CI_{BC} [.02, .10]) were positively related to intrinsic motivation through BPNS. Also, the indirect relationship between eudaimonic motives (H4b; $\beta = .01$, CI_{BC} [.001, .04]), AS from coaches (H4c; $\beta = .02$, CI_{BC} [.001, .04]), and parents (H4d; $\beta = .02$, CI_{BC} [.003, .03]) and thriving were mediated by BPNS.

Regarding the Hypotheses 5, BPNS predicted MT (H5a; $\beta = .31$, $CI_{BC} [.19, .42]$), which in turn was associated with thriving (H5b; $\beta = .63$, $CI_{BC} [.55, .71]$). The indirect relationship between BPNS and thriving through MT was significant (H5c; $\beta = .20$, $CI_{BC} [.12, .18]$). In addition, the indirect effect tests (Hypothesis 6) demonstrated that MT also mediated the relationships between BPNS and intention to continue (H6a; $\beta = .09$, $CI_{BC} [.01, .21]$), SWB in sport (H6b; $\beta = .15$, $CI_{BC} [.09, .22]$), and goal progress (H6c; $\beta = .19$, $CI_{BC} [.11, .28]$).

To test the mediating role of intrinsic regulation (Hypothesis 7), the results showed that intrinsic regulation mediated the relationship between BPNS and intention to continue (H7a; $\beta = .07$, $CI_{BC} [.01, .16]$), but did not mediate the relationships between BPNS and SWB in sport (H7b; $\beta = .02$, $CI_{BC} [-.002, .05]$) and goal progress (H7c; $\beta = -.02$, $CI_{BC} [-.004, .04]$). For Hypothesis 8, the indirect effect tests showed that thriving also significantly mediated relationships between BPNS and intention to continue (H8a; $\beta = .03$, $CI_{BC} [.001, .10]$) and SWB in sport (H8b; $\beta = .02$, $CI_{BC} [.002, .04]$). However, the relationship between BPNS and goal progress was not mediated by thriving (H8c; $\beta = .01$, $CI_{BC} [-.004, .04]$). Lastly, we also found other significant paths as suggested by modification indices to increase the model fit. Those are the direct relationships between eudaimonic motives and MT ($\beta = .20$, $CI_{BC} [.10, .29]$) and goal progress ($\beta = .19$, $CI_{BC} [.06, .33]$).

Discussion

The purpose of the study was to examine the detailed causal processes underlying thriving within a youth sport context by using a semi-longitudinal study design. More specifically, we investigated how personal and social factors are related to thriving, in turn associating with important outcome variables of interest. The results provided a more comprehensive understanding of youth athletes' thriving, which extends the knowledge in the sport psychology literature.

First, although previous studies showed the significant relationship between hedonic motives and BPNS (Huta & Ryan, 2010; Ryan et al., 2008; Saunders et al., 2018), the results showed that hedonic motives were not significantly related to BPNS. In contrast, eudaimonic motives and AS from coaches and parents were positively related to BPNS, which is consistent with previous studies (e.g., Gaudreau et al., 2016; Kinoshita et al., 2020). Thus, except hedonic motives, another personal (i.e., eudaimonic motives) and two social factors (i.e., AS from coaches and parents) are significantly related to BPNS (Hypothesis 1). While the path analysis showed the non-significant relationship between hedonic motives and BPNS, the correlation analysis demonstrated the significant positive relationship. Thus, the result suggests that the positive effect of hedonic motives should be partialled out because the degree of the relationship was significantly lower than others. This is also conceptually congruent with the argument that eudaimonia, compared to hedonia, is more strongly related to BPNS (Ryan et al., 2008; Saunder et al., 2018). Additionally, AS from both coaches and parents were significantly related to BPNS as is consistent with previous studies (Adie et al., 2012; Behzadnia et al., 2018; Smith et al., 2011).

Our findings demonstrated BPNS positively predicted thriving and intrinsic motivation three months later (Hypothesis 2), a finding consistent with the SDT-related literature (Ryan & Deci, 2002; Spreitzer & Porath, 2014). Furthermore, eudaimonic motives, but not hedonic motives positively predicted intrinsic motivation through BPNS (Hypothesis 3). Although previous research demonstrated significant relationships with high degrees of self-determined motivation regulation (e.g., intrinsic regulation) and both hedonic and eudaimonic experience (i.e., Waterman et al., 2008), our research demonstrated only eudaimonic motives were positively related to intrinsic regulation. Since eudaimonic motives refers to the orientation seeking one's development and excellence (Huta & Waterman, 2014), the orientation should be related to more self-determined behavior regulatory process (i.e.,

internalization) than hedonic orientation (i.e., seeking pleasure, fun, and comfort).

Accordingly, hedonic seeking would be more associated with positive emotional experiences itself such as enjoyment rather than the experience of internalization (Ryan & Deci, 2000).

Furthermore, being compatible with the SDT (Ryan & Deci, 2017) and previous studies (e.g., Behzadnia et al., 2018; Smith et al., 2011), AS from both coaches and parents had positive relationships with intrinsic regulation through BPNS.

In addition, hedonic motives did not indirectly predict thriving three months later through BPNS while eudaimonic motives predicted thriving through BPNS (Hypothesis 4). Although the results were in line with previous literature, which represented the weaker relationship between hedonic motives, relative to eudaimonic motives, and eudaimonic well-being (Huta & Ryan, 2010; Saunder et al., 2018). Given that subjective vitality (Ryan & Fredrick, 1997) is included as a subcomponent of thriving (Spreitzer et al., 2005), eudaimonic well-being (e.g., elevating experience, vitality; Huta & Ryan, 2010) has some similarities with thriving. Therefore, the results that eudaimonic motive were more related to thriving than hedonic motives are congruent with past studies.

Furthermore, our results also demonstrated that AS from both coaches and parents similarly predicted thriving through increased BPNS. The results were in agreement with the previous research that presented AS from significant figures (e.g., coaches, teachers) positively predicted vitality (e.g., Adie et al, 2012) and learning (e.g., Kaplan, 2018). As an autonomy supportive environment provides choices and high structure and facilitates positive connection with others, high-quality learning with vitality would be more likely to occur (Reeve et al, 2004). Although Gaudreau and colleagues (2016) concluded that AS from parents compared to that from coaches would be more important for younger athletes' thriving, our results did not find any differences between the effects of AS from parents and coaches. Yet, the assertion makes sense because younger athletes should spend more time

with parents than coaches and they need more parental supports for sport participation (e.g., financial, basic needs). The current samples were older than the samples in the previous study (Gaudreau et al., 2016); therefore, we might not detect the significant difference.

As is in line with the assumption by MT researchers (Mahoney et al., 2014), BPNS positively predicted MT three months later, which resulted in increased of thriving (Hypothesis 5). Thus, the relationship between BPNS and thriving was also mediated by increased MT. Since BPNS is a significant ingredient for individuals' psychological development and growth (Ryan & Deci, 2002, 2017), the personal psychological capacity (i.e., MT: Gucciardi et al., 2015) should be nurtured. Our findings replicate and bolster previous cross-sectional research (Mahoney et al., 2014). Furthermore, higher MT has predicted greater daily experience of thriving (Gucciardi et al., 2015), our results support this assertion. Consequently, BPNS was a significant predictor of thriving through MT as we hypothesized.

The present results also showed that MT mediated the relationships between BPNS and all of the outcomes in the model: intention to continue, SWB in sport, and goal progress (Hypothesis 6), consistent with past research (Gucciardi et al., 2015; Jing & Wang, 2018; Mahoney et al., 2014). However, more interestingly, the present study showed that intrinsic regulation only mediated the relationship between BPNS and intention to continue (Hypothesis 7). The result differs from previous studies that demonstrated the positive associations between intrinsic motivation and desired outcomes including SWB (e.g., Behzadnia et al., 2018) and goal progress or performance (e.g., Cerasoli et al., 2014). Additionally, thriving also didn't mediate the relationship between BPNS and goal progress while thriving significantly mediated the relations of BPNS with intention to continue and SWB in sport (Hypothesis 8). The non-significant relationships (H7b, H7c, and H8c), in contrast to our hypotheses, were found in the present study possibly because other mediating

variables in the model (i.e., MT or thriving) explained more variances in SWB in sport and goal progress. The results interestingly demonstrated several causal associations. Research has argued that internal regulation is one of the most important predictors for human well-being (Ryan & Deci, 2017). Interestingly, our study showed that MT and thriving might be more important predictors of SWB in sport than intrinsic regulation. Furthermore, our study showed that only MT mediated the relationship between BPNS and goal progress. Since only the definition of MT (Gucciardi et al., 2015) argues the link with higher performance, compared to intrinsic regulation and thriving, MT might have explained more goal progress, which is also considered as a performance piece of outcomes in the present study.

Finally, while we did not hypothesize, eudaimonic motives positively predicted MT and goal progress at time 2. This result suggests that the personal orientation of seeking development and learning can be a significant personal factor for the improvement of future MT and goal progress. This result is in line with the previous research that has demonstrated the positive association of eudaimonic motives and performance-related outcomes (Kryza-Lacombe et al., 2019)

Practical implication

Our findings suggest some implications. First, environmental factors regarding AS from coaches and parents are particularly important for youth athletes' thriving. Although a personal factor (hedonic motives) did not predict thriving, eudaimonic motives were positively related to thriving through increased BPNS, and the eudaimonic motives also were directly related to MT. Thus, practitioners or significant others should also focus on the improvement of eudaimonic motives when targeting the development of youths' MT. The findings suggest that a more comprehensive approach regarding the personal factor and greater autonomy supportiveness of significant social figures (e.g., coaches, parents) can develop not only the experience of thriving but also the youth athletes' MT. As the

eudaimonic way of living (e.g., seeking excellence in your activity or life) is not merely a psychological technique, it is not easy to be enhanced compared to hedonic experience such as positive emotions or thoughts (Kimiecik, 2016). While more research is needed in terms of how to enhance a person's eudaimonic motives, eudaimonism-focused interventions based on well-being therapy, framed by Ryff's (1989) multidimensional model of psychological well-being, including self-observation, structured diaries, and self-discovery strategies on identity exploration have shown important impacts on a person's experiences (c.f., Ruini, Ottolini et al., 2009; Schwartz, Kurtines, & Montgomery, 2005). Additionally, as Reeve and Cheon (2016) presented the significance autonomy-supportive intervention programs (ASIP), that education programs should be applied to youth sport context (see Raabe, Schmidt, Carl, & Höner, 2019 for a review). These intervention strategies would be positively related to the development of the resources affecting youth athletes thriving.

To facilitate youth athletes' positive functioning, improvement of mental toughness can be a significant predictor of the desired outcomes for youths. Although a number of past studies showed that the importance of internalization to acquire the salient outcomes (e.g., Cerasoli et al., 2014), our findings suggest that the improvement of other psychological variables (i.e., MT, thriving) may have a greater impact on the outcomes including intention to continue sport, SWB, and goal progress. Therefore, if the athletes wish to improve such outcomes in their sport participation, practitioners should work on positive psychology-based interventions (e.g., Kimiecik, 2016), or mental skills training (e.g., Bell et al., 2013; Fitzwater et al., 2018) to improve clients' thriving and MT.

Limitations

We only collected the data using participants' subjective perception-based measurements. Although this approach has some advantages, it does not provide objective measurements, which can be a cause of bias. For example, the measurement of SWB has

been criticized by researchers (e.g., Pavot, 2018). Since the SWB has been assessed by the sum of the evaluations of participants' lives and their affect (e.g., life satisfaction and positive affect: Diener et al., 1985), the evaluation of life is influenced by the participants' affect (Pavot, 2018). As human affect is fluctuating in many situations, the evaluation can be biased. Future studies can use more objective variables such as hormone (e.g., dopamine, serotonin, endorphin, or oxytocin) as a biological marker of psychological variables (Fredrickson, 2018).

Because of the relatively small sample size in the present study, we used path analysis instead of a latent variable based structural equation modeling (SEM). Since path analysis only uses averaged constructs, the information about the construct itself such as the subscales were combined into one variable. Future research would benefit from a larger sample size to enable more detailed explanations in the relationship among the variables by using a SEM. Also, because of the low response rate for Canadian participants at Time 2, we were not able to conduct a multi-group path analysis. Future study is recommended to recruit more participants from each country to compare, which might provide the invariance of the hypothesized model tested in the present study.

The present study only focused on the positive side of SDT-related variables including autonomy supportiveness, BPNS, and internal regulation. Recent SDT-related research claims that the feeling of BPN satisfaction does not necessarily coexist with low levels of the BPN frustration (Vansteenkiste & Ryan, 2013). Thus, it is important to distinguish BPN satisfaction from BPN frustration (Costa, Ntoumanis, & Bartholomew, 2015), which allows us a more comprehensive understanding of the relationships between the SDT-related variables and outcomes. Consequently, scholars have recommended to include both BPN satisfaction and frustration and/or autonomy supportiveness and controlling behaviors of significant figures' (i.e., parents and coaches).

Conclusion

The present study revealed that eudaimonic motives and AS from coaches and parents were the significant personal and environmental factors for youth athletes' thriving three months later. Additionally, increased intrinsic regulation, thriving, and mental toughness were uniquely explained salient outcomes for youth athlete functioning (i.e., intention to continue, SWB in sport, goal progress). The findings provide important insight for understanding of how youth athletes thrive within sport.

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Tables

Table 1.

Descriptive Statistics and Correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 HM (T1)	5.97	1.07										
2 EM (T1)	5.81	0.98	.69**									
3 Coach AS (T1)	5.04	1.46	.22**	.36**								
4 Parent AS (T1)	5.29	1.48	.28**	.41**	.68**							
5 BPNS (T1)	4.69	1.20	.19**	.35**	.60**	.58**						
6 MT (T2)	5.37	0.94	.18**	.35**	.23**	.28**	.38**					
7 IR (T2)	6.24	1.07	.19**	.27**	.21**	.24**	.25**	.52**				
8 Thriving (T2)	5.90	0.77	.30**	.41**	.40**	.33**	.34**	.68**	.63**			
9 Intention (T2)	4.75	1.99	.13	.18**	.002	.10	.22**	.40**	.36**	.37**		
10 SWB (T2)	5.12	0.97	.21**	.36**	.27**	.24**	.33**	.78**	.52**	.66**	.41**	
11 GP (T2)	5.21	1.26	.23**	.45**	.23**	.26**	.34**	.70**	.37**	.55**	.36**	.72**

Note. HM = Hedonic Motives; EM = Eudaimonic Motives; AS = Autonomy Support; BPNS = Basic Psychological Need Satisfaction; MT = Mental Toughness; IR = Intrinsic Regulation; SWB = Subjective Well-being; GP = Goal Progress

* $p < .05$. ** $p < .01$.

Table. 2

Results for Hypothesized Indirect Paths

	Paths	β	95% CI _{BC}	Hypothesis
H1a	HM (T1) → BPNS (T1)	-0.08	[-.21, .04]	
H1b	EM (T1) → BPNS (T1)	0.16	[.01, .30]	Supported
H1c	Coach AS (T1) → BPNS (T1)	0.37	[.24, .49]	Supported
H1d	Parent AS (T1) → BPNS (T1)	0.29	[.15, .42]	Supported
H2a	BPNS (T1) → IR (T2)	0.25	[.14, .37]	Supported
H2b	BPNS (T1) → Thriving (T2)	0.10	[.01, .19]	Supported
H3a	HM (T1) → BPNS (T1) → IR (T2)	-0.02	[-.07, .01]	
H3b	EM (T1) → BPNS (T1) → IR (T2)	0.04	[.01, .11]	Supported
H3c	Coach AS (T1) → BPNS (T1) → IR (T2)	0.09	[.03, .12]	Supported
H3d	Parent AS (T1) → BPNS (T1) → IR (T2)	0.07	[.02, .10]	Supported
H4a	HM (T1) → BPNS (T1) → Thriving (T2)	-0.01	[-.02, .001]	
H4b	EM (T1) → BPNS(T1) → Thriving (T2)	0.01	[.001, .04]	Supported
H4c	Coach AS (T1) → BPNS (T1) → Thriving (T2)	0.02	[.001, .04]	Supported
H4d	Parent AS (T1) → BPNS (T1) → Thriving (T2)	0.02	[.003, .03]	Supported
H5a	BPNS (T1) → MT (T2)	0.31	[.19, .42]	Supported
H5b	MT (T2) → Thriving (T2)	0.63	[.55, .71]	Supported
H5c	BPNS (T1) → MT (T2) → Thriving (T2)	0.20	[.12, .18]	Supported
H6a	BPNS (T1) → MT (T2) → Intention (T2)	0.09	[.01, .21]	Supported
H6b	BPNS (T1) → MT (T2) → SWB(T2)	0.15	[.09, .22]	Supported
H6c	BPNS (T1) → MT (T2) → GP (T2)	0.19	[.11, .28]	Supported
H7a	BPNS (T1) → IR (T2) → Intention (T2)	0.07	[.01, .16]	Supported
H7b	BPNS (T1) → IR (T2) → SWB (T2)	0.02	[-.002, .05]	
H7c	BPNS (T1) → IR (T2) → GP (T2)	-0.02	[-.004, .04]	
H8a	BPNS (T1) → Thriving (T2) → Intention (T2)	0.03	[.001, .10]	Supported
H8b	BPNS (T1) → Thriving (T2) → SWB (T2)	0.02	[.002, .04]	Supported
H8c	BPNS (T1) → Thriving (T2) → GP (T2)	0.01	[-.004, .04]	

Note. HM = Hedonic Motives; EM = Eudaimonic Motives; AS = Autonomy Support; BPNS = Basic Psychological Need Satisfaction; IR = Intrinsic Regulation; MT = Mental Toughness; SWB = Subjective Well-being; GP = Goal Progress

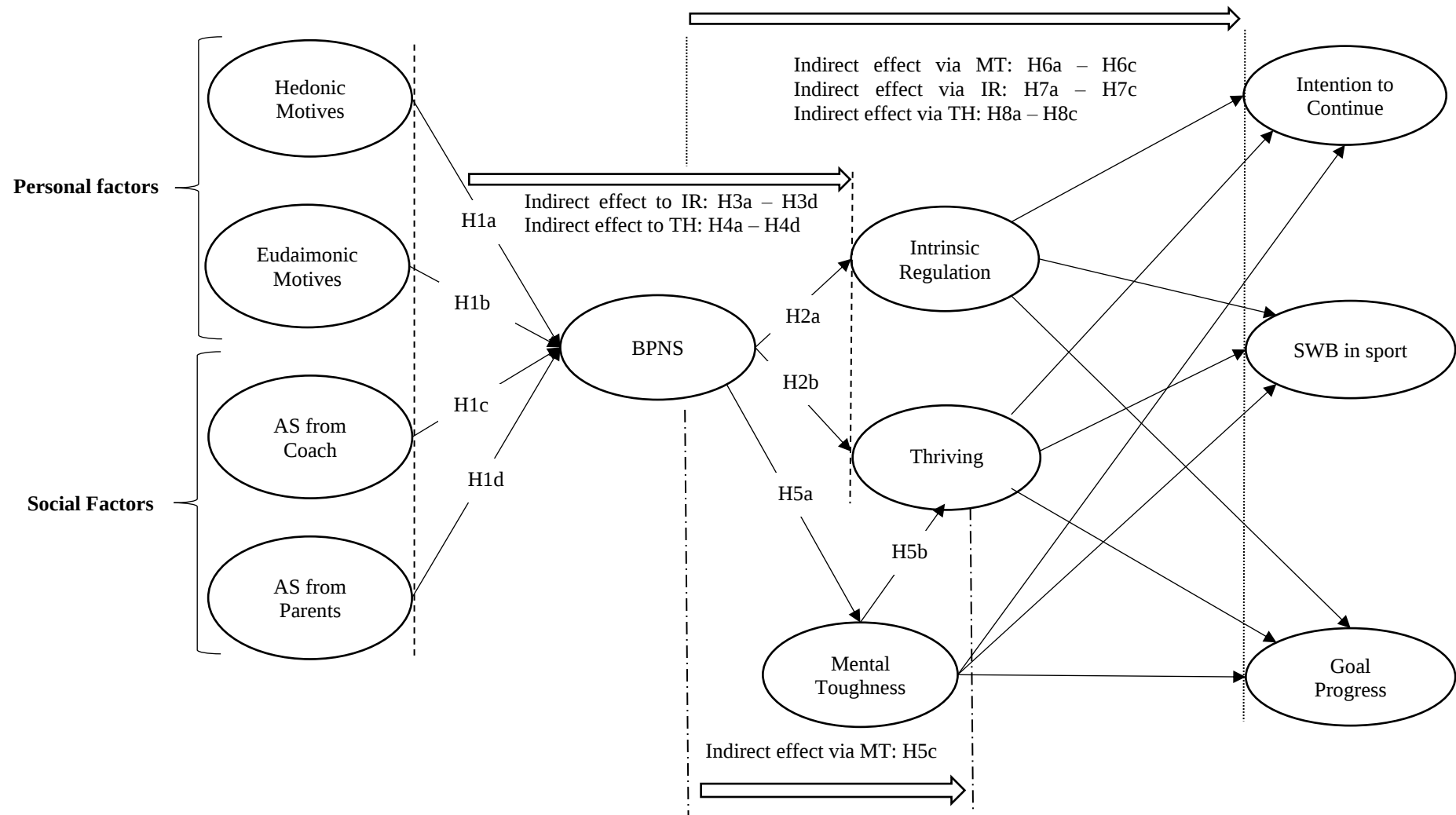


Fig 1. A hypothesized process model underlying athletes' thriving within youth sport context

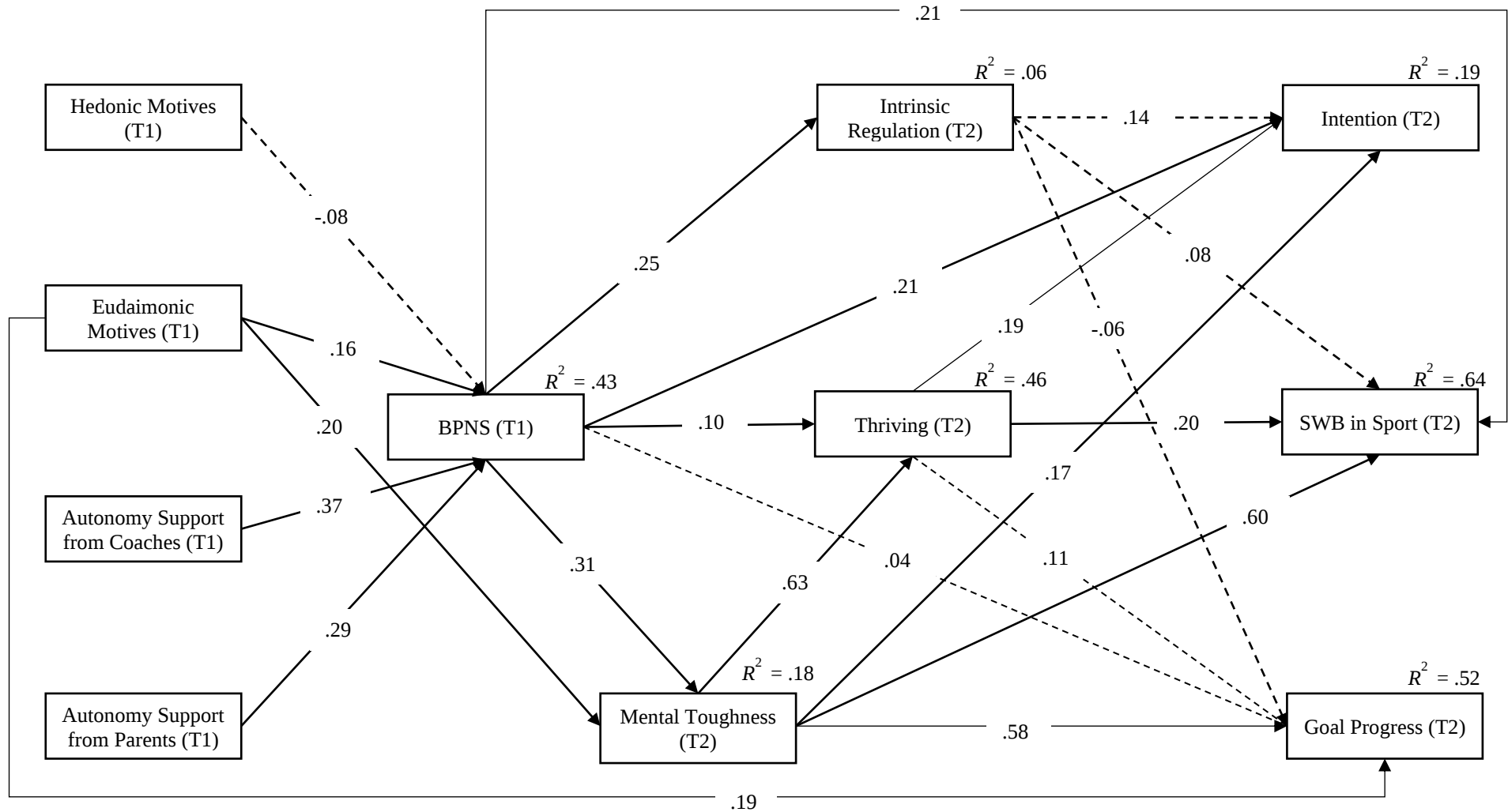


Fig 2. The result of the hypothesized model with standardized coefficients. The solid one-way lines with arrows represent significant direct path coefficients, while the one-way dotted lines with arrows depict non-significant effects.

Chapter V: General Discussion

The purpose of the dissertation was to investigate the psychological mechanism underlying thriving within a youth sport context. To this end, three separate studies were conducted. Study one investigated the antecedents of thriving, focusing mainly on personal motivational orientations with further consideration of self-determination theory. The purpose of Study one was to test the impact of personal factors (e.g., hedonic and eudaimonic motives) on thriving and the consequences of thriving on youth athlete positive functioning through the satisfaction of basic psychological needs.

Study two examined the negative impact of psychological need thwarting on thriving. Study two also included the buffering effect of mental toughness on the negative relationships between need thwarting and thriving. Hence, the purpose of Study two was to investigate the negative indirect relationships between psychological need thwarting and youth athlete functioning through thriving and in addition, to test if the negative relationship would be buffered by the level of mental toughness.

Finally, Study three investigated how the individual motivational factors (i.e., hedonic and eudaimonic motives) and social factors (autonomy support from coaches and parents) were associated with thriving in an effort to understand which factors would be more impactful on youth athletes' experience of thriving. Study three used a semi-longitudinal study design. Moreover, study three considered the psychological mechanism of improvement in mental toughness using the self-determination theory perspectives (c.f., Mahoney et al., 2014), and how mental toughness would be related to outcomes. In study three, the relationship between basic psychological need satisfaction and salient outcome variables for youth athletes through hypothesized mediating factors (thriving, and intrinsic regulation) were also examined over time. This was done to identify which mediating variable would explain the important outcome variables regarding youth athletes' positive

functioning. The research questions presented in Chapter I and their corresponding answers were derived from the three studies presented in Table 1 (see below).

Table 1. Research Questions and the Summaries of the Answers

	Research Questions	Summaries of Answers
RQ1	Does thriving mediate the relationships between the satisfaction of basic psychological needs and salient outcome variables for youth athletes?	Thriving mediated the relationship between basic psychological need satisfaction and the salient outcomes of interest (intention to continue sport, subjective well-being in sport, and goal progress).
RQ2	Is thriving predicted by hedonic and eudaimonic motives through the satisfaction of basic of basic psychological needs?	Both hedonic and eudaimonic motives are associated with thriving through the basic psychological need satisfaction.
RQ3	Are hedonic and eudaimonic motives associated with salient outcomes (e.g., intention to continue, subjective well-being in sport, goal progress) for youth athlete through thriving and basic psychological need satisfaction?	Both hedonic and eudaimonic motives were indirectly positively associated with intention to continue, subjective well-being in sport, and goal progress through both were basic psychological need satisfaction and thriving.
RQ4	Does mental toughness buffer the negative effect of psychological need thwarting on outcome variables? More specifically, does mental toughness moderate the indirect relationship between psychological need thwarting and outcome variables (i.e., intention to continue sport, subjective well-being in sport, goal progress) through thriving and the direct relationship between psychological need thwarting and the outcomes?	The negative indirect associations between basic psychological need thwarting and the outcomes through thriving were moderated by the degree of mental toughness. More specifically, the negative impacts of basic psychological need thwarting on important outcomes were weakest for those of who showed high mental toughness and strongest for the individual with low mental toughness.
RQ5	Which factors (personal resources: hedonic or eudaimonic motives vs social environment factors: autonomy support from coaches and parents) are more strongly related to youth athlete' thriving through basic psychological need satisfaction in the three-month-time span?	The social factors (i.e., autonomy supportiveness of both coaches and parents) and a personal factor (eudaimonic motives), but not hedonic motives, were equivalently related to thriving and intrinsic regulation three months later through increased basic psychological need satisfaction.
RQ6	How does mental toughness predict the outcome variables through thriving?	Mental toughness positively predicted all outcome variables (intention to continue sport, subjective well-being in sport, and goal progress) through increased thriving.

RQ7	How are personal and social factors at time 1 associated with salient outcomes (i.e., intention to continue sport, subjective well-being in sport, goal progress) at time 2 through thriving in the three-months-time span?	Eudaimonic motives and autonomy support from coaches and parents were the significant personal and environmental factors for youth athletes' thriving three months later. Additionally, increased intrinsic regulation, thriving, and mental toughness were uniquely explained salient outcomes for youth athlete functioning (i.e., intention to continue, subjective well-being in sport, goal progress).
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Key Findings and Contributions from Study 1

The purpose of Study 1 was to investigate the impact of personal factors (e.g., hedonic and eudaimonic motives) on thriving and the consequences of thriving on youth athlete positive functioning through the satisfaction of basic psychological needs. Consistent with our hypothesis, the results showed that basic psychological need satisfaction was positively associated with three outcome variables (intention to continue, subjective well-being in sport, and goal progress) through thriving. Although many studies purport that basic psychological needs satisfaction and thriving are significant predictors of important outcomes in youth athletes positive functioning (e.g., Balish et al., 2014; Porath et al., 2012) and the significant relationship between basic psychological need satisfaction and thriving was suggested and supported by previous studies, no studies to date have yet tested the mediating role of thriving on the relationships between basic psychological need satisfaction and outcomes. Therefore, I proposed that the indirect relationships and the results showed that all three indirect relationships were significant, suggesting that the importance of basic psychological need satisfaction for youth athletes' thriving, which in turn associated with the important outcomes.

In the field of positive psychology, the concepts of hedonic and eudaimonic motives have been developed as an important personal factor to predict positive psychological experiences such as vitality, and personal growth (e.g., Huta & Ryan, 2010). However, those personal motives have not been applied to youth within a sporting context. Since prior research has demonstrated that hedonic and eudaimonic motives are significant predictors of basic psychological need satisfaction (Saunders et al., 2018), the propositions advanced in study one that both hedonic and eudaimonic motives would be positively associated with basic psychological need satisfaction were rendered. Our results showed that the positive indirect relationships between hedonic and eudaimonic motives and thriving through basic

psychological need satisfaction were in fact, significant. We also expected that the relationships may be stronger between eudaimonic motives and thriving because the subcomponent of thriving (i.e., learning and vitality) is an indicator of eudaimonic well-being (e.g., Deci & Ryan, 2008). However, although the value of the coefficient of the relationship of eudaimonic motives with thriving ($\beta = .18$) was double the coefficient of the relationship between hedonic motives and thriving ($\beta = .09$), the difference was not significant as those confidence intervals were overlapped. This suggests that hedonic and eudaimonic motives are in fact related to thriving, but that eudaimonic motives may be slightly more relevant in the youth sport context.

Finally, we tested the full hypothesized model (p. 72) to more comprehensively understand the personal factor-related antecedents and the consequences of youth athletes' thriving. The results showed that both hedonic and eudaimonic motives were significantly and similarly related to outcome variables through both basic psychological need satisfaction and thriving. These results suggest that hedonic motives and eudaimonic motives were equivalently important for youth athletes' thriving and the outcomes for their positive functioning.

The contribution of Study 1 is the adaptation and extension of the model that has been built in the field of management into the context of youth sport (Spreitzer et al., 2005; Spreitzer & Porath, 2014). The findings from study one contribute to nurturing the body of literature in the self-determination theory by presenting a comprehensive model to enhance the understanding of the underlying mechanisms of thriving within the youth sport context. Also, hedonic and eudaimonic motives have been rarely applied to sport context and youth participants. As motives are more broadly defined than the reasons for behaviors (Cambridge University, 2001), the present study indicated that youth athletes' motivational orientations (e.g., hedonic seeking or eudaimonic seeking for their sport participation) would have

important meanings in their sport participation to increase the experience and thriving and positive functioning.

Key Findings and Contributions from Study 2

The purpose of the study two was to examine the buffering effect of a trainable psychological trait (mental toughness) on the negative effects of BPN thwarting on important outcomes for youth sport participants' positive functioning through thriving. Specifically, the study investigated the mediating role of thriving on the negative relationships between basic psychological need thwarting and outcome variables regarding positive youth functioning (i.e., intention to continue, SWB in sport, and goal progress). This study also examined the moderating role of mental toughness on the negative direct and indirect associations between BPN thwarting and the outcome variables through thriving (Moderated-mediation).

The findings showed that basic psychological need thwarting was negatively related to outcome variables and the relationships were mediated by thriving. Thus, basic psychological need thwarting was negatively associated with the salient outcomes for youth athletes' functioning through thriving. In contrast to the positive impact of basic psychological needs satisfaction, thriving was negatively predicted by basic psychological need thwarting, which was eventually associated with the three outcome variables.

More interestingly, regarding the interpretation of the retained or disappeared direct effect after including thriving in the moderated mediation model, the significance of the direct effects from psychological need thwarting to the three outcomes of our interests through thriving was varied. First, the direct effect from BPN thwarting to intention to continue was still significant after including thriving as a mediator in the model. The results indicated that basic psychological need thwarting still explained more youth athletes' intention to continue than decreased thriving in the model, suggesting that BPN thwarting should be a critical negative predictor of the intention of youth sport continuation. Second,

subjective well-being in sport was still directly and significantly explained by basic psychological need thwarting in the mediation model. As the result showed that the value of the coefficients of the indirect and direct path was equivalent, meaning that basic psychological need thwarting and a low level of thriving are similarly related to subjective well-being in sport. Lastly, in terms of the pathway from basic psychological need satisfaction to goal progress, the direct association was insignificant. The result indicated that basic psychological need thwarting was not a direct significant predictor of goal progress after including thriving as a mediator. In other words, the lower level of thriving, induced by basic psychological need thwarting, is the significant antecedent of the lower level of goal progress. Therefore, the result pointed out that basic psychological need thwarting was directly most related to the intention but least associated with goal progress in the mediation model, which is in line with the past scholars' works (Balish et al., 2014; Cerasoli et al., 2016). These comprehensive examinations of the models to clarify the negative antecedent and the consequences of thriving would contribute to understanding the rarely investigated psychological mechanism of youth athletes' thriving.

Moreover, the negative indirect relationships were moderated by the degree of mental toughness. Although the negative effects of basic psychological need thwarting on outcomes variables through thriving were not completely cut out depending on the degree of mental toughness, the higher level of mental toughness clearly diminished the negative indirect effects. More specifically, the negative indirect effects tended to be weaker for the participants with higher mental toughness. Since mental toughness conceptually helps an individual effectively cope with the stressors (Gucciardi et al., 2015), we expected that the people with higher mental toughness would be less influenced by maladaptive motivational factors (e.g., basic psychological need thwarting). The findings are in line with past empirical research, demonstrating that higher mental toughness predicted greater perseverant behaviors

(Gucciardi, 2016). As Gucciardi (2016) claimed that ‘perseverance’ is a fundamental behavioral marker of the individuals with high mental toughness, our findings also represented the buffering effect of mental toughness on the negative indirect relationships from the negative motivational factor to important outcomes for youth athletes’ functioning. Thus, our results showed novel findings that the mediating role of thriving between a motivational factor and outcome variables were moderated by the degree of mental toughness.

Key Findings and Contributions from Study 3

The purpose of Study 3 was to examine the detailed causal processes underlying thriving within a youth sport context by using a semi-longitudinal study design. More specifically, we investigated how personal and social factors are related to thriving, and in turn, associate with important outcome variables of interest. The results provided a more comprehensive understanding of youth athletes’ thriving, which extends the knowledge in the sport psychology literature.

Eudaimonic motives, but not hedonic motives, positively predicted intrinsic motivation three months later through basic psychological need satisfaction. Although previous research demonstrated significant relationships with high degrees of self-determined motivation regulation (e.g., intrinsic regulation) and both hedonic and eudaimonic experience (i.e., Waterman et al., 2008), our research demonstrated only eudaimonic motives were positively related to intrinsic regulation. Our works also found that hedonic motives did not indirectly predict thriving through basic psychological need satisfaction while eudaimonic motives predicted thriving through basic psychological need satisfaction. Since both social factors were significantly associated with intrinsic regulation and thriving through basic psychological need satisfaction, hedonic motives were not an important predictor of the enhancement in youth athletes’ intrinsic regulation and thriving when comparing with another personal factor (eudaimonic motives) and the social factors (i.e., autonomy

supportiveness of coaches and parents). As eudaimonic motives refer to the orientation seeking one's development and excellence (Huta & Waterman, 2014), our results suggest that the orientation (i.e., eudaimonic motives) might be more important motives for the development of intrinsic regulation and the greater experience of thriving compared to hedonic orientation (i.e., seeking pleasure, fun, and comfort). Since hedonism is not long-lasting compared to eudaimonism as hedonism focuses more on affective aspects (Huta, 2016), only the relationships with eudaimonic motives might be significant as Study 3 tested the association of those motives with the outcome variables (i.e., intrinsic regulation, thriving) three months later. In addition, the results of the correlation analysis showed the significant correlations between hedonic motives and intrinsic regulation ($r = .19$) and thriving ($r = .30$). Thus, since the correlations between other personal and social factors and intrinsic regulation and thriving were greater than the correlations with hedonic motives, the findings might demonstrate a non-significant relationship compared with eudaimonic motives and autonomy support from coaches and parents. Also, the results might come from the difference between orientations and experiences. Although Waterman and colleagues (2008) showed that higher self-determined motivation and hedonic and eudaimonic experience (i.e., well-being), Huta and Waterman (2014) distinguished hedonic and eudaimonic motives from hedonic and eudaimonic well-being.

Furthermore, our results also demonstrated that autonomy support from both coaches and parents similarly predicted thriving through increased basic psychological need satisfaction. While no known studies have tested the mediating relationships between autonomy supportiveness of coaches and parents and thriving through basic psychological need satisfaction, our results do bolster previous research that has found that autonomy support from significant figures (e.g., coaches, teachers) positively predicted vitality (e.g., Adie et al, 2012) and learning (e.g., Kaplan, 2018). Although Gaudreau and colleagues

(2016) concluded that autonomy support from parents compared to that from coaches would be more important for younger athletes' thriving, our results did not find any significant differences between the effects of autonomy support from parents and coaches on thriving as the confidence intervals of the effects were overlapped. Yet, the assertion makes sense because younger athletes should spend more time with parents than coaches and they need more parental support for sport participation (e.g., financial, basic needs). The current samples were older than the samples in the previous study (Gaudreau et al., 2016); therefore, we might not detect the significant difference.

As is in line with the assumption by mental toughness researchers (Mahoney et al., 2014b), basic psychological need satisfaction positively predicted mental toughness three months later, which resulted in an increase of thriving. Thus, the relationship between basic psychological need satisfaction and thriving was mediated by increased mental toughness. Since basic psychological need satisfaction is an essential ingredient for individuals' psychological development and growth (Ryan & Deci, 2002, 2017), the personal psychological capacity (i.e., mental toughness: Gucciardi et al., 2015) should be nurtured. Although a cross-sectional study demonstrated the significant relationship between basic psychological need satisfaction and mental toughness (Mahoney et al., 2014a), the findings from study three demonstrated a significant relationship using a semi-longitudinal design. Furthermore, mental toughness was also positively associated with thriving in line with a previous study in the education context (Gucciardi et al., 2015), our results support the relationship in the youth sport context. Consequently, basic psychological need satisfaction was a significant predictor of thriving through increased mental toughness in the context of youth sport.

The present results also showed that mental toughness mediated the relationships between basic psychological need satisfaction and all of the outcome variables (i.e., intention

to continue, subjective well-being in sport, and goal progress), consistent with past research (Gucciardi et al., 2015; Jing & Wang, 2018; Mahoney et al., 2014a). However, more interestingly, the present study showed that intrinsic regulation only mediated the relationship between basic psychological need satisfaction and intention to continue. The result differs from previous studies that demonstrated the positive associations between intrinsic motivation and desired outcomes including subjective well-being (e.g., Behzadnia et al., 2018) and goal progress/performance (e.g., Cerasoli et al., 2014). Additionally, thriving also did not mediate the relationship between basic psychological need satisfaction and goal progress while thriving significantly mediated the relations of basic psychological need satisfaction with an intention to continue and subjective well-being in sport. The non-significant relationships, being inconsistent with our hypotheses, were found in Study 3 possibly because other mediating variables (i.e., mental toughness or thriving) explained more variances in subjective well-being in sport and goal progress.

Study 3 demonstrated several interesting causal associations in the field of sport psychology. In the mainstream of motivation research, internal regulation is one of the most important predictors for human well-being (Ryan & Deci, 2017) and the universality of the assumption was clarified in the sport psychology literature (e.g., Jowett, Adie, Bartholomew, Yang, Gustafsson, & Lopez-Jiménez, 2017). However, our study interestingly revealed that mental toughness and thriving explained more variance in subjective well-being compared to intrinsic motivation, suggesting that those two variables might be more important predictors of subjective well-being in sport than intrinsic regulation. Furthermore, our study showed that only mental toughness mediated the relationship between basic psychological need satisfaction and goal progress relative to intrinsic regulation and thriving. The concept of mental toughness (Gucciardi et al., 2015) only argues the link with higher performance,

mental toughness might have explained more goal progress, which is also considered as a performance piece of outcomes in Study 3.

Finally, while we did not hypothesize, eudaimonic motives positively predicted mental toughness and goal progress at time 2, directly. This result suggests that the personal orientation of seeking development and learning can be a significant personal factor for the improvement of future mental toughness and goal progress, which is in line with the previous research that demonstrated the positive association of eudaimonic motives and performance-related outcomes in university students' GPA (Kryza-Lacombe et al., 2019). Thus, the results suggest that eudaimonic motives may be an important personal factor for performance-related construct as *mental toughness* is referred "a personal capacity to produce consistently high levels of subjective or objective performance despite everyday challenges and stressors as well as significant adversities (Gucciardi et al., 2015, p.28)."

Implication

Theoretical Implication

The dissertation research contributes to the growing body of literature investigating thriving within a youth sport context (e.g., Brown et al, 2017a, 2017b, 2018; Gucciardi et al, 2015; van Rens & Filho, 2019). First, the results showed that thriving is a significant mediator in the relationships between basic psychological need satisfaction and three important outcomes for youth athletes' positive functioning (Study 1). Moreover, thriving also mediated the relationship between basic psychological need thwarting and outcome variables (Study 2). Hence, the results of these studies provide support for some of the assertions developed in the literature of self-determination theory and thriving (e.g., Spreitzer & Porath, 2014). Ultimately, the concept of thriving (Spreitzer et al., 2005) is suitable to utilize with the self-determination theory in the youth sport context.

Second, the research has demonstrated that thriving was predicted by both hedonic and eudaimonic motives through basic psychological need satisfaction in Study 1. This result suggests that those personal resources (i.e., hedonic and eudaimonic motives) can be antecedents of thriving through increased basic psychological need satisfaction. However, our findings in Study 3 denoted only eudaimonic motives were significantly related to thriving three months later through basic psychological need satisfaction. Since social factors (i.e., autonomy supportiveness of coaches and parents) were also included in Study 3 as exogenous variables, the results have demonstrated that social factors can be more important predictors of thriving compared to hedonic motives. The results also contribute to the development of the positive psychology literature (hedonism, eudaimonism, and thriving) by adding the evidence of important antecedents (e.g., how youths' thriving can occur in the youth sport context) of youth athletes' thriving.

Moreover, the results in Study 1 showed that both hedonic and eudaimonic motives are associated with three outcomes relating to youths' positive functioning in sport through the increased experience of both basic psychological need satisfaction and thriving. The findings contribute to understanding the underlying mechanism of thriving within youth sport and in particular, by showing what are the antecedents, focusing on only personal factors (i.e., hedonic and eudaimonic motives), and the consequences, regarding youth athletes' functioning, of the desired psychological state: thriving. The relationships between thriving and outcomes regarding youth athlete functioning were also replicated in Study 2. Hence, our findings in Study 1 and Study 2 could help theoretical understanding of how thriving can occur in youth sport and what youth athletes can obtain as the result of experiencing thriving when only focusing on personal factors (i.e., hedonic and eudaimonic motives, basic psychological need satisfaction and thwarting).

Additionally, Study 3 enriched the results of Study 1 and Study 2 as thriving was also associated with important outcomes for youth functioning. However, in Study 3, increased thriving by basic psychological need satisfaction three months ago was only associated with the intention to continue sport and subjective well-being in sport. More interestingly, in Study 3, intrinsic regulation was only associated with intention to continue while mental toughness was related to all of the three outcomes when putting the three mediating variables at time 2 (i.e., intrinsic regulation, thriving, and mental toughness) all together in a model. The results also suggest an important theoretical implication as many of previous studies clearly demonstrated that intrinsic motivation (Deci, 1975) is an essential determinant of well-being and goal progress/performance (e.g., Cerasoli et al., 2014; Ryan & Deci, 2000). Thus, the results of Study 3 suggest, in addition to intrinsic motivation, other important psychological ingredients (i.e., thriving and mental toughness) for youth athletes' positive functioning.

In terms of the relationship between mental toughness and thriving, previous research showed that the degree of mental toughness moderated only the relationship between coaches' controlling behaviors and learning, a subcomponent of thriving, while the relationship with vitality, another subcomponent of thriving, was not moderated by mental toughness (Gucciardi et al., 2017). Whereas our result showed that mental toughness moderated the negative relationship between need thwarting and thriving. As psychological need thwarting is often predicted by the controlling behaviors of significant figures, the result from study three similarly replicated past research (Gucciardi et al., 2017). Additionally, Study 2 results demonstrated that mental toughness can buffer the negative impact of maladaptive motivational factors on thriving compared to the impact of maladaptive social factors (i.e., coaches' controlling behavior) conducted in the past study (Gucciardi et al., 2017). This point makes sense because as Spreizer and Porath (2014) argued, thriving should

be directly affected by motivational factors such as basic psychological need satisfaction rather than social factors (e.g., autonomy supportiveness or controlling behaviors of coaches or parents). The point is also consistent with our results in Study 3 that demonstrated that autonomy supportiveness of coaches and parents were indirectly rather than directly related to thriving through basic psychological need satisfaction. In addition to the moderating role of mental toughness, our results in Study 2 and Study 3 showed the positive main effect of mental toughness on thriving, which is consistent with past research (Gucciardi et al., 2017). Therefore, Study 2 and Study 3 not only replicated the result of previous research but also clarified the relationship between mental toughness and thriving.

Finally, many of our hypotheses came from the theoretical models suggested by Spreitzer and her colleagues (Spreitzer et al., 2005; Spreitzer & Porath, 2014). Our works in the current doctoral thesis presented the applicability of the theoretical models (Spreitzer et al., 2005; Spreitzer & Porath, 2014) in the context of youth sport in Canada and Japan. Also, the theoretical models were developed by adding the individual and social factors as the antecedents and other important mediating variables (i.e., intrinsic regulation and mental toughness). These theoretical developments in the present works would also contribute to the development of practical implications for the more positive youth athletes' functioning.

Practical Implication

Findings suggest several practical implications for nurturing youth athlete functioning. First, thriving should be an important indicator of essential outcome variables for youth athletes (i.e., intention to continue sport, subjective well-being in sport, and goal progress). To facilitate a greater experience of thriving for youth athletes, basic psychological need satisfaction is an essential ingredient. Previous studies and the present dissertation findings have indicated the importance of autonomy support to satisfy athletes' basic psychological needs (e.g., Smith et al., 2011). Autonomy support, moreover, could be an

imperative precursor of youth athletes' thriving (Gaudreau et al., 2016). Therefore, based on the findings, practitioners and others involving youth sport should emphasize the importance of supporting styles and creating environments to satisfy youth athletes' basic psychological needs such as autonomy-supportive environment or/and empowering environment (e.g., Appleton, & Duda, 2016; Curran, Hill, Ntoumanis, Hall, & Jowett, 2016; Fenton, Duda, Appleton, & Barrett, 2017; Harwood, Keegan, Smith, & Raine, 2015; Reeve, Deci, & Ryan, 2004).

Second, athletes cannot necessarily control those social environmental elements by themselves although the impacts of social factors on youths were critical in either positive or negative ways. Consequently, youth might be unintentionally affected by negative environmental factors. Hence, it is imperative for youth to find more personally controllable antecedents of basic psychological need satisfaction (e.g., hedonic and eudaimonic motives), which can be an important implication in sport psychology literature. As hedonic and eudaimonic motives could be a personal resource that can be improved by themselves for young athletes, those motives could be personally controllable antecedents. According to our findings, higher levels of both hedonic and eudaimonic motives lead youth athletes to gain more beneficial outcomes from sport participation. Consequently, coaches and parents need to understand the importance of both high levels of hedonic and eudaimonic pursuit (Huta & Ryan, 2010; Seligman, 2002) as a personally controllable antecedent.

The present thesis showed that hedonic motives are an imperative indicator of thriving and other outcomes (intention to continue sport, subjective well-being in sport, and goal progress) in Study 1. Further, hedonic motives were more important for acquiring positive psychological experiences such as vitality and positive affect (Huta & Ryan, 2010) rather than higher performance (Kryza-Lacombe et al., 2019). This may counter the belief from many sport coaches that contend enjoyment is not as important as winning in

competitive sports, especially in the cases of Japan (Allen, 2019; Story, 2018). This is a very important message for youth sport developers including coaches and parents as many youth sport development programs are not facilitated by healthy ways. According to one of the Japanese MLB players, Yoshitomo Tsutsugo, the population of youth playing baseball is decreasing six to 10 times faster than the decline of the Japanese birth rate, and this is due to excessive training and injuries in youth sport populations (Allen, 2019). He also described that youth athletes' winning orientations and the coaches' controlling style of coaching in the youth category. Such a pressuring way of coaching (e.g., corporal punishment) in Japan is very common, and this abuse of power caused the death by suicide of a 17-year-old high school basketball player in Japan, which happened only 8 years ago (Story, 2018). This might come from the coaches' orientation that focusing mainly on eudaimonic pursuit with low hedonic pursuit in their coaching contexts. To prevent further tragic events from occurring, sport program developers should strongly recommend the adults surrounding youth sport participants to educate the youth on the importance of nurturing hedonic motives rather than winning orientation in their sport participation. Therefore, we strongly suggest that hedonic seeking should also be considered as an essential ingredient of thriving in the context of youth sport. The interpretation of the results suggest a need for future research investigating if coaches' personal motives (hedonic vs. eudaimonic) affect youths' motives and the psychological experiences (e.g., enjoyment).

However, past scholars have suggested that eudaimonic motives are more important for obtaining desired outcomes (e.g., Saunderson et al., 2018). As consistent with the past, the present dissertation found that eudaimonic motives (e.g., seeking the development, learning, values, meanings, or excellent) might be more important motives for youth athlete functioning as shown in Study 3. To increase the motives, for example, youth athletes may be required to cognitively understand the importance of growth mindset (e.g., Dweck, 2008), the

concept of mindfulness (Kabat-Zinn, 2005), and excellence (Orlick, 2015). Additionally, as the eudaimonic way of living (e.g., seeking excellence in your activity or life) is not merely a psychological technique, it is not easy to be enhanced compared to hedonic experience such as positive emotions or thoughts (Kimiecik, 2016). While more research is needed in terms of how to enhance a person's eudaimonic motives, eudaimonism-focused interventions based on well-being therapy, framed by Ryff's (1989) multidimensional model of psychological well-being, including self-observation, structured diaries, and self-discovery strategies on identity exploration have shown important impacts on a person's experiences (c.f., Ruini, Ottolini, et al., 2009; Schwartz, Kurtines, & Montgomery, 2005). Besides, the motives should be affected by the environments that are built by significant others (e.g., coaches, parents, teammates); therefore, practitioners should educate not only the target participants (e.g., youth athletes) but also their parents and coaches about the way to improve eudaimonic motives. As previous scholars presented the significance of autonomy-supportive intervention programs, that education programs should be applied to youth sport contexts (see Raabe, Schmidt, Carl, & Höner, 2019 for a review). These intervention strategies would be positively related to the development of the resources affecting youth athletes thriving.

In addition to hedonic and eudaimonic motives, mental toughness is also an important personal resource that the youths can be enhanced by youth athletes themselves. The present works in Study 2 demonstrated that the level of mental toughness gradually buffered the negative impacts of basic psychological need thwarting on thriving, which in turn related to the desirable outcomes (i.e., intention, subjective well-being in sport, goal progress). The results suggest that the improvement of a person's mental toughness would be a key controllable factor to protect youths from the negative impact of the maladaptive motivational factor (e.g., basic psychological need thwarting/frustration). For youth, there may be a substantial benefit to having a mental performance consultant teach them mental

skills training (e.g., goal setting, relaxation, mental rehearsal, visualization, etc.) to prevent them from being vulnerable to the negative effects of basic psychological need thwarting. As shown in past intervention research, mental toughness is a trainable personal resource that could be trained by mental skills training (Bell et al., 2013; Fitzwater et al., 2018). Hence, the strategically developed mental skills training program for youths would help them experience more thriving and positive functioning.

However, significant others surrounding youth sport participants should be careful with the potential possibility that high mental toughness may become a cause of suffering from mental ill-being (e.g., burnout). The youth sport participants might somehow be able to continue sport participation due to the buffering effect of mental toughness on the indirect association between basic psychological need thwarting and intention to continue.

Consequently, there might be a possibility that the youths may keep being affected by the harmful environmental factors (e.g., controlling behavior) because of the increased intention, which is affected by high mental toughness. In other words, the environments negatively affecting their basic psychological needs could be overlooked since individuals with high mental toughness can continue playing the sport even in detrimental situations. The harmful environments should not be ignored, and the practitioner should keep paying attention to such environmental factors more than youth athletes' personal resources (e.g., mental toughness, hedonic and eudaimonic motives). From the findings in the current doctoral thesis, I can say mental toughness is a protective factor for detrimental effects of basic psychological need thwarting on important outcomes for youth sport participants through the increased experience of thriving. However, the characteristics of environmental factors (e.g., if the coach's interpersonal style is autonomy-supportive or controlling) are also needed to be strongly considered by the practitioner.

To sum up, our works have demonstrated bidirectional messages that are for youths

and significant others. First, for youth sport participants, hedonic and eudaimonic motives and mental toughness can be a key personal resource to experience more thriving, intention to continue, subjective well-being in sport, and goal progress. For hedonic motives, traditional positive psychology-based interventions such as a gratitude intervention (e.g., Gabana, Steinfeldt, Wong, Chung, & Svetina, 2019) could be an important tool to increase hedonic motives and hedonic experience. For eudaimonic motives, eudaimonism-focused interventions (e.g., self-observation, structured diaries, and self-discovery strategies on identity exploration: Ruini, Ottolini et al., 2009; Schwartz, Kurtines, & Montgomery, 2005) targeting to improve Ryff's (1989) multidimensional model of psychological well-being can be a great tool to improve euadaimonic motives and eudaimonic experience. Huta (2016) mentioned that mindfulness intervention programs also have the potential to increase both eudaimonic motives and eudaimonic experience. To enhance mental toughness, traditional mental skills training program such as goal setting, relaxation, mental rehearsal, imagery would be beneficial (see Fitzwater et al., 2018).

On the other hands, for significant others (e.g., coaches and parents), as the impact of significant others surrounding youths on basic psychological need satisfaction and thwarting are significant (e.g., Behzadnia et al., 2018), the significant others should first need to improve their environmental factors (e.g., reducing controlling behaviors and improving autonomy-supportive behavior) influencing youth sport participants' basic psychological needs rather than improving youths' hedonic and eudaimonic motives and mental toughness. As Reeve and Cheon (2016) presented the significance of autonomy-supportive intervention programs, that education programs should be applied to youth sport context (see Raabe, Schmidt, Carl, & Höner, 2019 for a review). These intervention strategies would be positively related to the development of the environmental resources affecting youth athletes thriving. Mental performance consultants also should be aware of both messages and conduct

a consultation from both sides of the perspective.

Limitation and Future Direction

The assessment used in the current dissertation only focused on the participants' subjective perception-based measurements. Although this approach has some advantages, it does not provide objective measurements, which can be a cause of bias. For example, the measurement of subjective well-being has been criticized by researchers (e.g., Pavot, 2018). Since the subjective well-being has been assessed by the sum of the evaluations of participants' lives and their affect (e.g., life satisfaction and positive affect: Diener et al., 1985), the evaluation of life is influenced by the participants' affect (Pavot, 2018). As human affect is fluctuating in many situations, the evaluation can be biased. Future studies can use more objective variables such as hormone (e.g., dopamine, serotonin, endorphin, or oxytocin) as actual performance, perhaps evaluated by the coaches or parents or a biological marker of psychological variables (Fredrickson, 2018).

Because of the relatively small sample size in each study, we used path analyses instead of a latent variable based on structural equation modeling (SEM). When we run the SEM in the current studies, a Heywood case (standardized regression weight is greater than 1) occurred, which is considered as a significant error for the analysis. It may be because the sample size is too small, but the correlation between basic psychological needs and thriving was so high, the variance in the variable (intention to continue) was too narrow. Since path analysis only uses averaged constructs, the information about the construct itself such as the subscales were combined into one variable. Future research would benefit from a larger sample size to enable more detailed explanations in the relationship among the variables by using an SEM.

Further, we were not able to compare the differences between Canadian and Japanese participants because of the limited responses in Study 3. Future research is needed

to compare the perspectives and the hypothesized model by collecting more participants from both countries as past research suggest that each country has the uniqueness in the cultural dimensions (e.g., Long/Short Term Orientation: Hofstede, 1984, 2011). Such future research will gain more robust evidence and universality for the theoretical model and can see the differences in the different cultures, which can provide more useful implications for the people in different countries.

Future studies should be conducted using longitudinal (more than three-time points) or experimental designs to clarify the causal relationships of mediation models and moderated-mediation models. Second, we only used questionnaires to measure the constructs of interest in the study. Behavioral or objective measurements could strengthen the evidence. Future study is needed to investigate the buffering effect of mental toughness on more objective outcome variables.

The present study only focused on the positive side of self-determination theory-related variables including autonomy supportiveness, basic psychological need satisfaction, and internal regulation. Recent self-determination theory-related research claims that the feeling of basic psychological need satisfaction does not necessarily coexist with low levels of BPN frustration (Vansteenkiste & Ryan, 2013). Thus, it is important to distinguish BPN satisfaction from basic psychological need frustration (Costa et al., 2015), which allows us a more comprehensive understanding of the relationships between the self-determination theory-related variables and outcomes. Consequently, scholars have recommended to include both basic psychological need satisfaction and frustration and/or autonomy supportiveness and controlling behaviors of significant figures' (i.e., parents and coaches).

Chapter VI: Conclusion

The psychological state of thriving appears is a critical component of understanding important outcomes from sport participation. As demonstrated in Study 1, both hedonic and eudaimonic motives were positively influential on youth sport participants' intention to continue, well-being, and goal progress through basic psychological need satisfaction and thriving. Study 1 revealed that thriving is a key predictor in understanding important outcomes within a youth sport context. In addition, Study 1 clarified the positive impact of hedonic and eudaimonic motives on thriving and the salient outcomes through basic psychological need satisfaction and thriving.

Study two found that the negative relationships between basic psychological need thwarting and outcomes were mediated by thriving, and the level of mental toughness moderated the indirect associations. More specifically, the higher the youths' mental toughness was the less negative relationships between basic psychological need thwarting and outcomes through thriving. Therefore, the results shed light on the importance of mental toughness; a trainable personal resource for youth to protect themselves from the negative effects of the maladaptive type of motivational factor (i.e., basic psychological need thwarting).

Study three revealed that eudaimonic motives and autonomy support from coaches and parents were the significant personal and environmental factors for youth athletes' thriving three months later. Additionally, increased intrinsic regulation, thriving, and mental toughness were uniquely explained salient outcomes for youth athlete functioning (i.e., intention to continue, subjective well-being in sport, goal progress). The findings provide important insight for understanding the mechanism underlying youth athletes thrive within sport.

In conclusion, the current dissertation suggests that youth athletes thriving is an

important predictor of their positive functioning. Moreover, the state of thriving is predicted by individuals (hedonic and eudaimonic motives) and social factors (autonomy support from coaches and parents) through increased basic psychological need satisfaction. Mental toughness is also an important psychological factor that is related to youth athletes' thriving and positive functioning. These results contribute to the development of the literature in the field of sport psychology.

Statement of Contributions

Studies 1 and 2 investigated the theoretical explanations in the relationships between motivational factors and athletes' thriving. Hence, the theoretical developments underlying thriving will significantly contribute to sport psychology literature. Additionally, in Study 3, we investigated both social and personal factors as antecedents of thriving. The works in Study 3 can provide a more comprehensive understanding of the relationships between motivational factors and thriving, which in turn, the subsequent outcomes regarding youth athletes' functioning (i.e., intention to continue sport, subjective well-being in sport, and goal progress in sport) by using a semi-longitudinal design. Therefore, the prospective design in Study 3 advances the cross-sectional designs of Study 1 and Study 2 and would not only contribute to the theoretical development but also help establish some psychological interventions to more productively facilitate youth athletes' thriving and positive functioning.

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Appendix A: An Integrative Model of Human Growth at Work

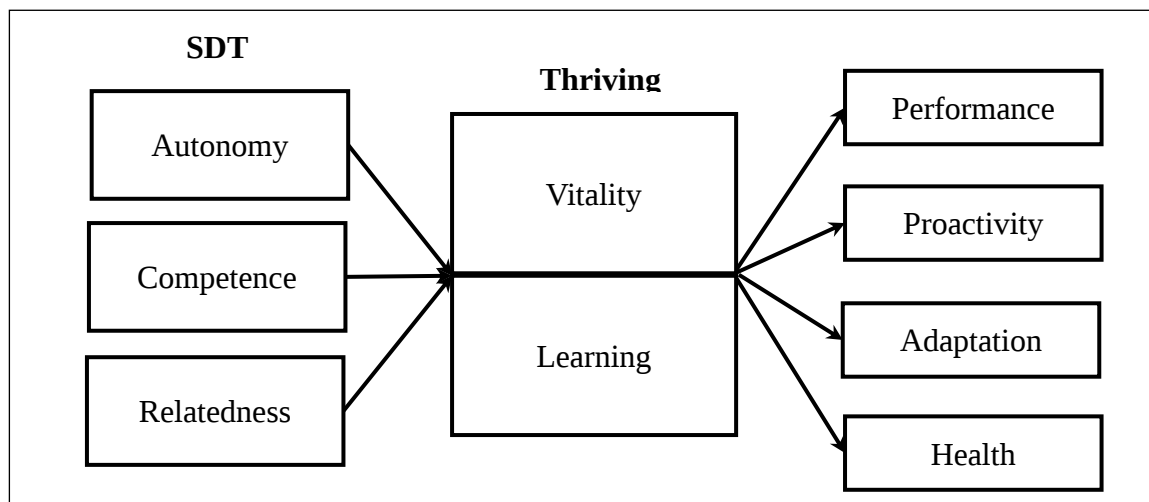


Figure 1. An integrative model of human growth at work (Spreitzer & Porath, 2014)

Appendix B: Ethics Approval

04/03/2019

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Bureau d'éthique et d'intégrité de la recherche

University of Ottawa

Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	H-01-19-1444
Titre du projet / Project Title	Investigating thriving on intention to continue, well-being, and goal progress in youth sport
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Approuvé / Approved
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	04/03/2019
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	03/03/2020

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Keita KINOSHITA	École des sciences de l'activité physique / School of Human Kinetics	Chercheur Principal / Principal Investigator
Eric MACINTOSH	École des sciences de l'activité physique / School of Human Kinetics	Superviseur / Supervisor
Shintaro SATO	École des sciences de l'activité physique / School of Human Kinetics	Co-superviseur / Co-supervisor

Conditions spéciales ou commentaires / Special conditions or comments

550, rue Cumberland, pièce 154 550 Cumberland Street, Room 154
Ottawa (Ontario) K1N 6N5 Canada Ottawa, Ontario K1N 6N5 Canada

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Appendix C: Ethics Approval of Modification

Université d'Ottawa

Bureau d'éthique et d'intégrité de la recherche

University of Ottawa

Office of Research Ethics and Integrity

H-01-19-1444 - MOD1-1444 - Modification approuvée / Modification Approved

(English message follows)

Cher/Chère Keita Kinoshita,

Merci d'avoir soumis une demande de modification pour votre projet de recherche intitulé «Investigating thriving on intention to continue, well-being, and goal progress in youth sports».

Ces modifications ont été approuvées et sont assujetties au certificat d'approbation éthique, valide jusqu'au 03-03-2020.

French translations:

All research instruments, recruitment documents and consent documents have been translated in French.

Si vous avez des questions, n'hésitez pas à communiquer avec le Bureau d'éthique au ethique@uottawa.ca ou au 613-562-5387.

Vous pouvez voir votre demande en vous connectant à votre compte [eReviews](#).

Cordialement,

Ethics Coordinator

Coordonnateur de l'éthique

Président(e) : Daniel Lagarec

CÉR : Comité d'éthique de la recherche en sciences de la santé et sciences / Health Sciences and Sciences Research Ethics Board

Ceci est une réponse automatisée, merci de ne pas répondre à ce courriel.

Dear Keita Kinoshita,

Thank you for submitting a modification request for your research project titled "Investigating thriving on intention to continue, well-being, and goal progress in youth sport".

These modifications are now covered under the certificate of ethics approval, valid until 03-03-2020.

French translations:

All research instruments, recruitment documents and consent documents have been translated in French.

If you have any questions, please contact the Ethics Office at ethics@uottawa.ca or 613-562-5387.

You can view your project at any time by logging into [eReviews](#).

Best regards,

Ethics Coordinator

Ethics Coordinator

Chair: Daniel Lagarec

REB: Comité d'éthique de la recherche en sciences de la santé et sciences / Health Sciences and Sciences Research Ethics Board

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Office of Research Ethics and Integrity

H-01-19-1444 - MOD2-1444 - Modification approuvée / Modification Approved

(English message follows)

Cher/Chère Keita Kinoshita,

Merci d'avoir soumis une demande de modification pour votre projet de recherche intitulé «Investigating thriving on intention to continue, well-being, and goal progress in youth sport».

Ces modifications ont été approuvées et sont assujetties au certificat d'approbation éthique, valide jusqu'au 03-03-2020.

Research Design: Recruitment and data collection will now also take place in Japan, as a comparative mean to Canadian youth athletes. The research objectives have been modified accordingly and translated documents appended. Recruitment and consent processes as well as data collection and sample remain the same.

Si vous avez des questions, n'hésitez pas à communiquer avec le Bureau d'éthique au ethique@uottawa.ca ou au 613-562-5387.

Vous pouvez voir votre demande en vous connectant à votre compte [eReviews](#).

Cordialement,

Kim Thompson

Responsable d'éthique en recherche

Président(e) : Daniel Lagarec

CÉR : Comité d'éthique de la recherche en sciences de la santé et sciences / Health Sciences and Sciences Research Ethics Board

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Research Design: Recruitment and data collection will now also take place in Japan, as a comparative mean to Canadian youth athletes. The research objectives have been modified accordingly and translated documents appended. Recruitment and consent processes as well as data collection and sample remain the same.

If you have any questions, please contact the Ethics Office at ethics@uottawa.ca or 613-562-5387.

You can view your project at any time by logging into [eReviews](#).

Best regards,

Kim Thompson

Protocol Officer

Chair: Daniel Lagarec

REB: Comité d'éthique de la recherche en sciences de la santé et sciences / Health Sciences and Sciences Research Ethics Board

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Appendix D: Template of Consent Form for Athletes

Investigating Thriving and Intention to Continue, Well-being, and Goal Progress in Youth Sport (Study 1 & 2)



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Research Study Consent Form for the Participant

Principal investigator: Ph.D. (c) Keita Kinoshita, Doctoral Student at the University of Ottawa (School of Human Kinetics, Faculty of Health Sciences), 125 University St., Montpetit #372B, Ottawa, ON, K1N 6N5, Tel: 613.562.5800 x 4595, Fax: 613.562.5497

Supervisor: Dr. Eric MacIntosh, Professor at University of Ottawa (School of Human Kinetics, Faculty of Health Sciences), 125 University St., Montpetit #373, Ottawa, ON, K1N 6N5, Tel: 613.562.5800 x 4242, Fax: 613.562.5497

Supervisor: Dr. Shintaro Sato, Professor of Marketing at Montclair State University (Feliciano School of Business), 1 Normal Ave, Montclair, NJ 07043-1624, USA. Tel: +1-973-655-3774

Invitation to Participate: You are invited to participate in the above mentioned research study conducted by Keita Kinoshita, Dr. Eric MacIntosh, and Dr. Sato for Ph.D. thesis.

Purpose of the Study: The purpose of the study is to examine the motivational factors that influence youth sport participants' intention to continue sport, their well-being, and subjective performance.

Participation: If you volunteer to participate in this study, you will be asked to fill out a survey that takes up to 15 minutes to complete. The surveys will be administered electronically. The survey will involve basic demographics questions (age, gender etc.), motives and intentions to continue in the sport, subjective well-being, and goal progress.

Risks: There are no foreseeable harms, risks or any discomforts associated with participating in this study.

Benefits: By participating in this study you are providing valuable information, which may lead to knowledge of youth sport continuation and youth athlete development in general. This information is important for the development of evidence-based interventions to prevent youth sport participants from dropout and to enhance their positive experience in sport participation overall. At the end of the study, we will provide your organization with a summary of the overall anonymous study findings. While you may not receive immediate tangible benefits, you will be contributing to prevent future youth sport participants from dropping out and to obtain more positive experiences (e.g., enjoyment, goal progress) from

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their sport participation.

Confidentiality and anonymity: The information obtained in connection with this study and that can identify you, will remain strictly confidential. Electronic copies of the surveys will be kept in a secure database on the investigator's computer. We guarantee that your personal identity will never be revealed in any reports regarding this study nor shared with any third party.

Voluntary Participation: Your participation in this study is completely voluntary. You can refuse to answer any questions if you do not feel comfortable, and still remain in the study. If you choose to participate in the study, you can withdraw from the study at any point in time without consequence. However, The researchers will not be able to remove your data once it has been submitted given the anonymous nature of the study.

Participants should print a copy of the consent form to keep for their personal records.

If you have any questions about the study, you may contact the researchers. If you have any ethical concerns regarding my participation in this study, I may contact the University of Ottawa's Protocol Officer for Ethics in Research, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON, K1N 6N5, tel.: 613.562.5387, email: ethics@uottawa.ca.

Acceptance:

- ☐ I have read the above information and agree to participate in the above research study. I would like to PARTICIPATE in this study
- ☐ I DO NOT want to participate in this study

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Enquêter sur l'épanouissement et l'intention de continuer, le bien-être et le progrès dans le sport chez les jeunes (Study 1 & 2)



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Formulaire de consentement à l'étude de recherché

Investigateur principal: Keita Kinoshita, Doctorant à l'Université d'Ottawa (École des sciences de l'activité Physique), 125 University St., Montpetit #372B, Ottawa, ON, K1N 6N5, Tel: 613.562.5800 x 4595, Fax: 613.562.5497

Superviseur: Dr. Eric MacIntosh, Professeur à l'Université d'Ottawa (École des sciences de l'activité Physique), 125 University St., Montpetit #373, Ottawa, ON, K1N 6N5, Tel: 613.562.5800 x 4242, Fax: 613.562.5497

Superviseur: Dr. Shintaro Sato, Professeur de marketing à l'Université Montclair State (Feliciano School of Business), 1 Normal Ave, Montclair, NJ 07043-1624, USA. Tel: +1-973-655-3774

Invitation à participer: Vous êtes invités à participer à l'étude de recherche susmentionnée menée par Keita Kinoshita, le Dr MacIntosh et le Dr Sato.

Objet de l'étude: L'objet de l'étude est d'examiner les facteurs de motivation qui influencent le développement, l'intention de poursuivre le sport, le bien-être et la progression des objectifs des jeunes sportifs.

Participation: Si vous vous êtes porté volontaire pour participer à cette étude, il vous sera demandé de remplir un questionnaire d'une durée maximale de 15 minutes. Le sondage sera administré électronique. L'enquête comportera des questions démographiques de base (âge, genre, etc.), les motivations et l'intention de continuer dans le sport, le bien-être subjectif et les progrès accomplis dans la réalisation des objectifs.

Risques: La participation à cette étude ne comporte pas de préjudices prévisibles, de risques, ni de désagréments.

Avantages: En participant à cette étude, vous fournissez des informations précieuses, qui peuvent permettre de mieux connaître la poursuite du sport chez les jeunes et le développement de leurs athlètes en général. Ces informations sont importantes pour la mise au point d'interventions fondées sur des données factuelles visant à empêcher les jeunes sportifs de participer au sport et à améliorer leur expérience positive de la participation sportive. À la fin de l'étude, nous fournirons à votre organisation un résumé des résultats globaux de l'étude anonyme. Bien que vous ne receviez peut-être pas d'avantages tangibles immédiats, vous contribuerez à empêcher les futurs

jeunes sportifs de décrocher et à obtenir des expériences plus positives (par exemple, jouissance, progression dans les objectifs) de leur participation

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Confidentialité et anonymat: Les informations obtenues dans le cadre de cette étude et pouvant vous identifier personnellement resteront strictement confidentielles. Les copies électroniques des sondages seront conservées dans une base de données sécurisée sur l'ordinateur de l'enquêteur. Nous vous garantissons que votre identité personnelle ne sera jamais révélée dans aucun rapport concernant cette étude ni partagée avec un tiers.

Participation volontaire: Votre participation à cette étude est totalement volontaire. Vous pouvez ne pas répondre à aucune question si vous ne vous sentez pas à l'aise tout en continuant à participer à l'étude. Si vous choisissez de participer à l'étude, vous pouvez vous retirer de l'étude à tout moment sans aucune conséquence. Toutefois, dû au caractère anonyme de l'étude, les chercheurs ne pourront pas supprimer vos données.

Les participants doivent imprimer une copie du formulaire de consentement à conserver pour leurs dossiers personnels.

Si vous avez des questions sur l'étude, vous pouvez contacter les chercheurs. Si vous avez des préoccupations d'ordre éthique concernant ma participation à cette étude, je peux contacter le responsable du protocole pour l'éthique dans la recherche de l'Université d'Ottawa, Tabaret Hall, 550, rue Cumberland, pièce 154, Ottawa (Ontario) K1N 6N5, tél.: 613.562.5387, email: ethique@uottawa.ca

Acceptation:

J'ai lu les informations ci-dessus et accepte de participer à l'étude de recherche ci-dessus. J'aimerais participer à cette étude
Je ne veux pas participer à cette étude

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Investigating Thriving and Intention to Continue, Well-being, and Goal Progress in Youth Sport (Study 3)



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Research Study Consent Form

Principal investigator: Ph.D. (c) Keita Kinoshita, Doctoral Student at the University of Ottawa (School of Human Kinetics, Faculty of Health Sciences), 125 University St., Montpetit #372B, Ottawa, ON, K1N 6N5, Tel: 613.562.5800 x 4595, Fax: 613.562.5497

Supervisor: Dr. Eric MacIntosh, Professor at University of Ottawa (School of Human Kinetics, Faculty of Health Sciences), 125 University St., Montpetit #373, Ottawa, ON, K1N 6N5, Tel: 613.562.5800 x 4242, Fax: 613.562.5497

Supervisor: Dr. Shintaro Sato, Professor of Marketing at Montclair State University (Feliciano School of Business), 1 Normal Ave, Montclair, NJ 07043-1624, USA. Tel: +1-973-655-3774

Invitation to Participate: You are invited to participate in the above mentioned research study conducted by Keita Kinoshita, Dr. MacIntosh, and Dr. Sato.

Purpose of the Study: The purpose of the study is to examine the motivational factors that influence youth sport participants' thriving, intention to continue sport, well-being, and goal progress.

Participation: If you volunteer to participate in this study, you will be asked to fill out a survey that takes up to 15 minutes to complete. The survey will be administered electronically in April 2019 and August 2019, so we would like you to take the online survey twice at the time points. The survey will involve basic demographics questions (age, gender etc.), motives and intentions to continue in the sport, subjective well-being, and goal progress. To send you the second survey link directly from the principal researcher at the end of August and to enable the first data to be matched, you will be required to disclose your personal information (i.e., email address and date of birth).

Risks: There are no foreseeable harms, risks or any discomforts associated with participating in this study.

Benefits: By participating in this study you are providing valuable information, which may lead to knowledge of youth sport continuation and youth athlete development in general. This information is important for the development of evidence-based interventions to prevent youth sport participants from dropout and to enhance their positive experience in sport

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participation overall. At the end of the study, we will provide your organization with a summary of the overall anonymous study findings. While you may not receive immediate tangible benefits, you will be contributing to prevent future youth sport participants from dropping out and to obtain more positive experiences (e.g., enjoyment, goal progress) from their sport participation.

Confidentiality and anonymity: The information obtained in connection with this study and that can identify you personally, will remain strictly confidential. Your email address and date of birth will be asked for the sole purpose of connecting the researcher to you personally for only the duration of the study. The information will not be shared with the organization to which you participate in sport, nor will it be shared with any third party. Electronic copies of the surveys will be kept in a secure database on the investigator's computer. We guarantee that your personal identity will never be revealed in any reports regarding this study nor shared with any third party.

Voluntary Participation: Your participation in this study is completely voluntary. You can refuse to answer any questions if you do not feel comfortable, and still remain in the study. If you choose to participate in the study, you can withdraw from the study at any point in time without consequence. If you choose to withdraw, all data gathered until the time of withdrawal will be destroyed and removed from the study.

Participants should print a copy of the consent form to keep for their personal records.

If you have any questions about the study, you may contact the researchers. If you have any ethical concerns regarding my participation in this study, I may contact the University of Ottawa's Protocol Officer for Ethics in Research, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON, K1N 6N5, tel.: 613.562.5387, email: ethics@uottawa.ca

Acceptance:

- ☐ I have read the above information and agree to participate in the above research study. I would like to PARTICIPATE in this study
- ☐ I DO NOT want to participate in this study

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Enquêter sur l'épanouissement et l'intention de continuer, le bien-être et le progrès dans le sport chez les jeunes (Study 3)



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Investigateur principal: Keita Kinoshita, Doctorant à l'Université d'Ottawa (École des sciences de l'activité Physique), 125 University St., Montpetit #372B, Ottawa, ON, K1N 6N5, Tel: 613.562.5800 x 4595, Fax: 613.562.5497

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Invitation à participer: Vous êtes invités à participer à l'étude de recherche susmentionnée menée par Keita Kinoshita, le Dr MacIntosh et le Dr Sato.

Objet de l'étude: L'objet de l'étude est d'examiner les facteurs de motivation qui influencent le développement, l'intention de poursuivre le sport, le bien-être et la progression des objectifs des jeunes sportifs.

Participation: Si vous vous êtes porté volontaire pour participer à cette étude, il vous sera demandé de remplir un questionnaire d'une durée maximale de 15 minutes. Le sondage sera administré électroniquement en avril 2019 et août 2019. Nous vous invitons donc à répondre au sondage en ligne deux fois par heure. L'enquête comportera des questions démographiques de base (âge, genre, etc.), les motivations et l'intention de continuer dans le sport, le bien-être subjectif et les progrès accomplis dans la réalisation des objectifs.

Risques: La participation à cette étude ne comporte pas de préjudices prévisibles, de risques, ni de désagréments.

Avantages: En participant à cette étude, vous fournissez des informations précieuses, qui peuvent permettre de mieux connaître la poursuite du sport chez les jeunes et le développement de leurs athlètes en général. Ces informations sont importantes pour la mise au point d'interventions fondées sur des données factuelles visant à empêcher les jeunes sportifs de participer au sport et à améliorer leur expérience positive de la participation sportive. À la fin de l'étude, nous fournirons à votre organisation un résumé des résultats globaux de l'étude anonyme. Bien que vous ne receviez peut-être

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pas d'avantages tangibles immédiats, vous contribuerez à empêcher les futurs jeunes sportifs de décrocher et à obtenir des expériences plus positives (par exemple, jouissance, progression dans les objectifs) de leur participation sportive.

Confidentialité et anonymat: Les informations obtenues dans le cadre de cette étude et pouvant vous identifier personnellement resteront strictement confidentielles. Votre nom et votre adresse électronique ne seront utilisés que dans le seul but de vous connecter personnellement avec le chercheur pour la durée de l'étude. Les informations ne seront pas partagées avec l'organisation à laquelle vous ne participez dans le sport ni avec des tiers. Les copies électroniques des sondages seront conservées dans une base de données sécurisée sur l'ordinateur de l'enquêteur. Nous vous garantissons que votre identité personnelle ne sera jamais révélée dans aucun rapport concernant cette étude ni partagée avec un tiers.

Participation volontaire: Votre participation à cette étude est totalement volontaire. Vous pouvez refuser de répondre aux questions si vous ne vous sentez pas à l'aise tout en continuant à participer à l'étude. Si vous choisissez de participer à l'étude, vous pouvez vous retirer de l'étude à tout moment sans aucune conséquence. Cependant, les chercheurs ne seront pas en mesure de supprimer vos données une fois qu'elles auront été soumises en raison du caractère anonyme de l'étude.

Les participants doivent imprimer une copie du formulaire de consentement à conserver pour leurs dossiers personnels.

Si vous avez des questions sur l'étude, vous pouvez contacter les chercheurs. Si vous avez des préoccupations d'ordre éthique concernant ma participation à cette étude, je peux contacter le responsable du protocole pour l'éthique dans la recherche de l'Université d'Ottawa, Tabaret Hall, 550, rue Cumberland, pièce 154, Ottawa (Ontario) K1N 6N5, tél.: 613.562.5387, email: ethique@uottawa.ca

Acceptation:

J'ai lu les informations ci-dessus et accepte de participer à l'étude de recherche ci-dessus. J'aimerais participer à cette étude
Je ne veux pas participer à cette étude

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青少年のスポーツ継続の意志、幸福感、および目標達成と繁栄に関する調査
(Study 3)



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School of Human
Kinetics

参加者への同意書

【主任研究者】：博士候補生 木下敬太、オタワ大学健康科学部、Tel：+1-613-562-5800 x 4595

【指導教官】エリック・マッキントッシュ（Eric MacIntosh）博士 オタワ大学健康科学部教授

Tel：+1-613-562-5800 x 4242

【指導教官】：佐藤晋太郎博士、モンクレア州立大学（フェリシアーノビジネススクール）マーケティング担当教授、Tel：+1-973-655-3774

1.本研究の目的：青少年アスリートの繁栄、スポーツ継続の意志、幸福感、および目標達成に影響するモチベーションの要因を調べること。

2.参加について：15分程のアンケートに回答していただきます。調査は2019年6月と2019年9月の計2回です。基本的な質問（年齢、性別など）、スポーツをする動機や継続の意志、幸福感、目標の進捗状況が含まれます。9月末に直接メールで2回目のリンクを送ります。

3.リスク：この試験への参加に関連するリスクはありません。

4.利点：あなたの貴重な情報は青少年スポーツの発展に貢献します。その情報は、青少年がスポーツにおいて、より良い経験をするためのプログラムを開発するために重要な役割を果たします。調後に、あなたの所属チームに調査結果を提出し、青少年が将来、スポーツに参加することでより良い経験をすることに貢献します。

5.機密性と匿名性：個人情報（Eメールアドレス、生年月日）は、厳重に保護され、研究期間中のみ使用されます。この情報は、第三者と共有されることはありません。あなたの個人情報が、いかなる報告においても決して明らかにされないこと、またいかなる第三者に共有されることがないことを保証します。

6.任意参加：参加は完全に任意です。答えたくないと感じた場合は、回答を拒否することができ、いつでも研究から辞退することができます。あなたが参加を辞退する場合、収集されたデータはすべて破棄され、研究から削除されます。

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7.個人的な記録を残すために同意書のコピーを印刷することを勧めます。研究について質問がある場合は、直接オタワ大学に連絡することができます。連絡先：Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON, K1N 6N5, tel.: 613.562.5387, メール: ethics@uottawa.ca

※必ず以下のどちらかにチェックをしてください。

- ☐同意して参加します
- ☐同意しません。参加を拒否します

Appendix E: Template of the Letter of Information to Organizations

RE: Recruitment of Youth Sport Participants,

Sport Continuation and Thriving



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Sciences

School of Human
Kinetics

To whom it may concern,

My name is Keita Kinoshita. I am a Ph.D. candidate in the School of Human Kinetics at the University of Ottawa under the supervision of Dr. Eric MacIntosh & Dr. Shintaro Sato. I would like you to help me conduct my Ph.D. research project.

Study: Canadian Heritage (2013) noted that sport participation rates of Canadians have been declining since 1992. The termination of sport participation negatively affects individuals' physical, psychological, and social well-being. Research has noted a significant relationship between motivational factors and sport continuation (e.g., Jõesaar et al., 2011) and it is our goal to focus on the investigation of the relationships between motivational factors and sport continuation. A study on sport continuance will help advance insights into the motivational mechanism underlying long-term sport participation and enhanced states of well-being.

Our particular interest is within **the context of youth sport (14-18 years old)**. We wish to investigate if there is a significant contribution to prevent young people from dropping out of sport programming **by using an online survey consisting of ○○ questions (available in both English and French). It will take about 10 minutes for each participant.**

Your assistance in recruitment will help reach the number of participations we need to produce good quality data. The study will help us propose programs for coaches, parents and administrators to create more optimal environments for youth sport participation in Canada.

Your Benefit: Our research will investigate personal resources and social environmental factors that influence sport continuation, well-being, and performance. By participating, we will produce a final report for your organization. At the end of the study, we will provide you with a report and executive summary of the findings. It is our intent to make our findings relevant for your programmatic decisions.

Thank you for your consideration. We would be pleased to visit your practice and tell you more about the study and the opportunity to partner with us in this important research study.

Sincerely,

Keita Kinoshita (Ph.D. Candidate) (613) 562-5800 ext. 4950
Eric MacIntosh (Ph.D.) (613) 562-5800 ext. 4242
Shintaro Sato (Ph.D.)

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☎ 613 562-5149

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令和元年〇月〇日

日本〇〇〇〇協会
 〇〇担当 〇〇〇〇様

オタワ大学
 木下敬太



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調査協力について

本研究の目的： ユースアスリート(14-18 歳)のスポーツ参加へのモチベーションに関する調査を行うことです。

ユースアスリートのモチベーションが、どのように“将来もそのスポーツを続けたいと思う意志”、“目標達成度”、“アスリートとしての満足感(ウェルビーイング)”に関係しているかを高度な統計を用いて分析・モデリングし、メカニズムを調査するものです。

モチベーションに関する質問には選手自身が、コーチや保護者のサポートに対してどのように感じているかということも含まれます。

この研究では、ユースアスリートがより適切なモチベーションを高く持ってスポーツに取り組めるようにどのような環境を整えるべきか?ということ疑問を明らかにすることも大きな目的としています。

データを収集し分析した際には、科学的な根拠を持って指導者や保護者がどういったサポートをすることで選手の適切なモチベーションをより高め、選手がより長くそのスポーツを続け、目標を達成し続け、心も健康にスポーツに取り組んで行くことができるかということのレポートをまとめ、データ収集に協力してくださった組織の方々へ提出させていただきます。

つきましては、ご多用のところ誠に恐縮でございますが、下記要領にて、本研究への調査協力していただきたく、まずは書面をもちまして調査協力をお願い申し上げる次第です。

敬具

記

1. 協会に所属するユースアスリートに対し15分程度のオンラインアンケートへの回答
2. 3ヶ月後にフォローアップとして同様のオンラインアンケートへの回答

注：収集させていただいたデータは、情報漏洩対策のため、パスワードをかけて保存し、厳重に保管することをお約束いたします。

以上

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Appendix F: Demographic Questionnaires

Demographic Questionnaire

1. Gender:
☐Male ☐Female ☐Prefer not to answer
2. Date of birth:
____/____/_____
DD/MM/YYYY
3. What town/city do you live? _____
4. What is the name of the sports you currently participate in? _____
5. What is the name of the team you currently belong to? _____
6. How long do you approximately train your sports per week? _____
7. What is your skill level in your main sport?
☐International level
☐National level
☐Provincial level
☐Regional level
☐Recreational level

Questionnaire démographique

1. Genre:

☐ Je m'identifie comme (veuillez préciser) _____ ☐ Préfère ne pas répondre

2. Date de naissance:

____ / _____

Mois /Année

3. Dans quelle ville et quelle province habitez-vous? _____

4. Combien de sports pratiquez-vous pendant la saison été / hiver? _____

5. Quels sont les sports auxquels vous participez actuellement? _____

6. Environ combien de temps par semaine accordez-vous à l'entraînement/la pratique de votre sport? _____

7. Quel est votre niveau de compétence dans votre sport principal?

☐ Niveau international

☐ Niveau national

☐ Niveau provincial

☐ Niveau régional

☐ Niveau récréatif

アンケート

1. 性別：

- ・ 男
- ・ 女
- ・ _____と明記（指定してください）
- ・ 答えたくない

2. 生年月日：

____ / ____ / _____

DD / MM / YYYY

3. 現在お住まいの地域（〇〇県△△市） _____ 県 _____ 市

あなたが行っているスポーツの名前（例：野球）とチーム名または学校名を記入してください。

4. スポーツ名： _____

5. チームまたは学校名： _____

6. 一週間の練習時間はおおよそ何時間ですか？

週に _____ 時間

7. あなたの競技レベルを教えてください

☐ 国際レベル☐ 全国レベル☐ 地方レベル☐ 地域レベル☐ 以上の経験無し。または、レクリエーションで行っている

Appendix G: Basic Psychological Need Satisfaction (Study 1 & 3)

The Basic Psychological Need Satisfaction (Adopted from Deci & Ryan, 2000)

Below, we are going to ask about your actual experiences of certain feelings in your sport. Please read each statement carefully and decide how you typically experience in your sport.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

“In my sport...”

Autonomy

1. I feel free to decide what is best for me.....1 2 3 4 5 6 7
2. I feel pressured by others.....1 2 3 4 5 6 7
3. I feel like I can be myself when I practice my sport.....1 2 3 4 5 6 7
4. I feel that I am free to make decisions when I practice my sport.....1 2 3 4 5 6 7

Competence

5. I feel efficient in all aspects of my sport.....1 2 3 4 5 6 7
6. I feel competent in my sport.....1 2 3 4 5 6 7
7. Overall, I think I am a competent athlete.....1 2 3 4 5 6 7
8. In my sport, I feel more skillful than the average athlete.....1 2 3 4 5 6 7

Relatedness

9. I really appreciate the people with whom I practice my sport.....1 2 3 4 5 6 7
10. I get along very well with people I meet in my sport.....1 2 3 4 5 6 7
11. I feel a great complicity with the people with whom I practice
my sport.....1 2 3 4 5 6 7
12. I feel that the coaches and other athletes are interested in
me and respect me.....1 2 3 4 5 6 7

Satisfaction des besoins psychologiques dans le sport

(adoptée dans Deci & Ryan, 2000; Française: Verner-Filion & Vallerand, 2018)

Ci-dessous, nous allons vous poser des questions concernant vos expériences réelles de certains sentiments dans votre sport principal. Veuillez lire attentivement chaque énoncé et décidez de quelle façon vous vivez celui-ci habituellement dans votre sport principal.

Pas du tout en accord	Très peu en accord	Un peu en accord	Moyennement en accord	Assez en accord	Fortement en accord	Très fortement en accord
1	2	3	4	5	6	7

"Dans mon sport principal, ..."

1. Je me sens libre de décider ce qui est mieux pour moi.....1 2 3 4 5 6 7
2. J'apprécie vraiment les gens avec qui je pratique mon sport.....1 2 3 4 5 6 7
3. Je me sens efficace dans les différents aspects de mon sport.....1 2 3 4 5 6 7
4. Je ressens de la pression de la part des autres.....1 2 3 4 5 6 7
5. Je m'entends très bien avec les gens que je rencontre dans mon sport....1 2 3 4 5 6 7
6. Je me sens compétent dans mon sport.....1 2 3 4 5 6 7
7. Je sens que je peux être moi-même lorsque je pratique mon sport.....1 2 3 4 5 6 7
8. Je sens une belle complicité avec les gens avec qui je
pratique mon sport.....1 2 3 4 5 6 7
9. Dans l'ensemble, je crois être un athlète compétent.....1 2 3 4 5 6 7
10. Je sens que je suis libre de prendre des décisions lorsque je
pratique mon sport.....1 2 3 4 5 6 7
11. Je sens que les entraîneurs et les autres athlètes s'intéressent
à moi et me respectent.....1 2 3 4 5 6 7
12. Dans mon sport, je me sens plus habile que la moyenne des athlètes....1 2 3 4 5 6 7

基本的な心理欲求の満足度（デシ&ライアン、2000年より採用）

以下に、私たちは、あなたがスポーツを行う中で感じていることについて質問します。それぞれの質問を注意深く読み、あなたのスポーツにおける経験を全くそう思わない・当てはまらない（1）～全くそう思う・当てはまる（7）の7段階で教えてください。

- 1 全くそう思わない
- 2 そう思わない
- 3 どちらかといえばそう思わない
- 4 どちらでもない
- 5 どちらかといえばそう思う
- 6 そう思う
- 7 全くそう思う

“現在行っているスポーツにおいて”

<自発性>

1. 自分にとって最適なものを自由に決めれている.....1 2 3 4 5 6 7
2. 他者からのプレッシャーを感じている.....1 2 3 4 5 6 7
3. 練習をするとき、本来の自分自身になることができる.....1 2 3 4 5 6 7
4. 練習において、自由に決断を下すことができる.....1 2 3 4 5 6 7

<有能性>

5. 私は、自分が行うスポーツにおけるあらゆる面で有能であると感じている.....1 2 3 4 5 6 7
6. 私は、自分が行うスポーツにおける才能があると感じている.....1 2 3 4 5 6 7
7. 全体的に、私は有能なアスリートだと思う.....1 2 3 4 5 6 7
8. 自分が行うスポーツでは、平均的なアスリートよりも優秀だと感じる.....1 2 3 4 5 6 7

<関係性>

9. 私は一緒に練習している人たちに本当に感謝しています.....1 2 3 4 5 6 7
10. 私は自分のスポーツで出会った人ととても仲が良い.....1 2 3 4 5 6 7
11. 一緒に練習している人たちとはよく協力できていると感じる.....1 2 3 4 5 6 7
12. コーチや他のアスリートが自分に対し、関心や尊敬を持っていると感じる.....1 2 3 4 5 6 7

Appendix H: Thriving (Study 1, 2, & 3)

Thriving at Work Scale (Porath et al., 2012)

Please read each statement carefully and decide how you typically experience **in your sport**.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Learning

1. I find myself learning often.....1 2 3 4 5 6 7
2. I continue to learn more as time goes by.....1 2 3 4 5 6 7
3. I see myself continually improving.....1 2 3 4 5 6 7
4. I am not learning.....1 2 3 4 5 6 7
5. I am developing a lot as a person.....1 2 3 4 5 6 7

Vitality

6. I feel alive and vital.....1 2 3 4 5 6 7
7. I have energy and spirit.....1 2 3 4 5 6 7
8. I do not feel very energetic.....1 2 3 4 5 6 7
9. I feel alert and awake.....1 2 3 4 5 6 7
10. I am looking forward to each new day1 2 3 4 5 6 7

Épanouissement au travail (Porath et al., 2012; Française: Bensemmane et al., 2018)

Veillez lire attentivement chaque énoncé et déterminez le niveau auquel vous vivez habituellement cette expérience dans votre sport principal.

Pas du tout en accord	Très peu en accord	Un peu en accord	Moyennement en accord	Assez en accord	Fortement en accord	Très fortement en accord
1	2	3	4	5	6	7
1. Je me retrouve souvent à apprendre.....	1	2	3	4	5	6 7
2. Je continue d'apprendre de plus en plus avec le temps.....	1	2	3	4	5	6 7
3. Je me vois en amélioration constante.....	1	2	3	4	5	6 7
4. Je n'apprends pas.....	1	2	3	4	5	6 7
5. J'ai beaucoup évolué en tant que personne.....	1	2	3	4	5	6 7
6. Je me sens en vie et dynamique	1	2	3	4	5	6 7
7. J'ai de l'énergie et du moral.....	1	2	3	4	5	6 7
8. Je ne me sens pas très énergique.....	1	2	3	4	5	6 7
9. Je me sens alerte et éveillé(e).....	1	2	3	4	5	6 7
10. J'attends avec impatience chaque nouvelle journée.....	1	2	3	4	5	6 7

仕事における繁栄 (Porath et al., 2012)

それぞれの記述を注意深く読み、あなたが自分の行うスポーツでの経験についてどの程度当てはまるかを全くそう思わない・当てはまらない (1) ～全くそう思う・当てはまる (7) の7段階で答えてください。

- 1 全くそう思わない
- 2 そう思わない
- 3 どちらかといえばそう思わない
- 4 どちらでもない
- 5 どちらかといえばそう思う
- 6 そう思う
- 7 全くそう思う

<学び>

1. 自分が行うスポーツから多くのことを学んでいる.....1 2 3 4 5 6 7
2. 私は、スポーツからより多くのことを学び続けている.....1 2 3 4 5 6 7
3. 私は、アスリートとして成長し続けていると思う.....1 2 3 4 5 6 7
4. 私はスポーツから何も学んでいない.....1 2 3 4 5 6 7
5. 私はスポーツを通して人として大きく成長している.....1 2 3 4 5 6 7

<活力>

6. スポーツをしている時、生き生きしている.....1 2 3 4 5 6 7
7. 活力に溢れ、意欲に満ちている.....1 2 3 4 5 6 7
8. だるくて、あまりやる気が起きない.....1 2 3 4 5 6 7
9. 意識がはっきりとして、冷静である.....1 2 3 4 5 6 7
10. 新しい日が来るのを楽しみにしている.....1 2 3 4 5 6 7

Appendix I: Intention to Continue (Study 1, 2, & 3)

Intention to Continue Sport (adopted from Chatzisarantis, Biddle, & Meek, 1997)

Please read each statement carefully and decide your intention to play **your main sport in subsequent months or season.**

Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely
1	2	3	4	5	6	7
1. I intend to play the sport in the next season/months.....	1	2	3	4	5	6 7
2. I am determined to play the sport in the next season/months.....	1	2	3	4	5	6 7

Intention de continuer à faire du sport (adoptée dans Chatzisarantis, Biddle, & Meek, 1997)

Veillez lire attentivement chaque énoncé et décidez de votre intention de pratiquer **votre sport principal la saison ou les mois suivants.**

Très improbable	Improbable	Plutôt improbable	Ni probable ni improbable	Plutôt vraisemblable	Probable	Très probable
1	2	3	4	5	6	7
1. J'ai l'intention de pratiquer ce sport au cours de la prochaine saison / des prochains mois.....	1	2	3	4	5	6 7
2. Je suis déterminé à pratiquer ce sport au cours de la prochaine saison / des prochains mois.....	1	2	3	4	5	6 7

スポーツ継続の意志 (Chatzisarantis, Biddle, & Meek, 1997 より採択)

それぞれの記述を注意深く読み、あなたの行っているスポーツの来シーズンまたは数ヶ月後の継続の意志について回答してください。

- 1 非常に可能性が低い
- 2 可能性が低い
- 3 どちらかといえば可能性が低い
- 4 どちらとも言えない
- 5 どちらかといえば可能性が高い
- 6 可能性が高い
- 7 非常に可能性が高い

1. 来シーズンまたは数ヶ月後も今のスポーツを続けるつもりです.....1 2 3 4 5 6 7
2. 来シーズンまたは数ヶ月後も今のスポーツをすることを決心していま.....1 2 3 4 5 6 7

Appendix J: Satisfaction in Athletic Life (Study 1, 2, & 3)

Satisfaction With Life Scale (Diener et al., 1985)

Please read each statement carefully and rate the degree of satisfaction with **your sport**.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7
1. In most ways my life as an athlete is close to my ideal	1	2	3	4	5	6 7
2. The conditions in which I practice my sport are excellent.....	1	2	3	4	5	6 7
3. I am satisfied with my life as an athlete.....	1	2	3	4	5	6 7
4. So far, I have gotten the important things I want as an athlete.....	1	2	3	4	5	6 7
5. I would change almost nothing about my life as an athlete.....	1	2	3	4	5	6 7

Échelle de satisfaction de la vie (Diener et al., 1985; Française: Verner-Filion & Vallerand)

Veillez lire attentivement chaque énoncé et noter le degré de satisfaction avec votre sport principal. Indiquez votre degré d'accord avec chacun des énoncés suivants en répondant de façon aussi honnête que possible.

Pas du tout en accord	Très peu en accord	Un peu en accord	Moyennement en accord	Assez en accord	Fortement en accord	Très fortement en accord
1	2	3	4	5	6	7
1. Ma vie en tant qu'athlète correspond de près à mes objectifs.....	1	2	3	4	5	6 7
2. Les conditions dans lesquelles je pratique mon sport sont excellentes....	1	2	3	4	5	6 7
3. Je suis satisfait de ma vie en tant qu'athlète.....	1	2	3	4	5	6 7
4. J'obtiens les choses importantes que je voulais dans mon sport.....	1	2	3	4	5	6 7
5. Je ne changerais presque rien à ma vie d'athlète.....	1	2	3	4	5	6 7

人生満足感 (Diener et al., 1985)

各記述を注意深く読み、あなたの行っているスポーツに対する満足度を評価してください。

- 1 全くそう思わない
- 2 そう思わない
- 3 どちらかといえばそう思わない
- 4 どちらでもない
- 5 どちらかといえばそう思う
- 6 そう思う
- 7 全くそう思う

- 1.ほとんどの点で、私のアスリートとして人生は理想に近い.....1 2 3 4 5 6 7
- 2.自分のスポーツを練習する環境は優れている.....1 2 3 4 5 6 7
- 3.アスリートとしての人生に満足しています.....1 2 3 4 5 6 7
- 4.今まで、私はアスリートとして欲しいものを手に入れてきた.....1 2 3 4 5 6 7
- 5.私は、自分のアスリートとしての人生に関して、
ほとんど何も変えたいと思わない.....1 2 3 4 5 6 7

Appendix K: Positive Affect (Study 1, 2, & 3)

Positive Affect (adopted from Thompson, 2007)

Please read each statement carefully and decide how you experience the positive emotion **when you are playing your main sport.**

Very Slightly or Not at all	A Little	Moderately	Quite a Bit	Extremely
1	2	3	4	5

“When you are playing my main sport...”

1. I am Determined.....1 2 3 4 5 6 7
2. I am Attentive.....1 2 3 4 5 6 7
3. I am Alert.....1 2 3 4 5 6 7
4. I am Inspired.....1 2 3 4 5 6 7
5. I am Active.....1 2 3 4 5 6 7

Affect positif (adopté de Thompson, 2007; Française: adopté de Gaudreau et al., 2006)

Veuillez lire attentivement chaque énoncé et déterminez la façon dont vous ressentez les émotions positives **lorsque vous pratiquez votre sport principal.**

Pas du tout	Très légèrement	Légèrement	Modérément	Fortement	Très fortement	Totalement
1	2	3	4	5	6	7

“Quand je pratique mon sport principal ...”

1. Je suis déterminé(e).....1 2 3 4 5 6 7
2. Je suis attentif(ve).....1 2 3 4 5 6 7
3. Je suis alerte.....1 2 3 4 5 6 7
4. Je suis inspiré(e).....1 2 3 4 5 6 7
5. Je suis actif(ve).....1 2 3 4 5 6 7

ポジティブ感情（2007年 Thompson より）

それぞれの説明を注意深く読み、あなたがあなたのメインスポーツをしているときあなたがどのように前向きな感情を経験するかを教えてください。

- 1 まったくない
- 2 非常にわずかに
- 3 わずかに
- 4 適度に
- 5 非常に
- 6 非常に強い
- 7 完全に

"私がスポーツをしているとき、..."

- 1.私は決心しています.....1 2 3 4 5 6 7
- 2.私は注意深くになっています.....1 2 3 4 5 6 7
- 3.私は機敏になっています（油断がない）1 2 3 4 5 6 7
- 4.私はやる気が湧いています.....1 2 3 4 5 6 7
- 5.私には活力があります.....1 2 3 4 5 6 7

Appendix L: Goal Progress (Study 1, 2, & 3)

Goal Progress in Sport (adopted from Dugas et al., 2012)

Please read each statement carefully and decide how you experience about your goals and the progress **in your sport**.

Not at all	Very very Slightly	Very Slightly	Slightly	Moderately	Strongly	Very Strongly	Very very Strongly	Totally
1	2	3	4	5	6	7	8	9

“In my sport...”

1. I have progressed on my sport/athletic goal.....1 2 3 4 5 6 7 8 9

2. I have moved forward in the pursuit of
my sport/athletic goal.....1 2 3 4 5 6 7 8 9

3. I have come closer to reaching my s
port/athletic goal.....1 2 3 4 5 6 7 8 9

4. I have made progress toward the realization of
my athletic/sport goal.....1 2 3 4 5 6 7 8 9

5. I have advanced toward my athletic/sport goal.....1 2 3 4 5 6 7 8 9

Progrès de l'objectif dans le sport (adopté de Dugas et al., 2012)

Veuillez lire attentivement chaque énoncé et déterminez votre niveau de progrès quant à votre objectif dans **votre sport principal**.

Pas du tout	Très légèrement	Légèrement	Modérément	Fortement	Très fortement	Totalement
1	2	3	4	5	6	7

“Dans mon sport principal...”

1. J'ai progressé dans mon objectif sportif / athlétique.....1 2 3 4 5 6 7

2. J'ai progressé dans la poursuite de mon objectif sportif / athlétique.....1 2 3 4 5 6 7

3. Je suis plus près d'atteindre mon objectif sportif / athlétique.....1 2 3 4 5 6 7

スポーツにおける目標進捗状況 (Dugas et al., 2012 より)

それぞれの記述を注意深く読み、あなたがどのように自分の目標の進捗を経験しているか答えてください。

- 1 まったくない
- 2 非常にわずかに
- 3 わずかに
- 4 適度に
- 5 非常に
- 6 非常に強く
- 7 完全に

“私のスポーツでは…”

- 1. 私は、自分の目標に向かって順調に進んでいる.....1 2 3 4 5 6 7
- 2. 私は、求めている目標に向かって前進している.....1 2 3 4 5 6 7
- 3. 私は、目標に近づいていっている.....1 2 3 4 5 6 7

Appendix M: Hedonic and Eudaimonic Motives (Study 1 & 3)

Hedonic and Eudaimonic Motives for Activities Revised (Huta et al, 2016)

Please read each statement carefully and decide how you typically experience **in your sport**.

Not at all	Very Slightly	Slightly	Moderately	Strongly	Very Strongly	Totally
1	2	3	4	5	6	7

Hedonic Motives

1. Seeking relaxation?1 2 3 4 5 6 7
2. Seeking pleasure?1 2 3 4 5 6 7
3. Seeking enjoyment?1 2 3 4 5 6 7
4. Seeking to take it easy?1 2 3 4 5 6 7
5. Seeking fun?1 2 3 4 5 6 7

Eudaimonic Motives

6. Seeking to develop a skill, learn, or gain insight into something?1 2 3 4 5 6 7
7. Seeking to do what you believe in?1 2 3 4 5 6 7
8. Seeking to pursue excellence or a personal ideal?1 2 3 4 5 6 7
9. Seeking to use the best in yourself?1 2 3 4 5 6 7
10. Seeking to contribute to others or the surrounding world?1 2 3 4 5 6 7

Motifs hédoniques et eudaimoniques des activités révisés

(Huta et al, 2016; Française: Huta & Bouchard, 2017)

Veillez lire attentivement chaque énoncé et déterminez de quelle façon vous vivez celui-ci habituellement **dans votre sport principal.**

Pas du tout	Très légèrement	Légèrement	Modérément	Fortement	Très fortement	Totalement
1	2	3	4	5	6	7

Motifs hédoniques

1. Cherchant la détente?1 2 3 4 5 6 7
2. Cherchant le plaisir?1 2 3 4 5 6 7
3. Cherchant la jouissance?1 2 3 4 5 6 7
4. Cherchant à se laisser vivre, à ‘y aller mollo’?.....1 2 3 4 5 6 7
5. Cherchant à s’amuser?.....1 2 3 4 5 6 7

Motifs hédoniques et eudaimoniques

6. Cherchant à développer une compétence, d'apprendre,
ou de mieux comprendre quelque chose?.....1 2 3 4 5 6 7
7. Cherchant à faire ce en quoi vous croyez?1 2 3 4 5 6 7
8. Cherchant à poursuivre l'excellence ou un idéal personnel?1 2 3 4 5 6 7
9. Cherchant à utiliser le meilleur de vous-même?1 2 3 4 5 6 7
10. Cherchant à contribuer aux autres et au monde environnant?.....1 2 3 4 5 6 7

ヘドニックとユーダイモニックな動機 (Huta et al., 2016 より)

あなたはふだん、自分の活動に取り組む際に、以下に示すそれぞれの意思をどのくらい持っていますか。あなたが実際に目標を達成しているかどうかにかかわらず、1から7の間で回答してください。

- 1 全くあてはまらない
7 非常にあてはまる

ヘドニックの動機

1. くつろぎを追求すること.....1 2 3 4 5 6 7
2. 喜びを追求すること.....1 2 3 4 5 6 7
3. 楽しさを追求すること.....1 2 3 4 5 6 7
4. 気楽さを追求すること.....1 2 3 4 5 6 7
5. 面白さを追求すること.....1 2 3 4 5 6 7

ユーダイモニックの動機

6. 技術の向上、学習、あるいは物事への洞察力の獲得を追求すること.....1 2 3 4 5 6 7
7. 自分の信念に従った行動を追求すること.....1 2 3 4 5 6 7
8. 優秀さ、あるいは自分の理想を追求すること.....1 2 3 4 5 6 7
9. 自分自身の力を最大限に活かす方法を追求すること.....1 2 3 4 5 6 7
10. 他人や周りの環境への貢献をめざしている.....1 2 3 4 5 6 7

Appendix N: Basic Psychological Need Thwarting (Study 2)

The Psychological Need Thwarting Scale (PNTS; Bartholomew et al., 2011)

Please read each statement carefully and decide how you typically experience in your sport.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Autonomy

1. I feel prevented from making choices with regard to the way I train.....1 2 3 4 5 6 7
2. I feel pushed to behave in certain ways.....1 2 3 4 5 6 7
3. I feel obligated to follow training decisions made for me.....1 2 3 4 5 6 7
4. I feel under pressure to agree with the training regime I am provided...1 2 3 4 5 6 7

Competence

5. There are occasions where I feel incompetent because others impose unrealistic expectations upon me.....1 2 3 4 5 6 7
6. There are times when I am made to feel inadequate.....1 2 3 4 5 6 7
7. There are situations where I am made to feel inadequate.....1 2 3 4 5 6 7
8. I feel inadequate because I am not given opportunities to fulfill my potential.....1 2 3 4 5 6 7

Relatedness

9. I feel I am rejected by those around me.....1 2 3 4 5 6 7
10. I feel others can be dismissive of me.....1 2 3 4 5 6 7
11. I feel others can be dismissive of me.....1 2 3 4 5 6 7
12. I feel some of the athletes around me are envious when I achieve success..... 1 2 3 4 5 6 7

Le besoin psychologique en échec (PNTS; Bartholomew et al., 2011; Française: Martinent et al., 2015)

Veillez lire attentivement chaque énoncé et déterminez votre expérience habituelle **dans votre sport principal.**

Pas du tout en accord	Très peu en accord	Un peu en accord	Moyennement en accord	Assez en accord	Fortement en accord	Très fortement en accord
1	2	3	4	5	6	7
1. Je n' ai pas la possibilité de faire des choix dans la gestion de mes entraînement.....	1	2	3	4	5	6 7
2. Je me sens contraint(e) de me comporter d' une certaine manière.....	1	2	3	4	5	6 7
3. Je me sens obligé(e) de suivre les décisions d'entraînement.....	1	2	3	4	5	6 7
4. Je me sens sous pression, car je me dois de réussir mon plan d' entraînement.....	1	2	3	4	5	6 7
5. Il y a des situations où je me sens incapable.....	1	2	3	4	5	6 7
6. Parfois, on me dit des choses qui me font penser que je suis incompetent(e).....	1	2	3	4	5	6 7
7. Il y a des situations où je me sens incompetent(e).....	1	2	3	4	5	6 7
8. Je me sens incompetent(e) car on ne me donne pas l'opportunité d'exprimer pleinement mon potentiel.....	1	2	3	4	5	6 7
9. J'estime que je suis rejeté(e) par les autres.....	1	2	3	4	5	6 7
10. Je pense que les autres m'ignorent.....	1	2	3	4	5	6 7
11. Je crois que mes partenaires ne m'apprécient pas.....	1	2	3	4	5	6 7
12. Je sens que les d'autres m'envient quand je réussis.....	1	2	3	4	5	6 7

Appendix O: Mental Toughness (Study 2 & 3)

Mental Toughness Inventory (MTI; Gucciardi et al., 2015)

The questions in this scale ask how you typically thought, felt and behaved as an athlete.

1 (false, 100% of the time) to 7(true, 100% of the time)

1. I believe in my ability to achieve my goals.....1 2 3 4 5 6 7
2. I am able to regulate my focus when performing tasks.....1 2 3 4 5 6 7
3. I am able to use my emotions to perform the way I want to.....1 2 3 4 5 6 7
4. I strive for continued success.....1 2 3 4 5 6 7
5. I effectively execute my knowledge of what is required
to achieve my goals.....1 2 3 4 5 6 7
6. I consistently overcome adversity.....1 2 3 4 5 6 7
7. I am able to execute appropriate skills or knowledge when challenged..1 2 3 4 5 6 7
8. I can find a positive in most situations.....1 2 3 4 5 6 7

Indice de force mentale (Gucciardi et al., 2015)

En utilisant l'échelle ci-dessous, veuillez indiquer dans quelle mesure chacune des affirmations suivantes sont vraies en ce qui concerne votre façon habituelle de penser, de ressentir et d'agir en tant qu'athlète **dans votre sport principal**.

1	2	3	4	5	6	7
Définitivement faux (Faux, 100% du temps)	Surtout faux	Probablement faux	Ni vrai ni faux	Probablement vrai	Surtout vrai	Définitivement vrai (Vrai, 100% du temps)

41. Je crois en ma capacité d'atteindre mes objectifs.....1 2 3 4 5 6 7

42. Je suis capable de réguler mon attention lorsque j'exécute des tâches..1 2 3 4 5 6 7

43. Je suis capable de me servir de mes émotions afin de performer de la façon désirée.....1 2 3 4 5 6 7

44. Je m'efforce de continuellement réussir.....1 2 3 4 5 6 7

45. J'utilise /J'exerce efficacement ma connaissance de ce qui est requis pour atteindre mes objectifs.....1 2 3 4 5 6 7

46. Je surmonte constamment l'adversité.....1 2 3 4 5 6 7

47. Je suis capable d'utiliser les habiletés ou les connaissances appropriées lorsque je rencontre un défi.....1 2 3 4 5 6 7

48. Je suis capable de trouver du positif dans la plupart des situations.....1 2 3 4 5 6 7

メンタルタフネス (MTI; Gucciardi et al., 2015 より)

このスケールの質問は、あなたが普段、アスリートとしてどのように考え、感じ、行動したかについて尋ねます。

1 (100%当てはまらない) から 7 (100%当てはまる)

1. 私は、自分の目標達成能力を信じている.....1 2 3 4 5 6 7
2. 課題を実行するとき、自分の集中力をコントロールすることができる.....1 2 3 4 5 6 7
3. 思い通りのパフォーマンスをするために、感情をうまく使うことができる.....1 2 3 4 5 6 7
4. 私は継続して成功するために努力をする.....1 2 3 4 5 6 7
5. 目標を達成するために必要な情報を集め、効果的に行動することができる.....1 2 3 4 5 6 7
6. 私は常に逆境を乗り越えることができる.....1 2 3 4 5 6 7
7. 課題に挑戦するとき、適切なスキルや知識を実行できる.....1 2 3 4 5 6 7
8. 私はほとんどの状況でポジティブな側面を見つけることができる.....1 2 3 4 5 6 7

Appendix P: Autonomy Support from Coaches and Parents (Study 3)

The Sport Climate Questionnaire —Short Form is a sport-adaption of the Learning Climate Questionnaire (Williams & Deci, 1996)

Please read each statement carefully and rate your perception of the support of your coaches/parents **in your main sport**.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Coach Autonomy Support

1. I feel that my coaches provide me choice and options1 2 3 4 5 6 7
2. I feel understood by my coaches1 2 3 4 5 6 7
3. My coaches encouraged me to ask questions1 2 3 4 5 6 7
4. My coaches encouraged me to ask questions1 2 3 4 5 6 7
5. My coaches listens to how I would like to do things1 2 3 4 5 6 7
6. My coaches tries to understand how I see things before
suggesting a new way to do things.....1 2 3 4 5 6 7

Parents Autonomy Support

1. I feel that my parents provide me choice and options1 2 3 4 5 6 7
2. I feel understood by my parents1 2 3 4 5 6 7
3. My parents encouraged me to ask questions1 2 3 4 5 6 7
4. My parents encouraged me to ask questions1 2 3 4 5 6 7
5. My parents listens to how I would like to do things1 2 3 4 5 6 7
6. My parents tries to understand how I see things before
suggesting a new way to do things.....1 2 3 4 5 6 7

La version abrégée du Questionnaire sur le climat sportif est une adaptation sportive du Questionnaire sur le climat d'apprentissage (Williams & Deci, 1996)

Veuillez lire attentivement chaque énoncé et évaluer votre perception du soutien de vos entraîneurs/parents **dans votre sport principal.**

« Dans mon sport principal ... »

Support de mes entraîneurs face à mon autonomie

1. Je ressens que **mes entraîneurs** me donnent le choix et des options...1 2 3 4 5 6 7
2. Je me sens compris par **mes entraîneurs**.....1 2 3 4 5 6 7
3. **Mes entraîneurs** ont exprimé leur confiance quant à ma capacité de bien réussir dans mon sport.....1 2 3 4 5 6 7
4. **Mes entraîneurs** m'ont encouragé à poser des questions.....1 2 3 4 5 6 7
5. **Mes entraîneurs** écoutent comment je voudrais faire les choses.....1 2 3 4 5 6 7
6. **Mes entraîneurs** essaient de comprendre comment je vois les choses avant de suggérer une nouvelle façon de faire les choses.....1 2 3 4 5 6 7

"Dans mon sport principal ..."

Support de mes parents face à mon autonomie

1. Je ressens que **mes parents** me donnent le choix et des options...1 2 3 4 5 6 7
2. Je me sens compris par **mes parents**.....1 2 3 4 5 6 7
3. **Mes parents** ont exprimé leur confiance quant à ma capacité de bien réussir dans mon sport.....1 2 3 4 5 6 7
4. **Mes parents** m'ont encouragé à poser des questions.....1 2 3 4 5 6 7
5. **Mes parents** écoutent comment je voudrais faire les choses.....1 2 3 4 5 6 7
6. **Mes parents** essaient de comprendre comment je vois les choses avant de suggérer une nouvelle façon de faire les choses...1 2 3 4 5 6 7

スポーツ雰囲気- ショートフォーム (Williams&Deci、1996 より)

各記述を注意深く読み、メインスポーツにおけるあなたのコーチと保護者のサポートに対するあなたの認識を評価してください。以下の1から7の間で回答してください

- 1 全くそう思わない
- 2 そう思わない
- 3 どちらかといえばそう思わない
- 4 どちらでもない
- 5 どちらかといえばそう思う
- 6 そう思う
- 7 全くそう思う

コーチの自主性サポート

“私のメインスポーツでは…”

- 1.私のコーチは私に選択肢を与えてくれる.....1 2 3 4 5 6 7
- 2.私はコーチに理解されていると感じる.....1 2 3 4 5 6 7
- 3.私のコーチは、スポーツでうまくいく能力があると自信を持たせてくれる.....1 2 3 4 5 6 7
- 4.私のコーチは私が質問することを歓迎してくれる.....1 2 3 4 5 6 7
- 5.私のコーチは私がどのようにやりたいのかを聞いてくれる1 2 3 4 5 6 7
- 6.私のコーチは、新しい方法を私に提案する前に私の考え方を
理解しようとしてくれる..... 1 2 3 4 5 6 7

親の自主性サポート

“私のメインスポーツでは…”

- 1.私の親は私に選択肢を与えてくれる.....1 2 3 4 5 6 7
- 2.私は親はに理解されていると感じる.....1 2 3 4 5 6 7
- 3.私の親は、スポーツでうまくいく能力があると自信を持たせてくれる.....1 2 3 4 5 6 7
- 4.私の親は私が質問すること歓迎してくれる.....1 2 3 4 5 6 7
- 5.私の親は私がどのようにやりたいのかを聞いてくれる.....1 2 3 4 5 6 7
- 6.私の親は、新しい方法を私に提案する前に私の考え方を
理解しようとしてくれる..... 1 2 3 4 5 6 7

Appendix Q: Self-Determined Motivation (Study 3)

The Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale et al., 2008)

Next, we would like to ask you why you participate in your main sport.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Intrinsic Motivation

"I participate in my main sport..."

because I enjoy it.....	1	2	3	4	5	6	7
because I like it.....	1	2	3	4	5	6	7
because it's fun.....	1	2	3	4	5	6	7
because I find it pleasurable.....	1	2	3	4	5	6	7

External Regulation

"I participate in my main sport..."

because people push me to play.....	1	2	3	4	5	6	7
to satisfy people who want me to play.....	1	2	3	4	5	6	7
because I feel pressure from other people to play.....	1	2	3	4	5	6	7
because if I don't other people will not be pleased with me.....	1	2	3	4	5	6	7

**Questionnaire sur la réglementation comportementale dans le sport
(BRSQ; Lonsdale et al., 2008; Française: Van Hoya et al., 2010)**

Nous aimerions vous demander pourquoi vous participez à votre sport principal.

Pas du tout en accord	Très peu en accord	Un peu en accord	Moyennement en accord	Assez en accord	Fortement en accord	Très fortement en accord
1	2	3	4	5	6	7

" Je participe à mon sport principal..."

Parce que je l'apprécie.....1 2 3 4 5 6 7

Parce que je l'aime.....1 2 3 4 5 6 7

Parce que je prends plaisir à faire ce sport.....1 2 3 4 5 6 7

Parce que je le trouve agréable.....1 2 3 4 5 6 7

" Je participe à mon sport principal..."

Parce que des gens me poussent à faire ce sport.....1 2 3 4 5 6 7

Pour faire plaisir à des gens qui veulent faire ce sport.....1 2 3 4 5 6 7

Parce que je sens une pression de mon entourage pour faire ce sport.....1 2 3 4 5 6 7

Parce que si je n'en fais pas, mon entourage ne sera pas content de moi....1 2 3 4 5 6 7

スポーツ動機づけ質問紙 (BRSQ; Lonsdale et al., 2008)

次に、なぜあなたがスポーツを行う理由について尋ねます。以下の1から7の間で回答してください

- 1 全くそう思わない
- 2 そう思わない
- 3 どちらかといえばそう思わない
- 4 どちらでもない
- 5 どちらかといえばそう思う
- 6 そう思う
- 7 全くそう思う

内発的動機づけ

「私はスポーツに参加しています...」

1. なぜなら私はそのスポーツが楽しいから.....1 2 3 4 5 6 7
2. なぜなら、私はそのスポーツが好きだから.....1 2 3 4 5 6 7
3. なぜなら、私はそのスポーツが面白いから.....1 2 3 4 5 6 7
4. 私はそれが楽しいと思うので.....1 2 3 4 5 6 7

外発的動機

「私はスポーツに参加しています...」

1. なぜなら、周りの人が私がそのスポーツをするよう背中を押すので.....1 2 3 4 5 6 7
2. 私にそのスポーツをしてほしいと思う人々を満足させるために.....1 2 3 4 5 6 7
3. 私がそのスポーツをするよう、他の人からのプレッシャーを感じているので..1 2 3 4 5 6 7
4. なぜなら、もし私がそのスポーツをしなかったら、他の人が悲しむから..... 1 2 3 4 5 6 7