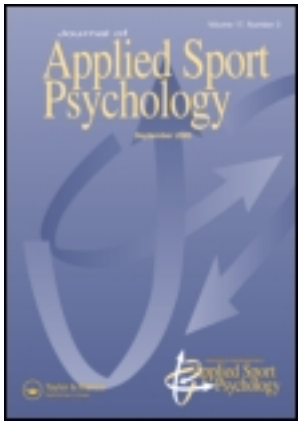

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Impact of the Talent Development Environment on Achievement Goals and Life Aspirations in Singapore

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Producing successful athletes in Singapore is a high priority, and the financial rewards for those that make it are great. In light of such an extrinsically motivated structure, the purpose of the current study was to examine the impact of the talent development environment on the goal pursuits and life aspirations of young athletes. Intrinsic goal striving was predicted by a mastery approach and an environment that prioritized long-term development and fundamentals, and provided a good support network. On the contrary, a lack of quality preparation and understanding of athletes promoted extrinsic goal-striving, as did both performance-approach and performance-avoidance goals.

The emergence of globalism and the importance of nationalism has led to many countries, such as Singapore, prioritizing policies and sport structures aimed at identifying, developing and producing elite sportspeople. However, there are still no clear guidelines for effective talent identification and development (TID). There are many factors that still need to be addressed and overcome to ensure the TID process is valid, successful, and sustainable (Burgess & Naughton,

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2010). For example there are issues around the subjective nature of rating individuals, isolated athletic assessment, acceptable criteria for maturation and valid performance appraisal (Lidor, Cote, & Hackfort, 2009; Malina et al., 2005). A consistent criticism of most TID models is that they are both exclusive and do not comprehensively take into account the multidimensional aspects of TID to ensure that realistic goals are set for those who are included (Vaeyens, Lenoir, Williams, & Philippaerts, 2008). This is important if you want to avoid dropout and ensure that appropriate reward schemes reflect the relevant needs of long-term and successful development (Burgess & Naughton, 2010). Singapore has a total land area of about 700 square kilometers and a total population of less than five million. Although the country is small in landmass and population, Singapore has a dream of becoming one of the top 10 nations in Asia in terms of sport. The commitment of the country can be seen in the establishment of the Sporting Culture Committee (SCC) by the government in September, 2006. The purpose of the committee is to promote a sporting culture in the country. A report by the SCC highlighted that one of their goals was to catalyze glory for the nation by producing world champions and sports heroes (Ministry of Community Development, Youth & Sports, 2008). To achieve this, the government announced the Multi-Million Dollar Awards Program to reward medal-winning athletes. For example, an Olympic gold medalist will receive one million Singapore dollars from the government.

Along with the reward scheme, the government developed a long-term strategy by focusing on the development of youth talent identification and talent management. More recently, many junior sport academies, youth sport academies, and a sport school have been set up in Singapore to pave the way for talent development. As typical of many policies and sport structures across the world, within such an extrinsically motivated structure, it is essential to understand how the talent development environment impacts on the athletes' goals and life aspirations. This understanding has particular importance, given that the development of talent is such a long-term project. Athletes will face many challenges over time (Bloom, 1985; MacNamara, Holmes, & Collins, 2008), whether it be performance, development or lifestyle-related (Martindale, Collins, & Abraham, 2007), and personal characteristics such as intrinsic motivation have been shown to play a crucial part in overcoming those challenges and becoming a world class athlete over time (Abbott & Collins, 2004; Bloom, 1985; Martindale et al., 2007). Furthermore, athletes who maintain strong task orientation have been shown to be less stressed, better learners and more intrinsically motivated (Deci & Ryan, 2008; Duda & White, 1992), which leads to less burn-out and drop out through the system (Burgess & Naughton, 2010). Although this is just one example, it highlights the need to understand how personal characteristics are influenced by the talent development environment.

Talent identification and development is closely linked to sustainable and quality world-class performance (Martindale et al., 2007). Research has identified a number of environmental factors that facilitate the development of the athletes and world-class performance (Abbott, Collins, Martindale, & Sowerby, 2002). For example, Bloom (1985) proposed a staged model of talent development. This model uses a holistic approach through the transition of different events (i.e., being dropped, talent scouted, winning a major competition), highlighting the many challenges that exist for talent developers. There are three stages of development: initiation, development, and perfection. The stages are not determined by chronological age, but by the completion of certain tasks, the development of relationships or attitudes, or the mastery of skills. This highlights the need to treat athletes individually, and allow them to progress when physical and mental foundations are in place. Indeed, the pressure of age group outcome success in many externally driven environments can be a big problem (Douglas & Martindale, 2008) and can both damage development experiences and skew an athlete's goals

Figure 1. The features of effective talent development environments identified in the TDEQ (Martindale et al., 2010).

and motivations detrimentally. Although Bloom's model was developed through structured interviews with elite athletes, it also used neurosurgeons, concert pianists, mathematicians and artists. Because the model is non sport-specific, there is a need to develop a more generic model for sport.

Recently, Martindale, Collins, Wang, McNeill, Lee, Sproule, and Westbury (2010) have examined the key features of an effective talent development environment specific to sport. They used a combination of review, content analysis, interviews with coaches and athletes, and psychometric testing to develop an inventory called the Talent Development Environment Questionnaire (TDEQ). This inventory can be used as a monitoring tool of the talent development environment. There are seven dimensions in the TDEQ as outlined in Figure 1.

The psychometric properties of the TDEQ have been found to be adequate, with internal consistency (Cronbach's alpha) of the factors ranging from .62 to .98. Specifically, Factor 1 to Factor 7 respectively scoring .98, .62, .91, .73, .90, .62, and .88. Interestingly, the characteristics of an effective talent development environment identified by Martindale et al. (2010) focus on promoting self-growth, responsibility and intrinsic motivation. These can be termed as intrinsic goals. However, in many talent development environments, much of the emphasis is placed on extrinsic goals, such as medal count, status, and extrinsic rewards when it comes to the evaluation of success (Douglas & Martindale, 2008). This is important because from a theoretical standpoint, such as the self-determination theory (SDT; Deci & Ryan, 1985, 1991, 2008) framework, pursuing intrinsic goals (e.g., relationships, growth, community, health) is related to positive outcomes (e.g. well-being, reduced stress, more confidence, better learning) because they promote the satisfaction of the three basic psychological needs (competence, autonomy, and relatedness). On the contrary, extrinsic goal pursuits (e.g., wealth, image, and fame) are associated with poor well-being because they do not lead to the satisfaction of the three basic psychological needs (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). According to SDT, the three psychological needs must be continuously satisfied for people to develop and function in healthy or optimal ways (Deci & Ryan, 2000). Many of the propositions of SDT derive from the postulate of fundamental psychological needs, and the concept has proven essential for making meaningful interpretations of a wide range of empirically isolated phenomena (for a review, see Deci & Ryan, 2008). Studies have shown that the pursuit of extrinsic goals tends to be related to poorer mental health (e.g., depression, anxiety, and

narcissism) and greater likelihood of high-risk behaviors, such as tobacco use, lower psychological well-being and more troubled relationships with friends (see Kasser & Ryan, 2001; Sheldon & Kasser, 1995).

Furthermore, there is a distinction between goals content (intrinsic versus extrinsic) and achievement goals (mastery versus performance). The goal content can be seen as more global and reflects the reasons for engaging in a particular behavior. Ford (1992) identified 24 basic categories of goals in his motivational systems taxonomy, such as social responsibility, mastery, tranquility, happiness, and belongingness. This goal content approach is considered as more general because it is applicable to all areas of life and not just achievement settings (Pintrich, 2000). It is assumed that individuals are likely to pursue multiple goals, and thus, examining the content of these goals can provide a better understanding of motivated behavior (Wentzel, 2000).

In an achievement goal approach, the outcome is a mental representation of what an individual wants to achieve in an achievement setting, such as to master a task or outperform others (Elliot, 1999; 2005). In Elliot's achievement goal approach, there are four styles: (a) mastery-approach, which focuses on task-based or intrapersonal competence; (b) mastery-avoidance, which focuses on task-based or intrapersonal incompetence; (c) performance-approach, which focuses on normative competence; and (d) performance-avoidance, which focuses on normative incompetence. Competence is differentiated in two ways in terms of definition and valency. Competence is defined in terms of the standard used to evaluate competence, either the task itself related to one's own past performance (mastery) or the performance of others (performance). Competence is valenced in terms of whether the focus is on a positive possibility (approach) or a negative possibility (avoidance). It has also been shown that individuals have a tendency to adopt each of these four goals to a varying degree at an intra-individual level (Wang, Biddle, & Elliot, 2007).

Because an individual can pursue multiple goals at the same time, and to varying degrees (Kaplan & Flum, 2010), it is reasonable to expect a logical linkage between goal content and achievement goals. For example, Vansteenkiste, Matos, Lens, and Soenens (2007) have shown that extrinsic goal framing is related to performance goals and intrinsic goal framing is associated with mastery goals. However, there are very few studies that examined the two types of goals concurrently, but the importance of these orientations to development success is significant (Kaplan & Flum, 2010).

Given the current high level of interest in talent identification and development and the subtle but crucial interconnection between the talent development environment and personal characteristics of athletes, the purpose of the current study was to examine the relationship between athletes' perceptions of the talent development environment and their goals and life aspirations. This is particularly pertinent given the apparent lack of empirical data for the examination and guidance of the talent development environment. Because this is an exploratory study that examined the relationship between goal pursuit and the achievement goal framework, there were no specific hypotheses formulated. Three research questions were formulated:

1. What are the predictors of intrinsic goals versus extrinsic goals, using the three basic psychological needs and the factors in the talent development environment?
2. What are the relationships between the achievement goals (mastery-performance × approach-avoidance) as well as intrinsic goals versus extrinsic goals?
3. What are the predictors of the achievement goals (mastery-performance × approach-avoidance) using the factors of the talent development environment?

METHODS

Participants and Data Collection

Three hundred and seventy-four young athletes (217 boys, 150 girls, 7 students did not indicate their gender) from a sport school in Singapore took part in the study. The athletes were aged between 12 to 17 years ($M = 14.5$, $SD = 1.2$). Two hundred and forty-three were competing at C division (under 15 years) and 119 were competing at the B division (15 years and older). Ethical clearance was obtained from the university's ethical review board.

Permission for the study was granted by the school principal, and no students refused to take part. Administration of the questionnaires took place in quiet classroom conditions under the supervision of a researcher and was completed in approximately 30 min. Participants were informed that there were no right or wrong answers, given assurance about the confidentiality of their responses, and encouraged to be honest and to ask questions if necessary. To further reduce social desirability, the participants were not asked about the personal details.

Measures

Talent Development Environment Questionnaire (TDEQ)

The original TDEQ developed by Martindale et al. (2010) had 59 items measuring seven factors: long-term development, 24 items; quality preparation, five items (as all five items were negatively worded, it was re-labeled lack of quality preparation); communication, seven items; understanding the athlete, four items (again all four items were negatively worded, and it was re-labeled lack of understanding); support network, eight items; challenging and supportive environment, four items; and long-term development fundamentals, seven items. For the purpose of this exploratory study, we only used five items of the long-term development focus factor focusing on the coach's behavior, and dropped the challenging and supportive environment factor due to low internal reliability. In this study, the subscale alphas ranged between .62 and .85 (development focus, $\alpha = .79$; lack of quality preparation, $\alpha = .62$; communication, $\alpha = .85$; lack of understanding, $\alpha = .75$; support network, $\alpha = .83$; development fundamentals, $\alpha = .77$). A 6-point Likert scale was used, ranging from 1 (*strong disagreement*) to 6 (*strong agreement*).

Basic Psychological Needs Scale

The Basic Psychological Needs Scale (La Guardia, Ryan, Couchman, & Deci, 2000), comprising 21 items that account for competence, autonomy, and relatedness, assesses the need satisfaction in the talent development environment. Responses were made on a 7-point scale ranging from 1 (*not true at all*) to 7 (*very true*). The subscale alphas in this study ranged between .68 and .77 (autonomy, $\alpha = .68$; competence, $\alpha = .71$; relatedness, $\alpha = .77$).

The Achievement Goal in Sport Questionnaire (AGSQ)

The Achievement Goals in Physical Education Questionnaire (AGPEQ; Wang et al., 2007) was adapted to measure four achievement goals in the sport context. The four achievement goals are mastery-approach (e.g. "I want to perform as well as it is possible for me to perform"), mastery-avoidance (e.g., "I am often concerned that I may not perform as well as I can perform"), performance-approach (e.g., "It is important for me to do well compared to others"), and performance-avoidance (e.g., "My goal is to avoid performing worse than everyone else"). There were three items in each subscale. Students responded on a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The subscale alphas in

this study ranged between .68 and .83 (mastery-approach, $\alpha = .68$; mastery-avoidance, $\alpha = .83$; performance-approach, $\alpha = .80$; performance-avoidance, $\alpha = .81$).

Life Aspiration Inventory

The goal pursuits of the student athletes were measured by the Life Aspiration Inventory (Kasser & Ryan, 1996). There were 30 items which assessed six life goals. Student athletes were asked to rate the importance of the aspiration on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*very*). Extrinsic aspiration scores (wealth, fame, image) and intrinsic aspiration scores (personal growth, meaningful relationships, community contributions) were calculated by computing the mean of the corresponding subscale scores. In this study, the alphas ranged between .73 to .92 (wealth, $\alpha = .87$; fame, $\alpha = .92$; image, $\alpha = .86$; personal growth, $\alpha = .73$; meaningful relationships, $\alpha = .78$; community contributions, $\alpha = .83$).

Data Analysis

In the initial analysis, the descriptive statistics, correlation, and internal consistency of the main variables were computed. For the main study, a series of hierarchical regressions were conducted. To control for age and gender effects, the two variables were entered into the regression equations in the first step. The first two hierarchical regressions used the three basic psychological needs satisfaction factors (Step 2) and the six factors of the talent development environment (Step 3) to predict intrinsic goal and extrinsic goals, separately. To check for the multicollinearity and independence of errors, we computed the tolerance values and Durbin-Watson index (D). The value of D lies between 0 and 4 and a value less than 2 indicates positive serial correlation. The tolerance is a measure of collinearity, a value smaller than .10 indicates almost perfect linear combination of the independent variable and should not be added to the regression equation (Hair, Anderson, Tatham, & Black, 1998). The second set of regression analysis used the four achievement goals as the independent variables of intrinsic and extrinsic goals in the second step. The final set regression used the six factors of the talent development environment to predict each of the four achievement goals, after controlling for age and gender. We did not control the school year as all the athletes entered the school at the age of 12 to 13 years old and controlling for the age variable is sufficed.

RESULTS

Table 1 shows the means and standard deviations of the main variables. In general, the athletes reported that the talent development environment emphasized long-term development, had effective communication and support network, and provided long-term development fundamentals. The athletes also reported high intrinsic goal pursuits, coupled with high psychological needs satisfaction. In terms of goal adoption, they reported a high mastery-approach goal orientation as well as a high mastery-avoidance goal.

Table 2 presents the intercorrelations of the main study variables: (a) long-term development positively correlated with communication, support network, and development fundamentals; (b) lack of quality preparation was positively associated with lack of understanding of the athletes; (c) communication was positively related to support network and development fundamentals; (d) support network was also highly correlated with development fundamentals; (e) intrinsic goal was positively related to long-term development, communication, support network, and long-term development fundamentals, as well as extrinsic goal pursuits; (f) intrinsic

Table 1
Descriptive Statistics of the Subscales

Subscales	*M*	*SD*
1. Development Focus	4.75	.84
2. Lack of Quality Preparation	3.37	.91
3. Communication	4.51	.86
4. Lack of Understanding	2.87	1.08
5. Support Network	4.56	.78
6. Development Fundamentals	4.44	.79
7. Intrinsic Goals	6.11	.56
8. Extrinsic Goals	4.88	1.06
9. Autonomy	4.95	1.05
10. Competence	5.35	1.01
11. Relatedness	5.14	.96
12. Mastery-Approach	6.05	.88
13. Mastery-Avoidance	5.46	1.38
14. Performance-Approach	4.97	1.46
15. Performance Avoidance	4.47	1.71

goal pursuit was also correlated with competence and mastery-approach; and (g) extrinsic goal was positively related to performance-approach and performance-avoidance goals.

Preliminary analyses showed no issues with multicollinearity and independence of error terms, the Durbin-Watson values exceeded 2 and the tolerance values ranged from .35 to .99. In the first set of hierarchical regression analyses, age and gender did not have an effect on intrinsic goals. The three psychological needs were entered in Step 2, followed by the six factors of the talent development environment in Step 3 to predict internal and external goal pursuits. In terms of intrinsic goal pursuits, competence was a significant predictor in Step 2, $\Delta R^2 = .16$, $p < .001$. In Step 3, long-term development focus, development fundamentals, and lack of understanding of the athletes were significant predictors of intrinsic goal pursuits, after controlling for the three psychological needs, $\Delta R^2 = .12$, $p < .001$. The model predicted 27.5% of variance in intrinsic goal pursuits. In terms of extrinsic goal pursuits, gender had a main effect. Male athletes tended to adopt extrinsic goals more than female athletes. In Step 2, gender, competence and autonomy were positive predictors while relatedness was a negative predictor, $\Delta R^2 = .08$, $p < .001$. In Step 3, gender, and autonomy, were positive predictors and lack of quality preparation and lack of understanding of the athletes were negative predictors of extrinsic goal pursuits, $\Delta R^2 = .08$, $p < .001$. The model accounted for a total of 19.5% variance in extrinsic goal pursuit. Table 3 shows the betas, standard errors of betas, standardized betas of the hierarchical regressions.

In the second set of regression analyses, we entered the four achievement goals as the independent variables of intrinsic and extrinsic goals, respectively, after controlling for age and gender. A mastery-approach goal emerged as the only predictor of intrinsic goal pursuits, $\beta = .47$, $p < .001$, whereas a performance-approach, $\beta = .32$, $p < .001$ and performance-avoidance, $\beta = .22$, $p < .001$ goal*s* were positive predictors of extrinsic goal pursuits (see Table 4).

In the third set of regression analyses, we tested the predictors of the four achievement goals using the six factors of the talent development environment separately in Step 2, after controlling for age and gender. The long-term development focus as well as the development fundamentals positively predicted a mastery-approach goal while communication was a negative predictor, $R^2 = .28$, $p < .001$. Lack of quality preparation and the support network

Table 2
Intercorrelations of the Main Variables

Subscales	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Devt Focus														
2. Lack of Quality Preparation	−.09													
3. Communication	.70**	−.04												
4. Lack of Understanding	−.29**	.54**	−.27**											
5. Support Network	.71**	−.13*	.71**	−.30**										
6. Devt Fundamentals	.64**	−.06	.71**	−.23**	.70**									
7. Intrinsic Goals	.44**	.01	.36**	−.03	.42**	.43**								
8. Extrinsic Goals	.15**	.28**	.20**	.20**	.12*	.21**	.38**							
9. Autonomy	.54**	−.06	.50**	−.18**	.54**	.56**	.28**	.25**						
10. Competence	.62**	−.11*	.61**	−.20**	.59**	.64**	.38**	.21**	.64**					
11. Relatedness	.43**	−.33**	.41**	−.38**	.46**	.42**	.24**	.01	.47**	.61**				
12. Mast-Approach	.50**	−.04	.33**	−.11*	.40**	.42**	.47**	.23**	.33**	.38**	.21**			
13. Mast-Avoid	.11*	.21**	.04	.07	.18**	.14**	.21**	.19**	.14**	.04	.03	.33**		
14. Perf-Approach	.24**	.18**	.23**	.09	.13*	.20**	.20**	.50**	.18**	.22**	.02	.40**	.29**	
15. Perf-Avoid	.16**	.22**	.13*	.15**	.08	.17**	.18**	.48**	.15**	.18**	.01	.31**	.41**	.72**

Note. Devt = Development, Mast = Mastery, Mast-Avoid = Mastery-Avoidance, Perf = Performance, Perf-Avoid = Performance-Avoidance, $^{*}p < .05$, $^{**}p < .01$.

Table 3
Hierarchical Regression Analyses of Predictors of Intrinsic and Extrinsic Goals

	Intrinsic Goals			Extrinsic Goals		
	B	**SE B**	***β***	***B***	**SE B**	***β***
Step 1						
Age	−.03	.02	−.07	.03	.05	.03
Gender	−.01	.06	−.01	.39	.11	.18**
Step 2						
Age	−.01	.02	−.01	.06	.05	.07
Gender	−.07	.06	−.06	.28	.11	.13*
Autonomy	.02	.04	.04	.21	.07	.21**
Competence	.22	.04	.39**	.18	.08	.18*
Relatedness	−.02	.04	−.03	−.21	.07	−.19**
Step 3						
Age	.00	.02	.01	.06	.04	.06
Gender	−.10	.06	−.09	.25	.11	.12*
Autonomy	−.04	.03	−.08	.19	.07	.19**
Competence	.08	.04	.14	.11	.08	.11
Relatedness	−.00	.04	−.01	−.05	.07	−.05
Development Focus	.17	.05	.26**	−.01	.10	−.01
Lack of Quality Preparation	.01	.03	.01	−.24	.07	−.20**
Communication	−.05	.05	−.07	.06	.10	.05
Lack of Understanding	−.08	.03	−.15*	−.14	.06	−.14*
Support Network	.10	.06	.14	−.09	.11	−.07
Development Fundamentals	.16	.05	.22**	.16	.10	.11

Note. $^{*}p < .05$, $^{**}p < .01$.

positively predicted mastery-avoidance, whereas communication was a negative predictor, $R^2 = .14, p < .001$. In terms of the performance-approach and performance-avoidance goals, the long term development focus and lack of quality preparation positively predicted both goals, $R^2 = .14, p < .001$, for performance-approach, and $R^2 = .10, p < .001$, for performance-avoidance. Table 5 showed the results of the four hierarchical regressions.

Table 4
Regression Analyses of Predictors of Intrinsic and Extrinsic Goals

	Intrinsic Goals			Extrinsic Goals		
	B	**SE B**	***β***	***B***	**SE B**	***β***
Step 1						
Age	−.03	.02	−.07	.03	.05	.03
Gender	−.02	.06	−.01	.39	.11	.18**
Step 2						
Age	−.01	.02	−.01	.01	.04	.01
Gender	−.05	.06	−.04	.24	.10	.11
Mastery-Approach	.31	.03	.47**	.05	.06	.04
Mastery-Avoidance	.02	.02	.04	.02	.04	.03
Performance-Approach	−.00	.03	−.00	.23	.05	.32**
Performance-Avoidance	.01	.02	.04	.14	.04	.22**

Note. $^{*}p < .05$, $^{**}p < .01$.

Table 5
Regression Analyses of Predictors of Achievement Goals

	Mastery-Approach			Mastery-Avoidance			Performance-Approach			Performance-Avoidance		
	B	**SE B**	**β**	**B**	**SE B**	**β**	**B**	**SE B**	**β**	**B**	**SE B**	**β**
Step 1												
Age	−.09	.04	−.13*	−.03	.06	−.03	.08	.06	.06	.07	.08	.05
Gender	.12	.09	.07	−.40	.15	−.14**	.51	.16	.18**	.24	.19	.07
Step 2												
Age	−.05	.03	−.07	.04	.06	.04	.09	.06	.07	.09	.08	.06
Gender	.01	.08	.01	−.44	.15	−.16**	.34	.15	.11*	.10	.18	.03
Development Focus	.44	.07	.42**	.03	.13	.02	.39	.13	.22**	.32	.16	.16
Lack of Quality Preparation	.00	.05	.00	−.40	.09	−.27**	−.29	.10	−.18**	−.35	.12	−.18**
Communication	−.16	.08	−.16*	−.36	.14	−.22**	.19	.15	.11	−.04	.17	−.02
Lack of Understanding	−.04	.05	−.04	−.00	.08	−.00	−.06	.09	−.05	−.15	.10	−.09
Support Network	.05	.08	.05	.52	.15	.29**	−.23	.16	−.12	−.15	.19	−.07
Development Fundamentals	.26	.08	.23**	.23	.14	.13	.15	.14	.08	.36	.17	.17*

Note. $^{*}p < .05$, $^{**}p < .01$.

DISCUSSION

The purpose of the present study was to examine the impact of the factors in the talent development environment on athletes' goal pursuits. The findings of the current study add to the limited literature in examining the impact of a talent development environment on athletes' personal goals. One other contribution is that the current study examined both goal content and achievement goals concurrently.

SDT states that the three psychological needs are fundamentals to optimum functioning and positive self-growth (Deci & Ryan, 1985; 1991; 2008). Past research has established that an intrinsic goal pursuit is related to higher satisfaction of the three psychological needs, whereas goals with extrinsic focus tend to distract people from satisfying their needs (Vansteenkiste et al., 2004). The findings of the current study provide some interesting perspectives from young athletes in a high-performance training environment. First, higher autonomy leads to a higher extrinsic goal pursuits. Second, higher competence leads to both intrinsic and extrinsic goal pursuits. Third, higher relatedness is negatively associated with an extrinsic goal pursuit. The present findings are contrary to those found in a previous study (Vansteenkiste et al., 2007). It seems like the competitive nature of high performance sport naturally aligns athletes toward extrinsic goals and rewards. This is perhaps obvious, especially considering the media focus on winners in competitions, the incentives and rewards, and scholarships available for winners. This explains that the fulfillment of needs of autonomy and competence may lead to extrinsic goal pursuits, rather than intrinsic goal pursuits. As such, coaches need to play a strong hand in promoting intrinsic goals in order to overcome the influence of a typical externally driven sport culture. However, it is worth highlighting that competence was also linked to heightened intrinsic motivation. Indeed, perhaps both types of goal pursuits are required for successful development (Burton, 1989) over time. Interestingly, the fulfillment of the need of relatedness reduces the tendency for extrinsic goal pursuits. These findings highlight that the mechanism between goal pursuit and need satisfaction may be different among high level athletes and also indicate the need to examine the environmental factors of a talent development program.

In terms of the talent development environment, a focus on long-term development and fundamentals, with a good support network, will positively predict intrinsic goals striving; on the other hand, a lack of quality preparation and lack of athlete understanding will promote extrinsic goal striving. This is a very important finding in that the satisfaction of the need of relatedness seems to be the key factor in promoting intrinsic goal aspirations among development athletes.

Previous research examined the effects of experimentally induced goal content (intrinsic versus extrinsic) on performance among different samples in the academic domain (Vansteenkiste & Deci, 2003; Vansteenkiste et al., 2004; Vansteenkiste et al., 2007). In general, intrinsic goal framing leads to task involvement (mastery goals) and extrinsic goal framing activates ego involvement (performance goals). To our knowledge, the present study is the first that has examined the relationship between goal pursuit and the achievement goal framework. Intrinsic goal pursuit is predicted by mastery-approach goals and extrinsic goal pursuit is predicted by both performance-approach and performance-avoidance goals. The findings are consistent with the literature. That is, both mastery-approach and performance-approach goals are proposed to contribute to positive effects and consequences (Elliot, 2005). Mastery-avoidance and performance-avoidance goals produce less adaptive motivational patterns, such as disorganization, worry, and emotionality (Elliot & McGregor, 2001; McGregor & Elliot, 2002; Middleton & Midgley, 1997).

Because achievement goals are related to goal pursuit, it is of interest to understand which environmental factors promote which achievement goals in the talent development program.

This was the third focus of the present study. The results of our study highlight that long-term development focus and fundamentals are strong predictors of mastery-approach goals. At the same time, a long-term development focus may also lead to adoption of both types of performance goals. A lack of quality preparation may orient athletes to avoidance goals and performance-approach goals. The six factors of the talent development environment accounted for 10% to 27% variance in the four achievement goals. Therefore, it is important for coaches and sport administrators to take these factors into consideration when designing an effective talent development program.

Limitations, Implications and Future Research

In terms of the psychometric properties of the TDEQ, the results of the current study support the internal reliability of the TDEQ, except for the challenging and supportive environment factor. Three of the four items in this subscale were negatively worded and the context ranged from school, opportunity to train with top performers, getting help from experienced performers, and about winning and losing. Another potential problem of the TDEQ is that the first dimension on the long-term development focus has 24 items. The alpha's coefficient is known to increase with the number of items in the scale. In addition, the high correlations between development focus, communication, support network, and development fundamentals suggest that a second higher order factor may be present. Future studies need to reexamine the factorial structure of the TDEQ using confirmatory factor analysis.

There are other limitations of the present study that need to be mentioned. The TDEQ is developed as a generic tool for monitoring the development of talent across sports. Therefore, there is a need to examine the invariance of the measurement tool across different sports. In addition, the current findings may not be applicable when the observations are replicated to other types or levels of sports. Furthermore, it is important to highlight that there is only one sport school in Singapore that houses the country's top performers in selected sports. Although the findings may not be generalized to lower level school athletes, the findings of the present study provide an in-depth understanding of the impact of the talent development environment on goal pursuit and achievement goals.

Notwithstanding these limitations, the results provide interesting insight into the impact of the talent development environment on important personal characteristics of development athletes. This has implications for practitioners not only within a Singaporean context, but across the world. Many countries are also investing huge resources into the development of talent and the recognition of success on a world-class stage. Adding to this external reward structure, many successful sports men and women across the globe also earn superstar status and vast sums of money through their success. As such, we feel there is likely to be a high level of external generalization of the implications for practice further afield than Singapore.

In conclusion, it appears possible for practitioners working in highly externally driven structures to develop and facilitate important intrinsic drives and adaptive goal orientations. For example, ensuring that the talent development environment has clear, coherent and consistently reinforced long-term aims throughout the system may be a strong predictor of intrinsic motivation. Furthermore, intrinsic drives also appear to be facilitated through emphasizing the importance of "understanding the individual," a mastery climate and putting development fundamentals in place, such as the provision of ongoing opportunities, facilitation of parental support, athlete autonomy, and delayed specialization. Interestingly, satisfying competency needs may be more of a priority than those of autonomy or relatedness due to its more broad-ranging impact on motivation within the talent development setting. Where athletes were more performance-orientated, were poorly understood or lacked quality preparation, extrinsic drives

came to the fore. This perhaps indicates the need for strong guidance in such an extrinsically driven culture. However, it is important to recognize the potential benefits, or even necessity, of having both strong intrinsic and extrinsic drives within the talent development environment. Although some interesting implications have emerged from this work, future research examining the issues raised in more depth is necessary, particularly in an attempt to understand potential cultural and sport differences.

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