
Title	Experience in competitive youth sport and needs satisfaction: The Singapore story
Author(s)	Koon Teck Koh, C. K. John Wang, Karl Erickson and Jean Côté
Source	<i>International Journal of Sport Psychology</i> , 43(1), 15-32
Published by	Edizioni Luigi Pozzi

This document may be used for private study or research purpose only. This document or any part of it may not be duplicated and/or distributed without permission of the copyright owner.

The Singapore Copyright Act applies to the use of this document.

Copyright © 2012 Edizioni Luigi Pozzi

Archived with permission of the publisher.

Experience in competitive youth sport and needs satisfaction: The Singapore Story

KOON TECK KOH¹ (*), C. K. JOHN WANG (*), KARL ERICKSON (**), and
JEAN CÔTÉ (***)

(*) *Motivation in Educational Research Lab, Nanyang Technological University, Singapore*

(**) *Queens University, Canada*

The purpose of this study was to examine the relationship between sport experiences and psychological needs satisfaction of Singapore high school athletes who were involved in inter-school competition. A total of 1250 school athletes from 22 sports participated in the study. The athletes were between 13 and 18 years old and had an average of 3 years of experience in school sport (SD=18). Cluster analysis was employed to identify homogenous groups based on the seven developmental experiences domains of the Youth Experience Survey (YES 2.0; Hansen & Larson, 2005). A one-way analysis of variance (ANOVA) was conducted to determine whether differences existed among the clusters in terms of psychological needs satisfaction (i.e., sense of autonomy, perceived competence and relatedness). The results of the cluster analysis showed that there were different subgroups of athletes with distinct developmental experiences, and they varied in the degree to which their psychological needs were satisfied. Generally, subgroups that had high levels of positive experiences and low levels of negative experiences in sport had better fulfillment of psychological needs. It is important to ensure that policies and programmes are formulated, delivered and monitored effectively to promote positive experiences for youth who are involved in competitive sports.

KEY WORDS: Analysis Cluster, Psychological needs, Self-determination theory, Sport experiences, Youth.

Young people participate in organised sports during a period of their lives that is critical to their personal development (Gilbert, Gilbert, & Trudel, 2001). Sports participation can lead to positive experiences and beneficial outcomes such as increased self-esteem, confidence, citizenship, character building, identity development, meaningful adult and peer relationships, academic achievement, and decreased delinquency (Bredemeier &

Correspondence to: Koon Teck, Koh, Ph.D, Assistant Professor, Motivation in Educational Research Lab, Nanyang Technological University, Singapore. E-mail: koonteck.koh@nie.edu.sg.

Shields, 2006; Camiré & Trudel, 2010; Coakley, 2007; Coatsworth & Conroy, 2009; Fraser-Thomas & Côté, 2009; Smith, Ullrich-French, Walker, & Hurley, 2006; Weiss, Amorose, & Allen, 2000). In contrast, participation in sport can also lead to negative experiences such as increased aggression, alcohol consumption, stress, dropout, burnout, decreased moral reasoning and low self-esteem (e.g., Brustad, Babkes, & Smith, 2001; Weiss et al., 2000). These negative experiences and dropout are often associated with negative experiences with the coaches, lack of playing time, pressure to win, poor coach-athlete relationships, peer influences, parental pressure, and the challenging psychological environment of competitive sport (Fraser-Thomas & Côté, 2009; Weiss & Williams, 2004).

Ryan and Connell (1989) suggest that athletes are motivated to participate in sports for various reasons. For example, they may participate in sports because they want to gain recognition, feel that they have to contribute to their sport, feel that taking part in sport is important for them to keep them fit, or simply for the love of the sport and the enjoyment derived from it. These differing reasons for sport participation are termed as 'motivation regulations'. Therefore, understanding the relationship between motivation and sport participation has been an important area of research in sports psychology. One of the common theories used to explain motivation in sport is the self-determination theory (SDT; Deci & Ryan, 1985). According to SDT, there are three basic psychological needs that affect human motivation. They are: (1) the need for autonomy, which refers to the need to feel ownership of one's behaviour, (2) the need for competence, which refers to the ability to achieve desired outcomes and to experience mastery and effectiveness, and (3) the need for relatedness, to feel that one can relate to others and the social world in general. When an athlete's basic psychological needs are fostered, he/she is more likely to be motivated to participate in sport for intrinsic reasons (self-determined), and optimal psychological development and well-being are the expected consequences (Deci & Ryan, 2000). The quality of sport participation and the degree of well- and ill-being an athlete experiences may depend upon the extent to which sport engagement satisfies the three psychological needs (Gagné & Balanchard, 2007). For example, basic needs satisfaction has been found to be positively related to the degree of enjoyment experienced by young Spanish soccer players and negatively related to players' boredom (Álvarez, Balaguer, Castillo, & Duda, 2009). It also positively predicts the positive affective states experienced by dancers (Quested & Duda, 2010), as well as young gymnasts' daily experiences of vitality (i.e., feeling alive and energised) and positive affect (Gagné, Ryan, &

Bargmann, 2003). In contrast, low basic needs satisfaction has been linked to undesirable consequences such as emotional and physical exhaustion (Reinboth & Duda, 2006), as well as burn-out (Perreault, Gaudreau, Lapointe, & Lacroix, 2007).

Hansen and Larson (2005) developed the Youth Experiences Survey (YES 2.0) to examine youth's developmental experiences (i.e., positive and negative) in different types of structured activities. In a study that evaluated how youth experiences were influenced by variations in dosage, motivation, leadership roles, and adult-child ratio using a large representative sample of 1,822 eleventh grade high schools students, Hanson and Larson (2007) found that sport participants had more positive experiences when they spent more time in the activity, participated more frequently, and were more motivated compared to non-sport participants. Hansen, Larson, and Dworkin (2003) also suggested that competition may be the key variable in producing both positive and negative outcomes for athletes through sport. According to the authors, competition may encourage self-evaluation and character building to the team goal but it may limit the development of collective skills and expose athletes to negative experiences that challenge their character. Vallerand and Losier (1999) proposed an integrated model to explain the relationships between personal experiences, motivation in sport and continued participation. Their model is based on self-determination theory (Deci & Ryan, 1985, 1991) and the Hierarchical Model of Intrinsic and Extrinsic Motivation (See Figure 1; Vallerand, 1997). According to the authors, social factors such as coaching behaviours, interpersonal relationship (e.g., peers, coach, athletes) and perceived success or failure, have a profound impact on individuals' thoughts, feelings, and behaviours. The effects of these social factors are mediated by perceptions of competence, autonomy, and relatedness which may influence the degree of motivation regulations (i.e. reason to participation in sport) and eventually lead to different consequences or experiences in sport. For example, if the three basic psychological needs are satisfied, athletes are more likely to be intrinsically motivated (self-determined) to participate in sport (Deci & Ryan, 2000). Consequently, optimal psychological development engenders positive outcomes such as achievement of high performance levels, demonstration of effort and persistence, development of a sense of confidence and a self-determined motivational orientation. In contrast, if the three basic psychological needs are thwarted, athletes' self-determined reasons for engaging in sports and their well-being are likely to be undermined, leading to negative outcomes such as poor performance, low self-esteem, high level of competition anxiety and burnout (Amorose, 2007).

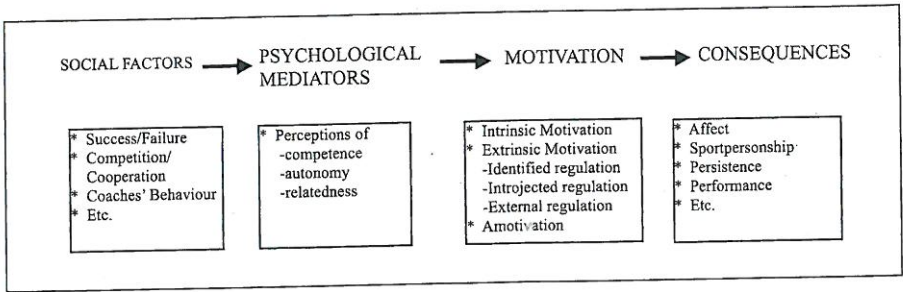


Fig. 1. - The motivational sequence involving social factors, psychological mediators, motivation, and consequences. (adapted from Vallerand & Losier, 1999).

As such, understanding the relationship between basic needs satisfaction and youth's experiences in competitive sport is warranted.

In Singapore, all medically fit high school students (between 13 to 18 years of age) must have at least one co-curricular activity (CCA) that is typically conducted after school. Generally, students are encouraged to continue with the same CCA throughout their high school. In the case of competitive sports, there has been a steady increase in the number of school athletes involved in sport participation over the last few years, from 66,000 (31% of total school population) in 2006 to 77,000 (35% of total school population) in 2007¹. Because of the mandatory CCA policy, students' motivation for taking part in CCA and their experiences remain unknown and research examining this area is warranted.

The Ministry of Education of Singapore (MOE) also introduced the Sustained Achievement Award (SAA) which aims to give recognition to schools which consistently achieve good results in sport. SAA is an award given to schools and individual athletes. It takes into account of school's continuous outstanding achievements over three years from different divisions (B or C division). To be eligible for the award, the high school must: (1) obtain top four placing at the National or Zonal Inter-School Competition for two team sports (can be from different division and gender) for three consecutive years; and (2) have at least one in four students involved in sports in that year. Most schools in Singapore can satisfy the second criterion but the first condition is very challenging as achieving good performance outcome is dependent on many factors such as a supportive environment, having highly skilled and committed athletes, as

¹ Data extracted from Singapore Schools Sports Council Annual Report from year 2007 to 2009.

well as effective coaching (Fraser-Thomas & Côté, 2009). Research also suggest that athletes in competitive sports may be successful in performance results but may be exposed to negative as well as positive experiences in sport participation (Holt & Sehn, 2008). Moreover, as most of these elite high school athletes are likely to represent Singapore at higher levels of competition in future, their experiences in school sports is a critical area that warrants investigation. Therefore, the purpose of this study was to examine the relationship between psychological needs satisfaction and young athletes' experience in CCA (sport). More specifically, the study sought to examine: (i) the psychological profiles of athletes based on their sporting experiences; (ii) the relationship between athletes' sport experiences and needs satisfaction; and (iii) the association between SAA and non-SAA group, sport experiences and levels of needs satisfaction. We hypothesized that (1) there will be different levels of psychological needs satisfaction associated with athletes' different sporting experiences, (2) there will be a positive relationship between athletes' positive experiences and needs satisfaction, and (3) SAA and non-SAA group will be associated with different levels of positive sport experiences and needs satisfaction.

Method

PARTICIPANTS

The participants were 1,250 high school athletes from 22 different sports drawn from 18 schools in Singapore (male = 740, female = 509, one not specified). They were identified from a list of 89 schools that have received the SAA for Sports compiled by MOE for the year 2007 or 2008. All the 89 schools were invited to participate in this study but only 18 of them agreed to be involved. Of the 1,250 school team athletes surveyed, 644 of them were in the SAA group. The rest of the SAA recipients might have graduated from their current school when this study was conducted. The athletes aged between 13 and 18 years old. All of them represented their school in the inter-school competition for an average of 3.33 years ($SD = .18$). On average, the athletes trained 2.74 times per week ($SD = .06$) and each training session lasted more than three hours ($M = 3.16, SD = .05$).

MEASURES

THE YOUTH EXPERIENCES SURVEY (YES) 2.0. The Youth Experiences Survey (YES) version 2.0 (Hansen & Larson, 2005) was used in this study. It provides quantitative measures of positive and negative developmental experiences within a specific, pre-determined

organised activity context. The responses were made on a 4-point scale which ranged from 1 (not at all) to 4 (definitely yes). Measures of positive developmental experiences were centred around three domains of personal development (identity work, initiative, and basic skills) and three domains of interpersonal development (teamwork and social skills, positive relationships, and adult networks and social capital). Measures of negative developmental experiences within five domains included stress, negative influences, social exclusion, negative group dynamics, and inappropriate adult behaviour. Each positive and negative domain is represented by a single scale. These scales have been found to be reliable (Cronbach's alphas ranging from .75 to .94) and have been cross validated with observations from adult leaders (Hansen & Larson, 2005). The YES 2.0 has also been used previously in similar large-scale examinations of developmental experiences (e.g., Hansen & Larson, 2007). In the present study, scale alpha coefficients ranged between .67 and .91 (see Table I).

BASIC PSYCHOLOGICAL NEEDS. The 9-item Basic Need Satisfaction in Relationships Scale (La Guardia, Ryan, Couchman, & Deci, 2000) was used to measure athletes' three basic psychological needs, specifically within their school sporting context. There were three items each to measure autonomy, competence and relatedness. The alpha coefficients ranged from .63 to .78 (see Table 1). Each response was scored on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

DEMOGRAPHIC INFORMATION. Athlete's demographic information such as gender, age, level of achievement (SAA or non SAA), duration involved in competitive sport, number of years training with the present coach, number of coaches they had, years in training and average number of training hours per week were collected.

PROCEDURES

Ethical clearance was obtained from the university's ethical review board to conduct the study. Permission from the MOE and school principals to conduct data for the study was also obtained. Parents' consent was obtained through schools and participants were told that participation in the study was voluntary and they were free to withdraw at any time. Subsequently, the heads of Physical Education departments were contacted to make arrangements for the questionnaire to be administered to the participants. All participants completed the questionnaire within 30 minutes. The questionnaires were collected and returned to the principal investigator by the schools.

DATA ANALYSIS

First, the descriptive statistics and correlations among all the main variables were computed. Second, cluster analysis was used to identify homogenous groups or clusters based on the seven developmental experiences domains scores of the YES. The use of cluster analysis is suitable for identifying homogenous groups with similar characteristics in terms of the YES profiles. Cluster analysis attempts to reduce the number of observations by finding groups of observations with minimum within-group variability and maximum between group variability (Wang & Biddle, 2001). In this way, rather than group similar variables, as in factor analysis,

cluster analysis will group similar people. Notwithstanding this, there are weaknesses in cluster analysis because regardless of which clustering method is used, the solution derived largely depends on the decisions of the researcher. However, there are several different techniques and statistics that can help researchers in the decision making process (e.g., ANOVA tests, agglomerative schedule) that increase the trustworthiness of the results (Hair, Anderson, Tatham, & Black, 1998).

The hierarchical method was used to determine the number of clusters (Wang, Chatzisarantis, Spray, & Biddle, 2002). Dendrogram and agglomeration schedules were generated to provide a basis for determining the number of clusters. Ward's method with squared Euclidean distance was also used to confirm the number of cluster groups.

After the cluster analysis, the three psychological needs were used to test the differences between the clusters. A one-way analysis of variance (ANOVA) was conducted to determine whether differences existed among the clusters in terms of psychological needs satisfaction. ANOVA and follow-up Tukey's tests were conducted to examine the differences in each of the three psychological needs among the clusters. Finally, the respective YES 2.0 profiles in terms of gender, age, sport achievement, duration in sport, time with the present coach and training duration were examined. Chi-square tests were used to examine nominal data and one-way ANOVA was used to examine continuous variables.

Results

Table I shows the descriptive statistics, alpha coefficients and zero-order correlation matrix for the entire sample. In general, the athletes reported moderately high levels of initiative work, basic skills, positive relationships, teamwork and social skills, and adult networks/social capital. The six positive experiences were positively correlated and not related to negative experiences and vice versa. The sample also reported moderate levels of satisfaction of all three psychological needs. The variables on positive experiences were positively associated with the three psychological needs while the negative experiences variables were negatively associated with the three psychological needs.

CLUSTER ANALYSIS

The agglomeration schedule of the cluster analysis showed that merging of all the clusters up to the six-cluster solution created small change in the coefficients (less than 3.8%), but merging a six-cluster to a five-cluster created a 5.4% change in the agglomeration coefficients, meaning that dissimilar solutions emerged. The dendrogram also confirmed that a six-cluster solution was most appropriate.

TABLE I
Descriptive Statistics and Internal Consistency Coefficients of the Variables

	α	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Identity Work	.76	2.91	.60	1.00												
2. Initiative Work	.91	3.16	.55	.65**	1.00											
3. Basic Skills	.83	3.02	.53	.57**	.73**	1.00										
4. Positive Relationships	.81	3.07	.59	.53**	.67**	.70**	1.00									
5. Teamwork and Social Skills	.88	3.01	.61	.57**	.71**	.67**	.72**	1.00								
6. Adult Networks/ Social Capital	.85	2.57	.71	.51**	.57**	.58*	.60*	.64**	1.00							
7. Stress	.73	2.10	.80	-.04	-.06*	-.05	.01	.02	.02	1.00						
8. Negative Influences	.76	1.60	.63	-.03	-.11**	-.04	-.02	-.02	.09**	.56**	1.00					
9. Social Exclusion	.73	1.70	.70	-.12	-.17**	-.13**	-.12**	-.12**	.39**	.49**	1.00					
10. Negative Group Dynamics	.70	1.60	.67	-.06*	-.06*	-.03	-.00	-.00	.03	.44**	.61**	.58**	1.00			
11. Inappropriate Behaviour	.67	1.66	.72	-.10**	-.10**	-.04	-.03	-.05	.02	.41**	.54**	.44**	.60**	1.00		
12. Autonomy	.65	4.55	1.23	.36**	.38**	.34**	.34**	.37**	.32**	-.26**	-.20**	-.23**	-.18**	-.29**	1.00	
13. Competence	.63	4.61	1.15	.37**	.42**	.37**	.36**	.42**	.39**	-.19**	-.15**	-.27**	-.13**	-.18**	.62**	1.00
14. Relatedness	.78	4.27	1.27	.38**	.42**	.37**	.37**	.38**	.42**	-.21**	-.12**	-.23**	-.12**	-.18**	.66**	.67**

Note. * $p < .05$; ** $p < .01$

Table II contains the means, standard deviations and z scores of the clustering variables of the six clusters. We used z scores of ± 0.5 as criteria for classifying higher or lower scores (Wang & Biddle, 2001). Cluster 1 consisted of 38 athletes (3.0%) with high positive experiences in sport and very high negative developmental experiences. Cluster 2 had 250 athletes (20.0%) with the highest positive developmental experiences and the lowest negative developmental experiences among the six clusters. Cluster 3 had 333 athletes (26.7%) with a flat profile above the mean scores in all the variables. Cluster 4 reported low positive developmental experiences in sport and high negative experiences. This cluster consisted of 89 athletes (7.1%). The fifth cluster was the largest group with 28.5% of the total sample ($N = 356$). This cluster was characterised by a flat profile of low scores in both positive and negative developmental experiences. The final cluster had 14.6% of the sample ($N = 182$) with extremely low positive developmental experiences and moderate negative experiences (see Figure 2).

A MANOVA was conducted to determine if the six clusters differed in terms of needs satisfaction. The multivariate test results showed significant differences between the six clusters in needs satisfaction, Pillai's Trace = .28, $F(15, 3726) = 25.35, p < .001, \eta^2 = .09$. Follow-up ANOVA tests showed that there were significant differences in terms of all the three psychological needs among the six clusters, $F(5, 1242) = 53.17, p < .001, \eta^2 = .18$ for autonomy; $F(5, 1242) = 69.61, p < .001, \eta^2 = .22$ for competence; and $F(5, 1242) = 63.38, p < .001, \eta^2 = .20$ for relatedness. The post-hoc Tukey's HSD revealed that most of the pairwise comparisons were significant (all $ps < .05$), except for Clusters 1 and 5 in all the three psychological needs, Clusters 4 and 6 in autonomy and competence, Clusters 1 and 3 in competence and Clusters 1 and 4 in relatedness (see Table III). It appeared that athletes from Cluster 2 had the highest needs satisfaction, followed by those from Clusters 3, 5 and 1 respectively. Clusters 4 and 6 had significantly lower needs satisfaction.

PROFILES OF CLUSTERS

Table III displays the means, standard deviations of the demographic variables and the percentages of gender and sports achievement awards distribution. The results of the chi-square tests revealed significant differences among the six clusters in terms of sports achievement award, $\chi^2(5) = 734.53, p < .001$. More than 90% of the athletes from Clusters 2 and 3 were SAA recipients. However, in Cluster 4, only 39% were from the SAA group. In

TABLE II
Cluster Means, Standard Deviations, and z Scores for the Six Clusters by YES 2.0

	Cluster 1 (N = 38)		Cluster 2 (N = 250)		Cluster 3 (N = 333)		Cluster 4 (N = 89)		Cluster 5 (N = 356)		Cluster 6 (N = 182)	
	Mean (SD)	Z	Mean (SD)	Z	Mean (SD)	Z	Mean (SD)	Z	Mean (SD)	Z	Mean (SD)	Z
1. Identity Work	3.11 (.50)	.33	3.40 (.43)	.82	3.20 (.45)	.48	2.51 (.43)	-.67	2.74 (.42)	-.28	2.19 (.46)	-1.20
2. Initiative Work	3.31 (.41)	.25	3.67 (.27)	.91	3.45 (.32)	.52	2.84 (.34)	-.58	3.02 (.37)	-.26	2.35 (.46)	-1.46
3. Basic Skills	3.22 (.53)	.38	3.47 (.33)	.85	3.30 (.30)	.53	2.75 (.37)	-.52	2.88 (.33)	-.28	2.29 (.42)	-1.40
4. Positive Relationships	3.23 (.51)	.27	3.58 (.34)	.85	3.38 (.39)	.51	2.89 (.33)	-.44	2.92 (.41)	-.25	2.21 (.41)	-1.46
5. Teamwork and Social Skills	3.30 (.51)	.48	3.54 (.36)	.89	3.33 (.41)	.53	2.72 (.40)	-.47	2.80 (.36)	-.33	2.16 (.46)	-1.40
6. Adult Networks and Social Capital	3.05 (.74)	.67	3.17 (.52)	.84	2.91 (.54)	.48	2.50 (.50)	-.09	2.23 (.51)	-.47	1.71 (.46)	-1.20
7. Stress	3.34 (.56)	1.56	3.33 (.52)	-.72	2.52 (.71)	.53	2.68 (.58)	.72	1.88 (.65)	-.28	1.99 (.78)	-.14
8. Negative Influences	3.25 (.51)	2.65	3.16 (.27)	-.69	1.83 (.59)	.38	2.26 (.52)	1.06	1.37 (.37)	-.36	1.52 (.50)	-.13
9. Social Exclusion	3.46 (.43)	2.40	3.25 (.36)	-.64	1.74 (.61)	.05	2.42 (.57)	1.03	1.56 (.52)	-.20	1.81 (.74)	.15
10. Negative Group Dynamics	3.46 (.43)	2.79	3.15 (.25)	-.67	1.75 (.60)	.23	2.50 (.52)	1.35	1.37 (.40)	-.33	1.51 (.54)	-.13
11. Inappropriate Adult Behaviour	3.46 (.43)	2.50	3.26 (.43)	-.55	1.85 (.73)	.26	2.26 (.77)	.83	1.40 (.44)	-.35	1.68 (.62)	.04

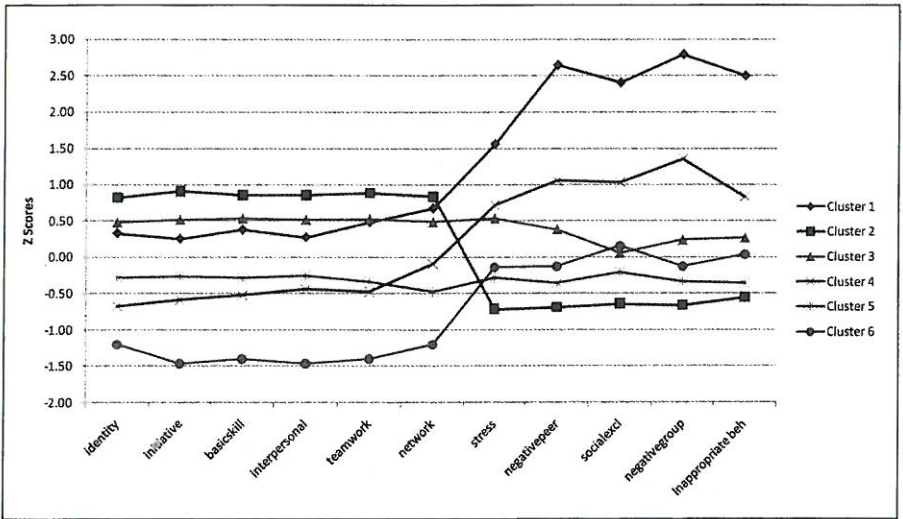


Fig. 2. - Cluster profiles based on YES 2.0.

the other two clusters (5 and 6), there were fewer recipients of the sport achievement awards. Significant gender differences were found among the six clusters, $\chi^2(5) = 28.67, p < .001$ and there were more male athletes in Clusters 1, 3, and 4, while Clusters 2, 5 and 6 had more female athletes.

The results of the various ANOVAs showed that there were no differences among the six clusters in terms of years in competition and training, duration training with the current coach, training frequency per week and training duration per session.

Discussion

Sport experience has the potential to provide both positive and negative outcomes for athletes' development (e.g., Brustad et al., 2001; Côté & Gilbert, 2009; Weiss et al., 2000). Using the YES developed by Hansen and Larson (2005) and motivational sequence proposed by Vallerand and Losier (1999), the current study examined the relationship between sporting experiences and psychological needs satisfaction of elite youth school team athletes in Singapore.

Results of the present study showed that if athletes experienced higher levels of positive experience (e.g., strong sense of identity and initiative work,

TABLE III
Characteristics of the Six Clusters by Needs Satisfaction, Demographic and Sports Achievements

	Cluster 1 (N = 38)	Cluster 2 (N = 250)	Cluster 3 (N = 333)	Cluster 4 (N = 89)	Cluster 5 (N = 356)	Cluster 6 (N = 182)
1. Autonomy	4.26 _{ab} (.92)	5.39 (1.03)	4.65 _{ab} (1.21)	3.81 _c (1.10)	4.44 _b (1.11)	3.83 _c (1.10)
2. Competence	4.54 _a (.94)	5.49 (.99)	4.75 _{ab} (1.13)	4.00 (1.01)	4.43 _b (.95)	3.81 (1.00)
3. Relatedness	4.03 _a (1.03)	5.23 (1.11)	4.43 _a (1.27)	3.86 _b (1.04)	4.03 _b (1.03)	3.41 (1.01)
4. Training Time	7.65 (2.90)	8.39 (3.25)	9.38 (4.12)	8.52 (3.89)	8.65 (3.82)	8.31 (3.47)
5. Gender Distribution	86.8% Male 13.2% Female	54.4% Male 45.6% Female	61.3% Male 38.7% Female	76.1% Male 23.9% Female	55.3% Male 44.7% Female	55.5% Male 44.5% Female
6. Sport Achievement Awards	63.2%	97.2%	90.7%	39.3%	20.2%	2.70%
7. Year in Competition	3.29 (1.48)	3.54 (1.98)	3.46 (2.00)	2.98 (1.90)	3.32 (2.04)	3.33 (2.02)
8. Year in Training	2.75 (.93)	2.66 (1.24)	2.56 (1.31)	2.37 (1.43)	2.48 (1.16)	2.46 (1.40)
9. Year with Coach	2.06 (.94)	2.05 (1.21)	2.21 (1.36)	2.04 (1.22)	1.97 (1.14)	2.08 (1.37)
10. Training Frequency/Week	2.50 (.81)	2.78 (.83)	2.87 (.89)	2.56 (.86)	2.76 (.97)	2.67 (.88)
11. Session Hour per Training	3.04 (.60)	3.02 (.73)	3.23 (.93)	3.27 (.78)	3.11 (.79)	3.09 (.76)

Note: Means in the same row with different subscripts differ significantly at $p < 0.05$ in the Tukey HSD comparison.

competence in skills, good relationship with their coach and peers, strong teamwork and social skills), they were also more likely to report that their three psychological needs (i.e., the sense of autonomy, relatedness and competence) were satisfied. For example, athletes in Clusters 2 reported higher positive sporting experiences and lower negative sporting experiences; they also had the highest needs satisfaction. Athletes from Cluster 3 reported the second highest needs satisfaction; perhaps the higher negative sporting experiences neutralised the higher positive sporting experiences. In contrast, athletes from Clusters 4, 5 and 6 had significantly lower needs satisfaction than the first three clusters, possibly a result of their lower positive experiences and higher negative experiences.

Our results were generally consistent with earlier studies that developmental benefits from organised activity or structured programmes might be higher if youth experienced positive personal and interpersonal development (e.g., Hanson & Larson, 2005). Psychological needs satisfaction in the present study was found to be positively associated with positive experiences but negatively associated with negative experiences. A typical variable-centered approach might conclude that these results were consistent with previous studies (e.g., Fraser-Thomas & Côté, 2009; Hansen & Larson, 2007) that sport participation was mostly positive for young people and contributed to the enhancement of personal skills (e.g., identity, initiative, basic skills) and interpersonal skills (e.g., team work, social skills, adult networks). The use of cluster analysis in the current study, however, showed that there were groups of young people with distinct psychological profiles based on their sporting experiences. For example, athletes from Clusters 1, 2 and 3 had high positive experiences while athletes from Clusters 4, 5 and 6 had low positive experiences. The latter three clusters consisted of almost half of the sample which could be an area of concern. The results suggested that many athletes who competed in the inter-school competition had reported lower positive experiences with either higher or lower negative experiences. The results suggested that nature of the competitive sport environment might be the key variable in producing both positive and negative experiences for youth, and in turn, their degree of psychological needs satisfaction. It might also limit the development of athlete's collaborative skills and challenge their character (Hansen et al., 2003).

Given that roughly 35% of the Singaporean school population was involved in sport, the low psychological needs satisfaction reported by almost half of the sample (i.e. clusters 4, 5 and 6) in the present study appeared to be an area of concern for sport development in Singapore, par-

ticularly when the young nation is using sports as a vehicle to gain prominence in the world such as hosting of the 1st inaugural Youth Olympic Games in 2010 as well as in the promotion of community bonding and healthy living (Ministry of Community Development & Sports, 2008). It is unlikely for this group of athletes to achieve optimal and long-term sport engagement and can potentially become a national health issue. In addition, the pool of elite athletes is likely to be affected as most of the school sport act as the feeder to national teams. In this aspect, social agents such as coaches and teachers play a pivotal role in fostering the satisfaction of the three psychological needs. The extent to which the coach/teacher is autonomy supportive (e.g., less controlling), socially supportive (e.g., praise and acknowledge effort), and focused on task orientation (personal improvement) rather than ego orientation (beating opponents) may help to satisfy athlete's basic needs, promote self-determination (Quested & Duda, 2011) and enhance positive outcomes such as enjoyment, positive affect and self-esteem (Álvarez et al., 2009; Gagné et al., 2003). If the psychological needs are undermined, athletes are likely to experience poor performance, low esteem, high levels of competition anxiety and burnout (Amorose, 2007; Vallerand & Losier, 1999).

Results from the present study also suggested that SAA and non-SAA athletes reported different sporting experiences. Clusters 1, 2 and 3, which had more SAA athletes compared to clusters 4, 5, and 6, reported higher positive experiences and lower negative experiences while clusters 4, 5 and 6 reported less positive sport experiences. The result suggested that sporting success from the SAA group might have enhanced their positive sport experiences. In addition, different motivational orientation of athletes in sport participation might influence the outcomes of their sporting experiences. For example, some athletes might wish to gain recognition in their sport (e.g., win award/trophy), or simply engage in the sport for the love of sport (self-determined). Others could participate due to a lack of choice (e.g., mandatory CCA policy in this case) and feeling compelled to compete for their school in order to please the coach, teacher or parents, leading to negative sport experiences (e.g., Fraser-Thomas & Côté, 2009; Holt & Sehn, 2008; Quested & Duda, 2011). While competition might serve as a useful role for increasing skills and extrinsic motivation (e.g., winning award) for participation, once the external stimulus such as the award is removed, motivation to participate in an activity is likely to become extinct (Deci & Flaste, 1995; Hansen & Larson, 2007). Accordingly, creating an autonomy supportive environment such as providing rationale, choice, being less controlling to athletes, focusing on personal development (mastery-orientation) rather than

winning or beating opponents (ego-orientation) should be promoted as they would likely satisfy the three psychological needs and promote positive experiences while working in the competitive environment (Gould, Flett, & Lauer, 2012; Hansen & Larson, 2007). In addition, sport programmes should be properly structured and developed appropriately as they would influence athletes' experiences (Holt & Sehn, 2008). Evaluation of the programmes should also include collecting feedback from athletes, teachers and coaches rather than solely on performance outcomes (Koh, Mallett, & Wang, 2009).

IMPLICATIONS AND LIMITATIONS

The present study shed some light on the relationship between psychological needs and experiences of high school athletes in the Singaporean culture and context such as mandatory organised activity (CCA) and the reward system (SAA) for the inter-school competitions. Based on our results, some implications were proposed. First, students should be provided with more *choices* so that they are more motivated to participate in organised activity. Second, using outcome results as the only indicator to measure the effectiveness of programs is flawed. Other factor such as athletes' feedback and experiences should be considered and addressed in a timely manner. Finally, people who are involved in competitive youth sports should be equipped with the essential skills and knowledge in promoting a caring, mastery-oriented, and autonomy-supportive environment as they have the potential to satisfy athletes' basic psychological needs and promote positive experiences.

While the present study provided some practical recommendations in creating positive experiences for competitive young athletes, there are limitations of the study which should be mentioned. First, this is a cross-sectional study and it limits the power to generalise the results to other contexts and cultures. Future study should continue to examine the relationship between parents, coaches, peers and athletes, and the interplay between different variables to advance our knowledge in this line of research. Second, this study only examined the relationship between athletes' sporting experience and needs satisfaction. Future study should attempt to identify the specific coaching behaviours that may potentially affect athletes' experiences and need satisfaction both positively and negatively. This information can then be used for coaches' reflection and improve the quality of coaching. Finally, results of our study indicated the possibility of gender effects in the competitive school sport experiences and needs satisfaction of Singaporean youth.

Though it was beyond the focus of the present study, future research might examine this possibility.

Conclusion

The results of the present study suggested that there was a close relationship between needs satisfaction and experience in high school athletes. Therefore, it is important that policies and sport programmes are formulated, managed and evaluated effectively to facilitate positive experiences for young competitive athletes. To this end, creating a caring and autonomy supportive environment that focused on process (personal development) rather than outcome (results) is encouraged.

REFERENCES

- Álvarez, M.S., Balaguer, I., Castillo, I., & Duda, J.L. (2009). Coach autonomy support and quality of sport engagement in young soccer players. *Spanish Journal of Psychology*, 12 (1), 138-148.
- Amorose, A.J. (2007). Coaching effectiveness. In M.S. Hagger and N.L.D. Chatzisarantis (eds.), *Intrinsic motivation and self-determination in exercise and sport*. Champaign, IL: Human Kinetics.
- Bredemeier, B., & Shields, D. (2006). Sport and character development. *Research Digest : President's Council on Physical Fitness and Sports*, 7, 1-8.
- Brustad, R.J., Babkes, M.L., & Smith, A.L. (2001). Youth in sport: Psychological considerations. In R.N. Singer, H.A. Hausenblas, & C.M. Janelle (Eds.), *Handbook of sport psychology* (2nd ed., pp. 604-635). New York: John Wiley & Sons.
- Camiré, M., & Trudel, P. (2010). High school athlete' perspectives on character development through sport participation. *Physical Education and Sport Pedagogy*, 15, 193-207.
- Coakley, J. (2007). *Sport in society: Issue and controversies* (9th ed.). Boston: McGraw Hill.
- Coatsworth, J.D., & Conroy, D.E. (2009). The effect of autonomy-supportive coaching, need satisfaction, and self-perceptions on initiative and identity in youth swimmers. *Development Psychology*, 45, 320-328.
- Côté, J., & Gilbert, W. (2009). An integrative definition of coaching effectiveness and expertise. *International Journal of Coaching and Sports Sciences*, 4, 307-323.
- Deci, E.L., & Flaste, R. (1995). *Why we do what we do*. New York: Penguin.
- Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behaviour*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (ed.), *Nebraska symposium on motivation* (pp. 237-288). Lincoln: University of Nebraska Press.
- Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227-268.

- Fraser-Thomas, J., & Côté, J. (2009). Understanding adolescents' positive and negative developmental experiences in sport. *The Sport Psychologist*, 23 (1), 3-23.
- Gagné, M., & Blanchard, C. (2007). Self-determination theory and well-being in athletes. In M.S. Hagger and H.L.D. Chatzisarantis (eds), *Intrinsic motivation and self-motivation in exercise and sport*. Champaign, IL: Human Kinetics.
- Gagné, M., Ryan, R.M., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, 15, 372-390.
- Gilbert, W.D., Gilbert, J.N., & Trudel, P. (2001). Coaching strategies for youth sports, part 1: Athletic behavior and athlete performance. *Journal of Physical Education, Recreation & Dance*, 72, 4, 29-33.
- Gould, D., Flett, R., & Lauser, L. (2012). The relationship between psychosocial developmental and the sports climate experienced by underserved youth. *Psychology of Sport and Exercise*, 13, 80-87.
- Hair, J. F. J., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). New Jersey: Prentice-Hall International.
- Hansen, D.M., & Larson, R.W. (2005). The Youth Experience Survey 2.0: Instrument Revision and Validity Testing, Unpublished manuscript, University of Illinois at Urban-Champaign. Survey available April 8, 2008, from <http://www.youthdev.uiuc.edu/YES%202.0.doc>.
- Hansen, D.M., & Larson, R.W. (2007). Amplifiers of developmental and negative experiences in organized activities: Dosage, motivation, lead roles, and adult-youth ratios. *Journal of Applied Developmental Psychology*, 28, 360-374.
- Hansen, D.M., Larson, R.W., & Dworkin, J.B. (2003). 'What adolescents learn in organised youth activities: a survey of self-reported development experiences' *Journal of Research on Adolescence*, 13, 25-55.
- Holt, N.L., & Sehn, Z.L. (2008). Processes associated with positive youth development and participation in competitive youth sport. In N. Holt (ed.), *Positive youth development through goals*. Retrieved January 26, 2010, from http://www.un.org/sport2005/a_year/mill_goals.html.
- Koh, K.T., Mallett, C.J., & Wang, J. (2009). The use of Singapore CBS-S in evaluating and developing high performance basketball coaches in Singapore. *Unpublished doctoral dissertation*, The University of Queensland, Brisbane, Queensland, Australia.
- La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology*, 79, 367-384.
- Ministry of Community Development and Sports (April, 2008). *Sporting culture committee report*, Singapore.
- Perreault, S., Gaudreau, P., Lapointe, M.C., & Lacroix, C. (2007). Does it take three to tango? Psychological need satisfaction and athlete burnout. *International Journal of Sport Psychology*, 38, 437-450.
- Quested, E., & Duad, J.L. (2010). Exploring the social-environment determinants of well-being and ill-being in dancers: a test of basic needs theory. *Journal of Sport and Exercise Psychology*, 32, 39-60.
- Quested, E., & Duad, J.L. (2011). Enhancing children's positive sport experiences and personal development: a motivational perspective. In I. Stafford (ed.). *Coaching Children in Sport*. London: Routledge.

- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57, 749-761.
- Reinboth, M., & Duda, J.L. (2006). Perceived motivational climate, needs satisfaction and indicators of well-being in team sports: a longitudinal perspective. *Psychology of Sport and Exercise*, 7, 269-286.
- Smith, A.L., Ullrich-French, S., Walker, E., & Hurley, K.S. (2006). Peer relationship profile and motivation in youth sport. *Journal of Sport and Exercise Psychology*, 28, 362-382.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 271-360). New York: Academic Press.
- Vallerand, R. J., & Losier, G. F. (1999). An integrative analysis of intrinsic and extrinsic motivation in sport. *Journal of Applied Sport Psychology*, 11, 142-169.
- Wang, C. K. J., & Biddle, S. J. H. (2001). Young people's motivational profiles in physical activity: A cluster analysis. *Journal of Sport & Exercise Psychology*, 23 (1), 1-22.
- Wang, C. K. J., Chatzisarantis, N. L. D., Spray, C. M., & Biddle, S. J. H. (2002). Achievement goal profiles in school physical education: Differences in self-determination, sport ability beliefs, and physical activity. *British Journal of Educational Psychology*, 72, 433-445.
- Weiss, M.R., Amorose, A.J., & Allen, J.B. (2000). The young elite athlete: The good, the bad and the ugly. In B.L. Drinkwater (Ed.), *Women in sport: Volume VIII of the encyclopedia of sports medicine* (pp. 409-440). Oxford: Blackwell Scientific Publications.
- Weiss, M.R., & Williams, L. (2004). The *why* of youth sport involvement: A developmental perspective on motivational processes. In M.R. Weiss (ed.), *Developmental sport and exercise psychology: A Lifespan perspective* (pp. 223-268). Morgantown: Fitness Information Technology.