DOI 10.2478/afepuc-2019-0007

THE RELATIONSHIP BETWEEN THE MODELS OF SPORT COMMITMENT AND SELF-DETERMINATION AMONG ADOLESCENT ATHLETES

Tamás Berki[1], Bettina F. Piko[2], Randy M. Page[3]

[1]Tamás Berki, Doctoral School of Education, Faculty of Art, University of Szeged, Hungary
[2]Bettina F. Piko, Department of Behavioral Sciences, Faculty of Medicine, University of Szeged, Hungary
[3]Randy M. Page, Department of Public Health, Brigham Young University, Provo, USA

Summary. This study examined the relationship between the Sport Commitment Model and the Self-Determination Theory. The participants were 214 adolescent athletes who completed the Hungarian version of the Sport Commitment Questionnaire-2 and the Hungarian version of the Sport Motivation Scale. Several commitment sources predicted SMS scores as well. Amotivation was predicted by the obligatory reason for commitment such as Personal Investment-Loss and Other Priorities. External Regulation was predicted by Social factors of commitment. Introjected Regulation was determined by Desire to Excel-Mastery and Personal Investment-Loss. Identified Regulation was explained by Desire to Excel-Mastery, Valuable Opportunities, and Personal Investment-Loss. Integrated Regulation was explained with Valuable Opportunities, Desire to Excel-Mastery, Personal Investment-Loss and Social Support-Informal. The Intrinsic Motivation subscale was significantly predicted by Desire to Excel-Mastery, Personal Investment-Loss, Sport Enjoyment and Social Support-Informal. As we see the types of commitment showed a clear association with SMS, however the commitment sources showed a complex relationship with self-determination, thus it is hard to separate them on the Self-determination continuum.

***Key words**:* enthusiastic commitment, constraints commitment, regression, athletes, motivation

Introduction

Researchers across the globe have identified many important positive effects of regular physical activity (e.g., prevent cardiovascular disease; Warburton & Bredin 2017). Understanding the motivations behind sport activities is fundamental in helping individuals to realize these benefits that can be accrued through physical activity participation. Different concepts of sport motivation from varied perspectives have been examined in studies (Clancy, Herring, MacIntyre & Campbell 2016). For example, motivation has been investigated in terms of internal and external motives (Mallett & Hanrahan 2004), influences of coaches (Gillet, Vallerand, Amoura & Baldes 2010), the role of perfectionism and burnout (Appleton & Hill 2012) and associations with eating behavior (Homan, Crowley & Sim 2019). Investigations have been based on various motivational theories such as Achievement Goal Theory (Nicholls 1989) and Self-Determination Theory (Deci & Ryan 1985). Self-Determination Theory (SDT) is one of the most commonly used motivation theory in the sport domain. The theory is based on three basic psychological needs (competence, relatedness, autonomy) that are assumed to drive motivated behaviour (Deci & Ryan 1985), altogether there are six types of regulations: nonregulation, external regulation, introjected regulation, identified regulation, integrated regulation (these are also called extrinsic motivations), and intrinsic regulation. These types are represented on a continuum where at one end of the spectrum there are the least motivated (least self-determined) individuals and the most motivated at the other end (self-determined). Describing the continuum, the least self-determined types of motivation is called amotivation. Deci & Ryan (2000) define it as the lack of either intrinsic or extrinsic motivation. The Self-Determination Theory refers to different types of intrinsic and extrinsic motivations as well. The first type of extrinsic motivation on the continuum is *external regulation* or motivation, which is controlled by rewards or punishments. The next step on the continuum is *introjection* where individuals affect their ego stimulation via praise or avoidance of shame (Mariager-Anderson, Cort & Thomsen 2016). Further along the continuum is found *identified regulation,* which refers to persons who participate in an activity because it becomes important for them. The final type of extrinsic motivation is *integrated regulation*, which is the most autonomous form of extrinsic motivation. It describes the individuals' complex goals. Besides extrinsic motivations, internal forms of motivation can be recognized as well (Mariager-Anderson et al. 2016). Namely, intrinsic motivation is the last type of regulation. It represents the individual's full and free engagement and those who are the most self-determined without reward or constraints (Deci & Ryan 2000). Self-Determination Theory often serves as a theoretical basis

for studies investigating motivation. For example, Ntoumanis (2001) investigated the relations between self-determination and achievement goals. The study found that task orientation predict a high level of self-determination and ego orientation predict a low level of the self-determined motivational variables. Other researchers have found that autonomy is more important than controlling support for intrinsic motivation, regardless of goal involvement (Spray, John Wang, Biddle & Chatzisarantis 2006). Besides the joint project of the theories of Self-Determination and Achievement Goal other associations were established on different aspects of Self-Determination (i.e. Vansteenkiste, Lens, Witte & Feather 2005).

These studies encourage us to further analyzation of the role of Self-Determination Theory in relation to sport motivation using a different approach. Therefore, we investigated self-determination from a commitment perspective. Sport commitment has been defined as a "psychological construct representing the desire and resolve to continue sport participation" (Scanlan, Chow, Sousa, Scanlan & Knifsend 2016, p. 235). The origin of the Sport Commitment Model was introduced in 1993 and consisted of five determinants of commitment; namely, enjoyment, investments, opportunities, alternatives, and social constraint (Scanlan, Carpenter, Simons, Schmidt & Keeler, 1993). However, over the years researchers identified additional possible sources of sport commitment and explored a more complex model (Scanlan, Russell, Magyar, & Scanlan 2009; Lu et al. 2012; Weiss & Weiss 2003). Scanlan and her colleagues (2016) expanded the model and determined two possible types of commitments; enthusiastic and constraints types of commitments. They also determined ten possible sources that could predict sport commitment, namely: Sport Enjoyment, Social Constraints, Valuable Opportunities, Other Priorities; and two types of Personal Investments, Social Support and Desire to Excel. Previous studies have found that Sport Enjoyment, Opportunities Social Support and Desire to Excel to be the strongest positive sources of Enthusiastic Commitment (Carpenter, Scanlan, Simons & Lobel 1993; Scanlan et al. 1993, 2003, 2016). The strongest predictors of constrained types of commitment were Personal Investments, Social Constraints and Other priorities (Scanlan et al. 2016). Sport Enjoyment, Valuable Opportunities and Other Priorities were sources associated with both types of commitment (Scanlan et al. 2016). Pedro and his colleagues (2019) carried out the Spanish adaptation, and they concluded that the model (two types and 10 sources of commitment) is appropriate for cross-cultural studies as well.

The relationship between Self-Determination and Sport Commitment is not well established. However, Zahariadis, Tsorbatzoudis & Alexadnris (2006) examined the association between the two constructs. Their results showed amotivation had a small negative relationship with commitment and a strong positive association with intrinsic motivation.

However, they did not find any significant correlation with extrinsic motivation and sport commitment. Davidson and Beck (2018) in a recent study investigated relationship of commitment and motivation among college students. They found that the satisfied basic needs go together with high level of commitment. To the best of our knowledge, no other studies have previously examined the relationship between Self-Determination Theory and the Sport Commitment Model; and the updated version of the model (Scanlan et al. 2016) has not previously been examined from the Self-Determination perspective. Therefore, the main objective of our study was to examine relationships between sport motivation and the types of sport commitment and their determinants.

There were two main goals of this study: To this end, we investigated: 1) how the types of commitment were associated with the types of motivation (e.g., constrained commitment with external regulation); 2) how the types of motivation were associated with Sport Commitment sources (e.g., amotivation with other priorities). In accordance with the literature, it was hypothesized that Enthusiastic Commitment would be associated with intrinsic types of motivation (high self-determination). In contrast, Constrained Commitment would be associated with extrinsic motivation and amotivation (low self-determination). Furthermore, it was hypothesized that amotivation and extrinsic types of motivations were positively associated with Other Priorities, Social Constrained, while Intrinsic types of motivation would be positively associated with Sport Enjoyment, Valuable Opportunities, and Desire to Excel. The mixed findings of other researchers (see e.g., Scanlan et. al. 2003, 2009, 2016) suggest that the complex function of Social Support and Personal Investment might be associated with both intrinsic and extrinsic motivation.

Methods

Two-hundred fourteen Hungarian adolescent athletes (66 males and 148 females) were involved in this study (mean age = 16.84 years; SD = 1.38). They participated in their sport for an average of 7.78 years (SD = 3.91) and they spent an average of 7.55 hours (SD = 4.66) in training weekly. The athletes were representatives of 25 different sports (individual sports = 59.8 %; team sports = 39.7 %). In terms of competition, 77.7 % of our sample consisted of athletes who were competing at international, national or local level. Only 22.3 % of our sample reported that they are not competing at any level.

Social-demographic data were collected on the athletes' age, gender, educational background, family status and characteristics of their sport activity (i.e., "How many hours do you spend in training in a week?").

Sport Commitment was measured by the Hungarian version of the Sport Commitment Questionnaire-2 (Scanlan et al. 2016). The scale was translated and adapted in a previous study (Berki & Pikó 2018). It contains 52 items which could be answered by a five-point Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). The Questionnaire consists of the two types of commitment and the ten possible sources of sport commitment. Enthusiastic Commitment (EC) represents the desire to continue sport participation. Constrained Commitment (CC) represents the obligation to continue sport participation. The ten possible sources of commitment are the following: Sport Enjoyment (SE) representing the joy and happiness in sport activity; Other Priorities (OP) – alternatives of sport activity; Valuable Opportunities (VO) – opportunities that may stem only from sports; Social Constraints (SC) are the social expectation and norms; Personal Investment-Quantity (PI-Q) means the amount of resources that an athlete puts into sport; Personal Investment-Loss (PI-L) represents the loss of investments that cannot be recovered when the participation is discontinued; Social Support-Emotional (SS-E) represents encouragement from others; Social Support-Informal (SS-I) provides useful information from others; Desire to Excel-Mastery (DE-M) means striving to improve and achieve; Desire to Excel-Social (DE-S) means winning and establishing superiority over the others. The adapted version of the scale showed suitable internal consist reliability. The Cronbach's alpha values varied from .66 to .91 on the subscales of commitment; however the whole scale showed a value of .94.

Sport motivation was measured with the revised Sport Motivation Scale (SMS-II; Pelletier, Rocchi, Vallerand, Deci & Ryan 2013). The scale was translated and adapted in a Hungarian sample by Paic and his colleagues (2017). The questionnaire contains 19 items and 6 subscales. The response options varied from 1 (Strongly disagree) to 7 (Strongly agree) on a seven-point Likert-type scale. The items measure the different types of motivations from the Self-Determination Theory (Deci & Ryan 2000). The subscales contained the following motivations: Amotivation, External Regulation, Introjected Regulation, Identified Regulation, Integrated Regulation; Intrinsic Motivation. The Cronbach's alpha value on the whole scale was .88 and the subscales varied between .50 to .89.

After receiving ethical approval from the university (Institutional Review Board), the questionnaires were sent out to 6 different sports schools in Hungary. Four of these schools agreed to participate in our research, which was authorized by the school principals. Through

the mail from school teachers, parents and students were informed about the goals of our research and asked for their consent. Questionnaires were self-administered, anonymous and voluntary, and no personal data (e.g., names) were collected from the participants. The questionnaires were guided by Physical Educators in PE classes and it took student respondents approximately 15-20 minutes to fill out the form. The students were assured that there were no right or wrong answers on the questionnaire they were asked to complete.

After data collection, SPSS for Windows software was used for data analysis. We used parametric tests to analyse our results. In addition to descriptive statistics (i.e., means, standard deviations) and bivariate correlations (r), linear regression (r^2) with stepwise method was used to identify the main predictors of the Sport Commitment Questionnaire and the Sport Motivational Scale. First, we analysed Enthusiastic and Constrained Commitment as dependent variables and elements of Self-Determination theory as the independent variables. In the second part of our analysis, variables of Self-Determination theory were the dependent ones and sources of commitment were the independent variables. The significant level of acceptance was 0.05.

Results

Descriptive statistics and bivariate relationships

Table 1 shows means, standard deviations, ranges, skewness, kurtosis, bivariate correlations and alpha reliabilities (along with the diagonal) for the Sport Commitment Questionnaire-2 and the Sport Motivation Scale. The participants of this study had moderate level ($M < 3.2$) of Constrained Commitment, Personal Investment-Loss, Other Priorities, Social Constrain, Social Support-Informal, Amotivation, External Regulation; and high level of Enthusiastic Commitment, Sport Enjoyment, Valuable Opportunities, Personal Investment-Quantity, Desire to Excel-Master, Desire to Excel-Social, Social Support-Emotional, Introjected Regulation, Identified Regulation, Integrated Regulation, Intrinsic Motivation. Consistent with other studies, Cronbach alpha values varied between .64 and .91 for the Sport Commitment Questionnaire-2 (Sánchez-Miguel 2019) and .50 to .83 for the Sport Motivation Scale (Sukys, Tilindienė, Cesnaitiene & Kreivyte 2019). Introjected Regulation had poor Cronbach alpha value. Cronbach alpha is sensitive to the number of items in a scale (Pallant 2010), but the inter-item correlations of the two items subscale had .33 mean, which is in the optimal range (Briggs & Cheek 1986). Thus, Introjected Regulation subscale remained in the

study. Skewness and kurtosis between -2 and 2 were considered as normally distributed due to George and Mallery (2010) suggestions.

The pattern of the bivariate correlations showed a previously established relationship between commitment types and sources (Scanlan et al. 2016). As we expected, Enthusiastic Commitment had a significant inverse relationship with Constrained Commitment and Other Priorities; and Constrained Commitment had a significant and positive relationship with Personal Investment-Loss, Other Priorities and Social Constrained. The correlation table displays the relationships between the two scales. Among the items, Amotivation, Constrained Commitment and Other Priorities indicated mostly inverse relations, but the rest of our items showed a positive pattern. A series of linear stepwise regression analyses with stepwise method were performed to determine how Sport Motivation Scale could predict Constrained and Enthusiastic types of commitment. Enthusiastic Commitment was explained with the 62 % of the variance and it was significantly predicted initially by Intrinsic Motivation ($\beta = .22$), which was followed by Integrated Regulation ($\beta = .21$), Amotivation ($\beta = -.12$), Introjected Regulation ($\beta = .12$). Constrained Commitment was explained with 28 % of the variance in the most predictive model and was determined by Amotivation ($\beta = .15$), External Regulation ($\beta = .19$) and Intrinsic Motivation ($\beta = -.10$).

In the next step, a series of linear stepwise regression analyses were conducted to verify how sources of commitment predict the Sport Motivation. Amotivation ($R^2 = .35$) was predicted by Sport Enjoyment ($\beta = -.52$), Personal Investment-Loss ($\beta = .38$), and Other Priorities ($\beta = .39$). External Regulation ($R^2 = .27$) was predicted by Social Constrained ($\beta = .41$), Sport Enjoyment ($\beta = -.23$), and Social Support-Informal ($\beta = .29$). Introjected Regulation ($R^2 = .32$) was determined by Desire to Excel-Mastery ($\beta = .27$) and Personal Investment-Loss ($\beta = .19$). Identified Regulation ($R^2 = .47$) was explained by Desire to Excel-Mastery ($\beta = .39$), Valuable Opportunities ($\beta = .22$), and Personal Investment-Loss ($\beta = .24$). Integrated Regulation ($R^2 = .58$) was explained in the first step with Valuable Opportunities ($\beta = .24$) than Desire to Excel-Mastery ($\beta = .24$), Personal Investment-Loss ($\beta = .14$) and Social Support – Informal ($\beta = .13$). The Intrinsic Motivation subscale explained 57 % of the variance on the best model and it was significantly predicted by Desire to Excel-Mastery ($\beta = .77$), Personal Investment-Loss ($\beta = .42$), Sport Enjoyment ($\beta = .37$) and Social Support-Informal ($\beta = .42$).

To summarize our findings, a model was built from the results of the stepwise regression (Figure 1). The model shows the positive and negative associations with the

standardized regression weights between the types and sources of commitment on the Self-Determination continuum.

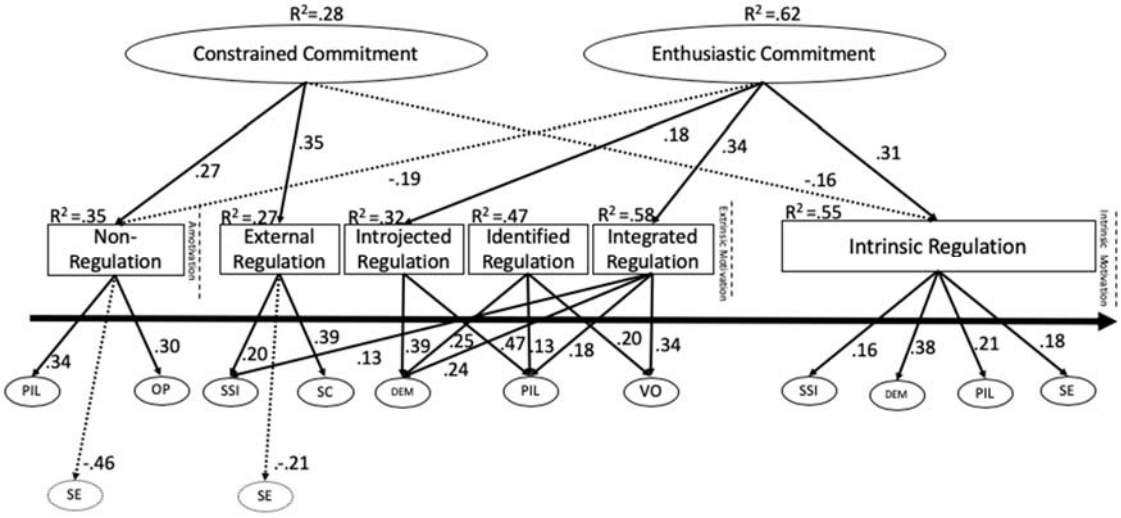

Figure 1

Sport Commitment Model on the Self-Determination Continuum with standardized regression weights. Note. SE= Sport Enjoyment; VO=Valuable Opportunities; PIL=Personal Investment-Loss; OP=Other Priorities; DEM=Desire to Excel-Mastery; SC=Social Constraints; SSI=Social Support-Informal

Discussion

This study aimed to examine the relationship between the Sport Commitment Model and the Self-Determination Theory among adolescent athletes from various sports. Stepwise regression was used to examine data and assess our results. To the best of our knowledge, there have been no other investigations examining Self-Determination Theory and the updated Sport Commitment Model.

In our first step, we investigated associations between types of commitment (enthusiastic, constrained) and the forms of sport motivation. As hypothesized, Intrinsic Motivation was positive predictors of Enthusiastic Commitment. Besides the intrinsic association, Enthusiastic Commitment was positively predicted by Integrated and Introjected Regulations as well. This finding represents that enthusiastically committed athletes primarily engage in sport for "want to" reasons (e.g., satisfaction; Wilson et al. 2004). Yet, it appears also that internal feelings and importance for physical activity are important predictors of Enthusiastic Commitment (Scanlan et al. 2016) which includes as well Integrated and Introjected regulations (Pelletier et al. 2013). Introjected Regulation, built on shame and guilt, appears to have a clear connection with Constrained Commitment because of obligatory influence (Lazarus 2000). Previous studies found that introjection was associated with high

levels of physical activity without showing negative effects (Gillison, Osborn, Standage & Skevington 2009). Other studies suggest that guilt-based introjection might decrease the individual's well-being, eating regulation and exercise (Verstuyf, Patrik, Vansteenkiste, & Teixeire, 2012). We believe that our findings support the concept that a high level of motivation requires both intrinsic and extrinsic motivations (Cameron, Pierce, Banko & Gear 2005). Integrated Regulation is the most autonomous form of extrinsic motivation incorporating the individual's life goals, objectives, and needs; and Integrated Regulation is highly related to Enthusiastic Commitment. Previous studies of commitment showed that Desire to Excel-mastery was one of the most important predictors of Enthusiastic Commitment (Scanlan et al. 2016). Enthusiastic Commitment was negatively predicted by Amotivation as well, which consisted of non-regulation and lack of intention to participate (Deci & Ryan 2002). These findings affirm that Enthusiastic Commitment has an inverse relationship with obligatory reasons for sport participation (e.g., Social Constraints; Scanlan et al. 2003, 2009, 2016).

In the process of investigating predictors of Constrained Commitment, we found that External Regulation and Amotivation were positive and Intrinsic Motivation was a negative predictor of Constrained Commitment. The construct represents perceptions of obligation to persist in a sport (Scanlan et al. 2016). These obligations come from social constraints, investment, alternatives, and the lack of enjoyment (e.g., Scanlan et al. 2016). Previous findings align with our result (e.g., Weiss & Weiss 2003). We believe that an individual's increased level of Constrained Commitment may be associated with the lack of intention to participate; therefore, heightening risk of dropout in sports participation. External rewards or punishments are important to evaluate in studies of motivation (e.g., Cameron, Banko, & Pierce 2001). Burton (1989) suggested that we should avoid extrinsic reward as a motivator of sport participation. However, more recently, studies suggest that external reward may increase Intrinsic Motivation for physical activity (Cameron, et al. 2005). We contend that external reward may increase commitment. Further, interrelationships among the types of sport commitment and motivations may change over time according to Weiss & Weiss (2006).

In the second aspect of our study we investigated relationships among the sources of Self-Determination and Sport Commitment. Amotivation was positively predicted by Personal Investment-Loss and Other Priorities; and negatively by Sport Enjoyment. This finding is consistent with previous sport commitment findings, since alternatives have negative and enjoyment has positive effects on sport commitment (Scanlan et al. 1993, 2009, 2016). Personal Investment may have an obligatory effect on sport participation, because the individual's investments can be lost if sport participation is discontinued (Scanlan et al. 1993, 2009, 2016).

Therefore, this association with Amotivation appears to be logical. Our results also suggest that Personal Investment-loss is a more complex construct since we found positive connections with extrinsic and intrinsic motivation as well.

Extrinsic motivation was associated with six predictors. Sport Enjoyment was a negative predictor of Amotivation and External Regulation. As expected, this factor shows the individual's positive feelings towards sport participation. The negative effect of Sport Enjoyment has been found in previous sport commitment studies as well (e.g., Wilson et al. 2004). External Regulation was predicted by Social Support-Informal and Social Constrained. These predictions were expected on the basis that these factors represent support from coaches or peers as well as social expectations (Scanlan et. al. 2016). Our findings support the hypothesis that expectations and support put pressure on the athletes to continue their sport participation and indicate a higher level of external regulation. It is important to note that Social Support-Informal is a predictor of Integrated Regulation as well. It might indicate that Support from coaches and peers can effect the athletes' internal feelings, which help them with commitment to their sports.

We found that Introjected and Integrated regulations were predicted by Personal Investment-Loss, Valuable Opportunities and Desire to Excel-Mastery sources. Thus, it appears that Desire to Excel-Mastery is an important predictor of the 3 types of extrinsic motivation. This factor represents the individual's desire to improve and achieve in sport (Scanlan et al. 2016) and supports that not only intrinsic but also extrinsic factors can contribute to the achievement of the athlete's goals. For example, athletes seeking for better performance are likely to determine that they must devote time to training in and not skip training sessions. There are different reasons for this, including conscience (introjection), the importance of the training (identification), thoughts related to more goals and objectives which are necessary to improve their performance (integration).

Personal Investment-loss positively predicted Introjected Regulation and Identified Regulation. We believe that there are two main reasons for these associations. First, Personal Investment represents the amount of energy, money, and time what an athlete invests in sport (Scanlan et al. 2006). Second is the loss of the investment might associate with the feelings such as guilt or shame. Valuable Opportunities as a variable was hypothesized to be an intrinsic predictor because previous studies have shown a strong association with Enthusiastic Commitment (Scanlan et al. 2016). However, we found positive relationships with Identified and Integrated Regulations. Qualitative studies demonstrated the diversity of Valuable Opportunities in sport representing many aspects of sport experience, such as travels,

performance, friendship and even job opportunities (Scanlan et al. 2003, 2009). We conclude that the athlete's opportunities and important motives may come from different attributes (e.g., trainings, travels, motor skills)

In the last part of our study we investigated the relationships between Intrinsic Motivation and the sources of sport commitment. As hypothesized, Sport Enjoyment was a strong predictor of intrinsic regulations. However, it was unexpected that Valuable Opportunities was not a significant predictor of Intrinsic Motivation. We believe that the Valuable Opportunities variable has a complex role, since it contains both external (e.g., experience of competition) and internal (e.g. learning skills) feelings. The three predictors of Intrinsic Motivations (Desire to Excel-mastery, Personal Investment-loss, Social Support-informal) were predictors of extrinsic motivation as well. It appears that these three factors can be viewed across a continuum and that these constructs represent wide aspects of sport participation. For example, Desire to Excel-mastery may reflect either the inside urge to perform or the personal importance with other life goals as well.

Conclusion

The association between the Sport Commitment and Self-Determination theories is complex and the sources of commitment cannot be individually separated from the Self-Determination continuum. Whereas the Sport Commitment is a complex construct, we postulate that aspects of Sport Commitment and Self-Determination influence each other in a bi-direction manner. For example, athletes with a high level of Social Support and External Regulation might feel the pressure to continue their sport participation, but in the long term it might influence their goals, lead to the increased satisfaction and help them engage in their sport activities.

We acknowledge that 3 out of the 10 commitment sources were not involved as predictors of sport motivation (Desire to excel-Social, Social Support-Emotional, Personal Investment-Quantity). Further investigations are necessary to explain this phenomenon. Our conclusions include the following points: 1) Constrained Commitment (associated with low self-determination) is at one end of the continuum and Enthusiastic Commitment is at the opposite end of the continuum (associating with high self-determination). However, because of its complexity external elements are associated with it as well; 2) Obligatory factors are predicted by Amotivation and external regulation (e.g., other priorities); 3) Enjoyment is an

important predictors of Intrinsic motivation; and 4) Several commitment sources varied across the continuum (e.g., Personal Investment-loss, Social Support-informal).

The current study has limitations that need to be mentioned. First, the gender distribution of research subjects was not equal (more females by 34 %). Second, some of the examined subscales showed low internal consistency reliability. However, we believe this problem can be solved by increasing our sample size. Therefore, the future direction is to increase the sample size and equal gender differences. Besides these, there are several other directions for further elaboration of our study. For example, it would be productive for future research to investigate sport commitment from different motivation perspectives (e.g., Achievement goal theory). In this study, only adolescent athletes were examined but investigating other age groups can help understand the link between the types of commitment and psychological behaviour.

In summary, a strength of the current study is that provides a cross-cultural application of the Sport Commitment Model and adds to the literature greater understanding of the model's association with Self-Determination. This study provides a representation of how the Sport Commitment Model incorporates with Self-Determination theory and provides direction for further research in this area of motivation research. These findings are useful in providing guidance to professionals who are striving to help young athletes maintain their sports activity and prevent dropout from sport.

References

1. APPLETON, P. R. & A. P. HILL, 2012. Perfectionism and athlete burnout in junior elite athletes: The mediating role of motivation regulations. *Journal of Clinical Sport Psychology.* ***6***(2), 129-145. doi:10.1123/jcsp.6.2.129.
2. BERKI, T. & B. PIKÓ, 2018. Comparison of sport commitment among adolescent athletes in light of some characteristics of sporting. *Hungarian Review of Sport Science.* **76**(4), 3-11.
3. BRIGGS, S. R. & J. M. CHEEK, 1986. The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality.* ***54***(1), 106-148. doi:10.1111/j.1467-6494.1986.tb00391.x
4. BURTON, D, 1989. Winning isn't everything: Examining the impact of performance goals on collegiate swimmers' cognitions and performance. *The Sport Psychologist.* ***3***(2), 105-132. doi:10.1123/tsp.3.2.105.

5. CAMERON, J., K. M. BANKO & W. D. PIERCE, 2001 Pervasive negative effects of rewards on intrinsic motivation: The myth continues *The Behavior Analyst.* **24**(1), 1-44. doi:10.1007/bf03392017.
6. CAMERON, J., W. D. PIERCE, K. M. BANKO & A. GEAR, 2005. Achievement-based rewards and intrinsic motivation: A test of cognitive mediators. *Journal of Educational Psychology*. ***97***(4), 641-655. doi:10.1037/0022-0663.97.4.641.
7. CARPENTER, P. J., T. K. SCANLAN, J. P. SIMONS & M. LOBEL, 1993. A test of the sport commitment model using structural equation modeling. *Journal of Sport and Exercise Psychology.* ***15***, 119-133.
8. CLANCY, R. B., M. P. HERRING, T. E. MACINTYRE & M. J. CAMPBELL, 2016. A review of competitive sport motivation research. *Psychology of Sport and Exercise.* ***27***, 232-242.
9. DAVIDSON, W. & H. P. BECK, 2018. Analyzing the Commitment of College Students Using a Brief, Contextualized Measure of Need Satisfaction from the Perspective of Self-Determination Theory. *Psychological Reports.* ***122***(3), 1145-1166. doi: 10.1177/0033294118769452.
10. DECI, E. L. & R. M. RYAN, 1985. *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum Press.
11. DECI, E. L. & R. M. RYAN, 2000. The "What" and "Why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry.* ***11***(4), 227-268. doi:10.1207/s15327965pli1104_01.
12. DECI, E. L. & R. M. RYAN, 2002. *Handbook of self-determination*. Rochester, NY: University of Rochester Press.
13. GEORGE, D. & M. MALLERY, 2010. SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 update (10a ed.) Boston: Pearson.
14. GILLET, N., R. J. VALLERAND, S. AMOURA & B. BALDES, 2010. Influence of coaches' autonomy support on athletes' motivation and sport performance: A test of the hierarchical model of intrinsic and extrinsic motivation. *Psychology of Sport and Exercise.* ***11***(2), 155-161. doi:10.1016/j.psychsport.2009.10.004.
15. GILLISON, F., M. OSBORN, M. STANDAGE & S. SKEVINGTON, 2009. Exploring the experience of introjected regulation for exercise across gender in adolescence. *Psychology of Sport and Exercise.* ***10***(3), 309-319. doi:10.1016/j.psychsport.2008.10.004.

16. HOMAN, K. J., S. L. CROWLEY & L. A. SIM, 2019. Motivation for sport participation and eating disorder risk among female collegiate athletes. *Eating Disorders.* ***27***(4), 369-383. Retrieved from DOI: 10.1080/10640266.2018.1517527.
17. LAZARUS, R. S., 2000. How emotions influence performance in competitive sports. *The Sport Psychologist.* ***14***(3), 229-252. doi:10.1123/tsp.14.3.229.
18. LU, F. J., Y. EVA, J. WANG, J. CHANG, M. HUANG & C. WANG, 2012. Exerciser identities and exercise dependence: The mediating effect of exercise commitment. *Perceptual and Motor Skills*. ***115***(2), 618-631. doi:10.2466/06.13.21.pms.115.5.618-631.
19. MALLETT, C. J. & S. J. HANRAHAN, 2004. Elite athletes: Why does the 'fire' burn so brightly? *Psychology of Sport and Exercise.* **5**(2), 183-200. doi:10.1016/s1469-0292(02)00043-2.
20. MARIAGER-ANDERSON, K., P. CORT & R. THOMSEN, 2016. 'In reality, I motivate myself!'. 'Low-skilled' workers' motivation: between individual and societal narratives. *British Journal of Guidance & Counselling.* ***44***(2), 171-184. doi: 10.1080/03069885.2016.1145191.
21. NICHOLLS, J. G., 1989. *The competitive ethos and democratic education*. Cambridge, MA: Harvard University Press.
22. NTOUMANIS, N., 2001. Empirical links between achievement goal theory and self-determination theory in sport. *Journal of Sports Sciences.* ***19***(6), 397-409. doi: 10.1080/026404101300149357.
23. PAIC, R., A. KAJOS, B. MESZLER & G. PRISZTÓKA, 2017. Validation of the Hungarian Sport Motivation Scale (H-SMS). *Cognition, Brain, Behavior. An Interdisciplinary Journal.* ***21***(4), 275-291. doi:10.24193/cbb.2017.21.17.
24. PALLANT, J., 2010. *Spss Survival Manual: A step by step guide to data analysis using SPSS.*
25. McGRAW-HILL INTERNATIONAL. PELLETIER, L. G., M. A. ROCCHI, R. J. VALLERAND, E. L. DECI & R. M. Ryan, 2013. Validation of the revised sport motivation scale (SMS-II). *Psychology of Sport and Exercise.* ***14***(3), 329-341. doi: 10.1016/j.psychsport.2012.12.002.
26. PELLETIER, L. G., K. M. TUSON, M. S. FORTIER, R. J. VALLERAND, N. M. BRIÉRE & M. R. BLAIS, 1995. Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS). *Journal of Sport and Exercise Psychology.* ***17***(1), 35-53. doi:10.1123/jsep.17.1.35.

27. RYAN, R. M. & E. L. DECI, 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist.* ***55***(1), 68-78. doi:10.1037//0003-066x.55.1.68.
28. SÁNCHEZ-MIGUEL, P. A., G. M. CHOW, C. SOUSA, T. K. SCANLAN, F. J. PONSETI, L. SCANLAN & A. GARCÍA-MAS, 2019. Adapting the Sport Commitment Questionnaire-2 for Spanish usage. *Perceptual and Motor Skills.* ***126***(2), 267-285. doi:10.1177/0031512518821822.
29. SCANLAN, T. K., P. J. CARPENTER, J. P. SIMONS, G. W. SCHMIDT & B. KEELER, 1993. An introduction to the Sport Commitment Model. *Journal of Sport and Exercise Psychology.* ***15***(1), 1-15. doi:10.1123/jsep.15.1.1.
30. SCANLAN, T. K., G. M. CHOW, C. SOUSA, L. A. SCANLAN & C. A. KNIFSEND, 2016. The development of the Sport Commitment Questionnaire-2 (English version). *Psychology of Sport and Exercise.* ***22***, 233-246. doi:10.1016/j.psychsport.2015.08.002.
31. SCANLAN, T. K., D. G. RUSSELL, K. P. BEALS & L. A. SCANLAN, 2003. Project on Elite Athlete Commitment (PEAK): II. A direct test and expansion of the Sport Commitment Model with elite amateur sportsmen. *Journal of Sport and Exercise Psychology.* ***25***(3), 377-401. doi:10.1123/jsep.25.3.377.
32. SCANLAN, T. K., D. G. RUSSELL, T. M. MAGYAR & L. A. SCANLAN, 2009. Project on Elite Athlete Commitment (PEAK): III. An examination of the external validity across gender, and the expansion and clarification of the Sport Commitment Model. *Journal of Sport and Exercise Psychology.* ***31***(6), 685-705. doi:10.1123/jsep.31.6.685.
33. SPRAY, C. M., C. K. JOHN WANG, S. J. BIDDLE & N. L. CHATZISARANTIS, 2006. Understanding motivation in sport: An experimental test of achievement goal and self determination theories. *European Journal of Sport Science.* ***6***(1), 43-51. doi:10.1080/17461390500422879.
34. SUKYS, S., I. TILINDIENĖ, V. J. CESNAITIENE & R. KREIVYTE, 2019. Does emotional intelligence predict athletes' motivation to participate in sports? *Perceptual and Motor Skills.* ***126***(2), 305-322. doi:10.1177/0031512518825201.
35. VALLERAND, R. J., L. G. PELLETIER, M. R. BLAIS, N. M. BRIERE, C. SENECAL & E. F. VALLIERES, 1992. The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement.* ***52***(4), 1003-1017. doi:10.1177/0013164492052004025.
36. VANSTEENKISTE, V., W. LENS, H. WITTE & N. T. FEATHER, 2005. Understanding unemployed people's job search behaviour, unemployment experience and well-being: A

comparison of expectancy-value theory and self-determination theory. *British Journal of Social Psychology.* ***44***(2), 269-287. doi:10.1348/014466604x17641.

37. VERSTUYF, J., H. PATRICK, M. VANSTEENKISTE & P. J. TEIXEIRA, 2012. Motivational dynamics of eating regulation: a self-determination theory perspective. *International Journal of Behavioral Nutrition and Physical Activity.* ***9***(1), 21. doi:10.1186/1479-5868-9-21.
38. WARBURTON, D. E. & S. S. BREDIN, 2017. Health benefits of physical activity. *Current Opinion in Cardiology.* ***32***(5), 541-556. doi:10.1097/hco.0000000000000437.
39. WEISS, W. M. & M. R. WEISS, 2003. Attraction- and entrapment-based commitment among competitive female gymnasts. *Journal of Sport and Exercise Psychology.* ***25***(2), 229-247. doi:10.1123/jsep.25.2.22.
40. WEISS, W. M. & M. R. WEISS, 2006. A longitudinal analysis of commitment among competitive female gymnasts. *Psychology of Sport and Exercise.* ***7***(3), 309-323. doi:10.1016/j.psychsport.2005.08.010.
41. WILSON, P. M., W. M. RODGERS, P. J. CARPENTER, C. HALL, J. HARDY & S. N. FRASER, 2004. The relationship between commitment and exercise behavior. *Psychology of Sport and Exercise.* ***5***(4), 405-421. doi:10.1016/s1469-0292(03)00035-9.
42. ZAHARIADIS, P., H. TSORBATZOUDIS & K. ALEXANDRIS, 2006. Self-determination in sport commitment. *Perceptual and Motor Skills.* ***102***(2), 405–420. https://doi.org/10.2466/pms.102.2.405-420.

Table 1

Correlations. alpha coefficients and descriptive statistics for the study variables

	EC	CC	SE	VO	PIQ	PIL	OP	SC	DEM	DES	SSE	SSI	Amot.	Ext. Reg.	Intro. Reg.	Iden. Reg.	Integ. Reg.	Intrin. Mot.
EC	(.91)																	
CC	-.15*	(.65)																
SE	.67**	-.42**	(.89)															
VO	.76**	.03	.51**	(.77)														
PIQ	.72**	-.00	.50**	.72**	(.87)													
PIL	.47**	.23**	.25**	.60**	.59**	(.77)												
OP	-.35**	.21**	-.19**	-.14*	-.25**	-.09	(.73)											
SC	.50**	.28**	.17**	.56**	.60**	.56**	-.16*	(.81)										
DEM	.76**	-.21**	.66**	.63**	.74**	.44**	-.28**	.39**	(.85)									
DES	.64**	0.01	.48**	.69**	.70**	.49**	-.22**	.56**	.69**	(.76)								
SSE	.53**	-.02	.33**	-0.04	.60**	.36**	-.30**	.53**	.57**	.54**	(.75)							
SSI	.53**	.07	.33**	.27**	.52**	.38**	-.12	.52**	.48**	.46**	.57**	(.72)						
Amot.	-.27**	.43**	-.41**	.44**	-0.1	.16*	.33**	.12	-.27**	-.09	-.08	-.01	(.76)					
Ext. Reg.	.19**	.42**	-.08	.55**	.24**	.27**	.03	.50**	.10	.29**	.24**	.35**	.39**	(.83)				
Intr. Reg.	.57**	.00	.36**	.61**	.49**	.43**	-.16*	.36**	.51**	.38**	.29**	.28**	-.03	.25**	(.50)			
Iden.Reg.	.64**	-.10	.46**	.60**	.50**	.45**	-.20**	.37**	.61**	.50**	.39**	.39**	-.17*	.16*	.59**	(.83)		
Integ.Reg.	.69**	-.11	.46**	.72**	.60**	.47**	-.22**	.41**	.63**	.58**	.45**	.44**	-.11	.23**	.53**	.79**	(.82)	
Intr. mot.	.70**	-.12	.53**	.60**	.58**	.48**	-.25**	.37**	.68**	.55**	.47**	.45**	-.13	.22**	.60**	.77**	.73**	(.89)
Range	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-7	1-7	1-7	1-7	1-7	1-7
Skewness	-.68	.32	-1.29	-.44	-.88	-.29	.39	-.03	-1.08	-.80	-.65	-.16	.47	.53	-.35	-.49	-.47	-.77
Kurtosis	-.22	-.67	1.30	-.76	.24	-.71	-.32	-1.05	1.03	-.06	-.57	-.89	-.67	.16	-.45	-.38	-.45	.25
M	3.72	2.42	4.26	3.38	3.94	3.16	2.54	3.01	4.07	3.77	3.66	3.08	3.05	2.87	4.58	4.79	4.57	4.86
SD	1.05	.92	.83	1.15	.95	1.10	.97	1.16	.85	1.00	1.14	1.17	1.66	1.69	1.54	1.26	1.66	1.46

Note. EC= Enthusiastic Commitment; CC=Constrained Commitment; SE= Sport Enjoyment; VO=Valuable Opportunities; PI-Q=Personal Investment-Quantity; PI-L=Personal Investment-Loss; OP=Other Priorities; DE-M=Desire to Excel-Mastery; DE-S=Desire to Excel-Social; SC=Social Constraints; SS-E=Social Support-Emotional; SS-I=Social Support-Informal; mot.=Amotivation; Ext. Reg.=External Regulation; Intro. Reg.=Introjected Regulation; Iden. Reg.=Identified Regulation; Integ. Reg.= Integrated Regulation; Intrin. Mot. = Intrinsic Motivation*p<0.05 **p<0.01