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Factors contributing to a supportive sport talent development environment

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Abstract

Sport organisations face serious challenges such as technological, economic, social and organisational change in a competitive environment. One of the ways in which sport organisations can address these challenges is through the implementation of a talent development environment. For such an environment to exist, sport organisations need to identify, develop and retain talent. Talent identification involves a process of recognising athletes with the potential to excel in a particular sport, recruiting them, and nurturing and developing them by providing the appropriate environment to realise their potential. The success of such a process is dependent on how well the environment retains, supports and shapes the talent. The purpose of the current study was to identify factors which sport coaches deem important to contribute to the enhancement of a talent development environment. A non-probability sampling design in the form of convenience sampling was used to collect data from 289 student-athletes from two universities situated within the Gauteng Province of South Africa. A two-section questionnaire was used to identify factors which contributed to the talent development environment of university student-athletes. Exploratory factor analysis using Principal Components Analysis (PCA) was conducted on the data to identify factors which contributed to the talent development environment of university athletes. Five factors, namely *coach guidance*, *feedback*, *goal setting*, *support* and *long-term focus*, were identified through the process. The study provided a promising contribution in identifying factors which contribute to the development of a talent environment for athletes from a coach viewpoint. It provides managers a reasonable starting point to strategically plan for talent development environments at their respective sport organisations.

Keywords: Talent environment, sport organisation, coach guidance, feedback, goal setting, support

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Introduction

Sport organisations, like most organisations in this global age, face serious challenges such as technological, economic, social and organisational change in a competitive environment. In this context, they are required to respond to these challenges. One of the ways in which sport organisations can achieve this is through the implementation of a talent development environment. For such an

environment to exist, sport organisations need to identify, develop and retain talent. Gagne´ (2000) argues that talent is prevalent in people who possess capabilities to excel in a chosen field of human endeavour. The chosen field could be business, arts, technology, sport or leisure. In the context of this study talent identification focuses on athletes. Talent identification involves a process of recognising athletes with the potential to excel in a particular sport (Vaeyens, Lenoir, Williams & Philippaerts, 2008), recruiting them, and nurturing and developing them by providing the appropriate environment to realise their potential. The success of such a process is dependent on how well the environment shapes, supports and retains the talent (Gould, Dieffenbach & Moffet, 2002; Martindale, Collins & Abraham, 2007).

Since South Africa's readmission into the international sport arena, there has been a remarkable increase in sport participation and the 'mushrooming' of sport organisations providing the avenue for participation and attracting many talented athletes. Sadly, this increase has not been matched by a corresponding increase of athletes participating at an elite level. A plausible reason for this is the lack of supportive talent development environments for the long term development of athletes.

If provision is made through the implementation of a talent development environment early in athletes' lives, the base of the talent development environment would be broad. The broader this base, the higher the number of athletes who will be able to emerge at the elite level. This, according to Hogan and Norton (2000), is the bottom-up or trickle-up effect.

Although there is limited evidence that early development of athletes result in successful elite athletes later in life (Martindale, Collins & Daubney, 2005), the implementation of a talent development environment which systematically incorporates vital elements such as motivation, adherence, competence, the development of fundamental cognitive and motor skills, opportunities to compete and attitude for the holistic development of athletes is crucial. This, according to Martindale et al. (2005), needs to be reinforced at all levels of development. The introduction of a talent development environment provides direction and stability as well as a clear vision and guidance for athletes so that they are able to plan properly for their future.

It is important that, in the development of a supportive talent development environment, appropriate pathways are created so that athletes can focus on what they are good at. In their integrated, holistic and systematic model, Martindale et al. (2005) suggested that long term aims and methods, wide-ranging coherent messages and support, emphasis on appropriate development and not early success, and individualised and on-going development are necessary for effective talent development environments.

Among the many influences that have a significant and long-lasting impact on the development of potential and success of an athlete is the quality and appropriateness of the coaching environment (Gould, Dieffenbach & Moffett 2002). The fact that athletes have different needs at different stages of their development implies that they may require different coaching environments as they progress (Van Rossum, 2001). This means that the creation of the talent development environment requires careful planning and thought. The coaching environment for elite athletes appears to be in place and functioning effectively (Lyle, 2000). However, for those athletes that want to transition to the elite level, there appears to be a glaring absence of a supportive talent development environment. The absence of a talent development environment provides little or no guidance for coaches to prepare athletes for higher levels in their careers (Falk, Lidor, Langer & Lang, 2004). The talent development environment should not only be limited to the provision of infrastructure, professional coaching and provision of knowledge of the sport. It should also include the involvement of individuals who athletes or coaches consider important in athletes' lives, for example parents, peers and role models. All these individuals, according to Durand-Bush and Salmela (2002) could exert positive influence on athletes, motivating them to strive towards higher levels in their performance.

It may not always be possible to include all important role players but, where possible, they should be included. According to Abbott and Collins (2002), many talent development programmes worldwide appear to use performance measures as one of the primary indicators of talent. Martindale et al. (2005) argue that this approach is problematic and poses a threat to development. Instead the authors suggest a focus on long term view of talent development. Their reasoning is that skills developed to achieve short term success may become redundant over a short period of time.

Taking into account the afore-mentioned, the purpose of the current study was therefore to identify factors which sport coaches deem important to contribute to the establishment of a supportive talent development environment. It is generally believed that the identification and understanding of the factors by coaches, as well as the management of sport organisations would assist them in taking proactive measures to enhance a supportive talent development environment.

Methodology

Participants

Three hundred and twenty student-athletes from two universities situated within the Gauteng Province comprised the sample from which data were collected for this study. Although permission was granted to conduct the study, the institutions requested to remain anonymous. Only student-athletes who participated

competitively under the auspices of University Sport South Africa (USSA) were recruited to voluntarily and anonymously complete the questionnaire. A non-probability sampling design in the form of convenience sampling was used to collect data over a three-week period. This method was chosen because it was inexpensive and efficient. In order to overcome the shortcomings of this method, a large sample group was targeted (Sekaran, 2003).

Instrument and procedure

A two-section questionnaire was used to collect data for the study. Section A requested demographic information of the participants. Section B comprised fifty items generated from the Talent Development Environment Questionnaire (TEDQ) (Martindale, Collins, Wang, McNeil, Lee, Sproule & Westbury, 2010). Items were scored using a 6-point Likert-type scale, anchored at 1 (strongly agree) and 6 (strongly disagree).

The principal researcher established contact with various coaches and requested permission to administer the questionnaire before or after training sessions at the respective institutions' sports grounds. At the outset participants were briefed about the purpose of the study, informed that participation was voluntary and advised that they could terminate their participation at any time without any repercussions. They were also assured of confidentiality and anonymity. In most instances the principal researcher was available to clarify any issues which were unclear to the participants. While the researcher made every attempt to have the questionnaires completed in her presence, in instances when this was not possible the respective coach was requested to assist in collecting the remaining questionnaires and handed them over to the researcher at the next training session.

Data analysis

The data were captured and analysed using the Statistical Package for the Social Sciences (SPSS – version 20). Firstly, descriptive statistics were conducted to profile the participants of this study. Secondly, exploratory factor analysis was conducted on the data to identify factors which contributed to the talent development environment of university athletes. Principal Components Analysis (PCA) was conducted on the 50 items to reduce them to a smaller number of variables. Varimax rotation was used to simplify factors by maximizing the variance loadings across variables, with the spread in the factor loadings being maximized (Tabachnick & Fidel, 2001).

PCAs were performed four times with items being removed until the criterion of a simple factor structure was met, whereby several variables correlated highly with each other and only one factor correlated highly with each variable. This

was done to permit a clear interpretation of the factors. Cronbach alphas were then calculated as an index of internal reliability for each factor. Internal consistency estimates for the scales ranged from 0.600 to 0.838. The Cronbach alpha for the scale was 0.805, with Factors 1 to 5 scoring .797, .838, .743, .779 and .600, respectively. Nunnally and Bernstein (1994) suggested that values of 0.70 or above may be considered good and 0.6 or above adequate for any factor with a small number of items. Hence, it may be implied that the reliability of the factors identified in this study ranged from adequate to good and may be applied in similar settings in future research.

Results

Descriptive statistics

Of the 320 questionnaires that were distributed, 289 questionnaires were returned (response rate = 90%). Twenty two questionnaires were incomplete and were therefore excluded from the study. Hence analysis was conducted on data obtained from 267 questionnaires. Of the participants, 50.6% (n = 135) were males and 49.4% (n = 132) females. The participants participated in the following sports: rugby (n = 52), cricket (n = 7), hockey (n = 40), netball (n = 30), athletics (n = 5), body building (n = 6), basketball (n = 44), dance (n = 14), volleyball (n = 18), soccer (n = 47) and "other" (n = 4). Participants were mainly in their 1st and 2nd years of study (29.9% and 29.6% respectively), with only 18.1% in their 3rd year of study and 15.5% representing post graduate students. Participants' ages were collapsed into two categories where 90.4% of them were in the 18 – 25 years age category and only 8.9% in the 26 – 30 years age group. More than 60% of the participants reported to have been participating in competitive sport for more than 6 years. Almost sixty percent (59.8%) of them perceived their sport season as "successful", with 35.1% viewing it as "somewhat successful" and only 4.8% as "unsuccessful". This correlates with their perception of their athletic skills which they reported as "improved greatly" (35.4%) or "improved slightly" (43.2%). Participants reported that they spent, on average, 4.91 hours per week (SD = 1.381) engaging in sport training, with 49.8% reporting to spend more than 5 hours training per week. Regarding the level at which they participated, 35.4% reported that they participated at university level, with 24.2% participating at provincial level and 14.8% featuring on USSA team level. A summary of the descriptive statistics is provided in Table 1.

Table 1: Descriptive statistics of participants

Variable	N	Mean	SD	Categories	%
Gender	267			Male	50.6
				Female	49.1
Age group	267			18 - 25	90.4
				26 - 33	8.9
Total number of years participation in competitive sport	267	5.51	2.227	1 Year	11.4
				2Years	4.1
				3 Years	0.4
				4 Years	3.3
				5 Years	5.5
				6 Years	6.6
				More than 6 years	60.9
Year of study	267	2.39	1.238	1st year	29.9
				2nd year	29.6
				3rd year	18.1
				Post Graduate	15.5
				Other	6.3
Sport participation	267	-	-	1.Soccer	16.6
				2.Rugby	19.6
				3.Cricket	2.6
				4.Athletics	2.2
				5.Netball	11.4
				6.Other	47.2
Success of sport season	267	2.55	0.592	1.Unsuccessful	4.8
				2.Somewhat Successful	35.1
				3. Successful	59.8
Athletic skills	267	4.03	1.040	1.Declined greatly	3.4
				2.Declined slightly	7.4
				3.Remained the same	8.5
				4.Improved slightly	43.2
				5.Improved greatly	35.4
Hours per week training	267	4.91	1.381	1 Hour	1.9
				2 Hours	7.7
				3 Hours	6.6
				4 Hours	15.1
				5 Hours	18.5
				More than 5 hours	49.8
Highest level of competition	267	2.94	1.813	1.University team / level	35.4
				2.USSA Team	14.8
				3.World Student Games	1.9
				4.Provincial team	24.4
				5.National team	14.4
				6.Professional team	7
				7.Other	1.5

Exploratory factor analysis

The appropriateness of factorability on the data set was first established. This was done by conducting Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. The Bartlett's Test of Sphericity value was estimated at 4440.384 (Sig = 0.000: df = 1225), which indicated that the data were suitable for exploratory factor analysis. The Kaiser-Meyer-Olkin measure of sampling test revealed significant results (0.867; $p<.001$), providing

further evidence that the sample size was adequate for factor analysis (Kaiser, 1974).

All 50 items were entered into the first PCA. Thirteen factors which accounted for 64.98% of the overall variance were identified. An examination of the items revealed that eight items did not load cleanly (within 0.3 of each other) and these items were subsequently removed.

A second PCA was conducted on the remaining 42 items (KMO = 866; Bartlett's Test of Sphericity = 2557.325; df = 406; sig = 0.000). Eleven factors, which accounted for 60.74% of the variance were extracted. Twelve items did not load clearly on a factor and were subsequently removed. The third PCA (KMO = .879; Bartlett's Test of Sphericity = 2450.311; df = 325; sig = 0.000) extracted 7 factors which accounted for 65.19% of the variance. In this instance eight items did not load cleanly on any factor. These items were therefore removed to reduce ambiguity in the interpretation of the factors (Tabachnick & Fidel, 2001).

The fourth PCA (KMO =.892; Bartlett's Test of Sphericity = 2168.155; (df = 231; sig = 0.000) revealed a five-factor structure with 22 items which accounted for 62.38% of the variance. The final factor structure is provided in Table 2.

Table 2: Rotated component matrix

Factor and variable descriptions	**1**	**2**	**3**	**4**	**5**
Factor 1: Coach Guidance (α =.797)					
My coach/es care more about helping me to become a professional/top level performer,than they do about having a winning team/performer right now	.715	.232	.194	-.095	-.066
I am being trained to be ready for almost anything that is thrown at me in sport and life.	.620	.358	.138	.074	-.175
My coach is good at helping me to understand my strengths and weaknesses in my sport	.658	.142	.215	.077	.415
My coach is good at helping me to understand what I am doing and why I am doing it.	.689	.236	.175	.064	.334
My coach constantly reminds me what he/she expects of me	.622	.157	.001	.063	.436
My coach and I talk about what current and/or past world class performers did to be successful	.472	-.013	.444	-.026	.209
Factor 2: Feedback (α = .838)					
Feedback I get from my coaches almost always relates directly to my goals	.369	.551	.423	.028	.108
My coach emphasises the need for constant work on fundamental and basic skills	.462	.508	.051	.090	.458
My coach is a positive supporting influence on me	.408	.594	.139	.070	.284
I spend most of my time developing skills and attributes that my coach tells me I will need if I am to compete successfully at the top/professional level	.032	.597	.252	-.017	.411
My coaches and others who support me in sport are approachable (e.g. physiotherapist, sport psychologist, strength trainer, nutritionist, lifestyle advisor)	.141	.698	.227	.178	.118
My coach emphasises that what I do in training and competition is far more important than winning	.322	.705	-.052	-.047	.219

Factor 3: Goal setting (α = .743)					
My coach and I often try to identify what my next big test will be before it happens	.360	.123	.517	-.177	.283
Currently, I have access to a variety of different types of professionals to help my sports development (e.g. physiotherapist, sport psychologist, strength trainer, nutritionist, lifestyle advisor).	.067	.103	.806	-.111	.000
I regularly set goals with my coach that are specific to my individual development	.269	.125	.519	.055	.410
My coaches talk regularly to the other people who support me in my sport about what I am trying to achieve (e.g. physiotherapist, sport psychologist, nutritionist, strength & conditioning coach, life style advisor).	.123	.215	.811	-.075	.085
Factor 4: Support (α = .779)					
The guidelines in my sport regarding what I need to do to progress are not very clear.	.077	.156	-.083	.838	-.041
I do not get much help to develop my mental toughness in sport effectively	.131	.193	.102	.784	-.139
My coach rarely takes the time to talk to other coaches who work with me	-.021	-.045	-.196	.810	.037
My coach rarely talks to me about my well-being	-.095	-.102	-.048	.673	.192
Factor 5: Long-term focus (α = .600)					
I am regularly told that winning and losing just now does not indicate how successful I will be in the future	.039	.247	.159	-.077	.621
I am constantly reminded that my personal dedication and desire to be successful will be the key to how good a performer I become	.271	.282	.119	.135	.739
Eigenvalue	7.351	2.768	1.392	1.174	1.038
% of variance explained	33.41	12.58	6.32	5.33	4.71
Cumulative %	33.41	45.99	52.32	57.66	62.37
Extraction method: Principal Component Analysis Rotation method: Varimax with Kaiser Normalisation					

Discussion

This study was conducted to identify factors which contribute to the augmentation of a supportive talent development environment for athletes. Five factors, namely *coach guidance*, *feedback*, *goal setting*, *support* and *long-term focus*, were identified through exploratory factor analysis.

Coach Guidance

The first factor, *coach guidance*, accounted for 15.37% of the variance in item scores with an eigenvalue of 7.351. This factor is indicative of the huge influence the coach has not only on the development of the athlete but also on the enhancement of the talent development environment. Without appropriate guidance from the coach, athletes may find it difficult to direct and control their own talent development as individuals. The primary role of the coach is mainly to train and prepare athletes technically, physically, psychologically and tactically (Norman & French, 2013). This is a very demanding and varied role which requires the coaches to understand their athletes well (Leach & Moon, 1999). Baker, Horton, Robertson-Wilson and Wall (2003) found that coaches plan and utilise a very high percentage of athletes' practice time and should influence the environment in such a manner as to foster optimal learning situations which

evidently enhances performance. Rutt-Leas and Chi's (1993) study of swimming coaches ascertained that, in addition to the coaches' ability to guide and optimally engage the athlete during practice, the expert coach also possesses domain-specific knowledge that is essential to fostering skill and talent development. This very influential guidance from coaches can only be achieved through a positive coach-athlete relationship and high quality feedback and should receive attention in setting up coach education programmes (Jowett & Cockerill, 2003).

Jowett and Clark-Carter (2006) posit that in sport coaching the guidance of the coach is important for two reasons, namely 1) because of the impact of coaching on athletes' performance and 2) because of the positive dynamics which influence athletes, coaches and the sporting environment broadly. Coach guidance also has great psychological significance for the development and stability of athletes. In a similar vein, Martindale et al. (2005) and Janelle and Hillman (2003) suggest that coach guidance, which encourage the integration of sport specific skills that can be used currently and in the future by athletes, are an integral part of the talent development environment.

Feedback

The second factor accounted for 12.91% of the variance with an eigenvalue of 2.768. The six items that loaded on this factor mainly reflect the feedback and communication received from coaches and supporting staff members. Coaching feedback can be defined as the information conveyed to athletes about the extent to which their behaviours and performance correspond to expectations (Hein & Koka, 2007). Keegan, Spray, Harwood and Lavallee (2010) reported on the significance of coaches' influence on the motivation of athletes through their verbal feedback or behavioural reinforcement. This coaching behaviour is of great significance and value since it directly transmits information about the athletes' competence, probably the most important aspect that a coach tries to directly and positively influence and develop (Horn, Glenn & Wentzell, 1993). This underlines the fact that coaching feedback should mainly be encouraging and supportive (McArdle & Duda, 2002), and that the quality of the coach feedback is of much higher importance than the frequency or amount of feedback (Stein, Bloom & Sabiston, 2012). Carpentier and Mageau (2013) identified 8 important characteristics of feedback and suggest that feedback must be empathic, paired with choices of solutions and based on clear and attainable objectives. Furthermore, it should also avoid person-related statements, should be paired with tips, be delivered promptly, privately and in a considerate tone of voice. When feedback is administered with these characteristics in mind, it fosters a two-fold function, namely motivating the athletes through information received as well as guiding them in putting greater effort on specific changes needed in their performances (Weinberg & Gould, 2011). This factor has the potential to foster or

deject talented athletes in their quest towards success and should therefore be positively and carefully cultivated into the talent development environment.

Goal setting

This factor had 4 items that were highly loaded and accounted for 11.78% of the variance with an eigenvalue of 1.392. Goals and setting of goals is an extremely valuable factor in the development and advancement of sport environments and nurturing of talents. According to Cox (2007) goal setting is, by nature, a matter of cognition and motivation. Cognitively it requires the athlete to think and plan and, with regard to motivation, it energises and mobilises drive within a specific environment. These aspects are crucial building blocks that are conducive to performance enhancements. According to Latham and Locke (1991), goal setting can influence performance in four basic ways, namely to direct attention, mobilise effort, induce persistence and contribute to the development of new learning strategies. However, the authors also argued that the process of setting goals alone does not ensure improvement in performance or productivity. Weinberg (2010) suggests that coaches should carefully consider the situational constraints, individual focus and team dynamics as well as to maximise the talent development environment. The specific cultivated training and performance environment will determine the interaction of the athletes with their goal orientation and the situational goal climate (Keegan et al., 2010). It is only from this positive and motivational climate (Weinberg, 2010) that athletes are able to develop proneness towards adopting and striving towards certain goals (Keegan et al., 2010). Once again, the influential role that the coach plays in fostering a positive goal setting environment is of utmost importance in order to develop talent.

Support

The fourth factor, *support*, accounted for 11.72% of the variance in item scores with an eigenvalue of 1.174. The four items that loaded to this factor reflected the importance of support provided by key role players such as coaches, friends, family members, mental trainers, physical conditioners and physiotherapists in the development of a nurturing talent development environment. According to Harwood, Spray and Keegan (2008) the coach evidently remains an important provider of social support and the coaching process. Not only do coaches represent important authority figures, but they are also seen as mentors, confidants and motivators (Carpentier & Mageau, 2013). Keegan et al.'s (2010) study which reported the significant influence that coaches and parents play regarding the motivation of athletes also supports this view. Athletes find themselves within a social integration situation that reflects a number of different types of relationships in which they participate (Rees, Ingledew & Hardey, 1999).

According to Cohen, Underwood and Gottlieb (2000), perceived support is strongly related to psychological, physiological, and behavioral outcomes, including self-efficacy, self-confidence, and sports performance (Rees & Freeman, 2007; Freeman & Rees, 2009). When considering the fact that university students are, in many instances, detached from their home while pursuing their studies, their parent-athlete relationship is disconnected in a way with less parental support. In this regard, the supporting role of the coach and trainers, as well as teammates and friends will increase. Keegan et al., (2010) also reported that relationships among athlete peers can either endorse or discourage certain achievement motivations such as affect, cognition and goal adoptions. From the current study it is also evident that athletes value good peer relationships as a contributing factor to success. Hall and Moss (1998) opine that by providing appropriate support and resources individuals are assisted in assessing their own identities, values, strengths and weaknesses so they are able to get a sense of their ability and develop their own career path.

Long-term focus

The fifth factor accounted for 10.60% of the variance with an eigenvalue of 1.038. Only two items loaded on this factor which relates to the acquisition and improvement of a long-term development focus in order to achieve one's own true talent over an extended period of time. Statistics from Bloom (1985) highlights the poor predictive validity of junior performance standards for later success. The study emphasised that less than 10% of the successful elite adult athletes were at a top performance level as a junior athlete at the age of 11 or 12 years. This implies that the necessity to perform at a high level as a junior athlete is decidedly over-rated and that the short-term performance goals achieved are indeed a short sighted avenue to pursue (Martindale et al., 2005). The focus in achieving short term performance outcomes should make way for the development of an explicit long term vision (Martindale et al., 2005).

The need for the systematic development of fundamental physical and movement skills (Moore, Collins and Burwitz, 1998; Schmidt & Wrisberg, 2000) and fundamental mental skills, such as commitment and persistence (Bloom, 1985; Talbot-Honeck & Orlick, 1998; Gould et al., 2002) is deemed the way forward in the development of sporting talent (Bloom, 1985; Van Rossum, 2001). Since the nature of development influence the short term performance level, athletes should be educated and instructed to understand the challenges as they develop (Abbott, Collins, Martindale & Sowerby, 2002) and that the pursuit of early specialisation and short sighted goals, may not be advantageous in the long run (Gould et al., 2002). Athletes should be afforded the opportunity to engage in the setting of long term developmental goals and be involved in the decision making process when considering the way forward in terms of their development and participation. This will also affect their self-motivation and pursuit of the correct skills development

positively (Martindale et al., 2010). Athletes should therefore be guided in regard to their planned long term participation as well as the proposed age at which they are expected to reach their peak performance (Smith, 2003). When taking the 5th factor into account, athletes will consider the 10 to 18 years of competitive participation in a specific sport that is needed before reaching their highest performance potential (Bompa, 1999).

Implications for further research

The current study investigated the talent development environment from a coach's perspective. In most sport organisations top executive management is ultimately responsible for talent management activities. It would therefore be important that further studies investigate the development of the supportive talent development environment from a management perspective. Furthermore, rich and perhaps more meaningful data could be obtained through semi-structured qualitative interviews with important stakeholders such as the management, sport coaches and athletes.

Conclusion

The study, although exploratory, has provided a promising contribution in identifying factors which contribute to the enhancement of a supportive talent development environment for athletes from a coach viewpoint. While this area warrants considerably more research attention, managers have a reasonable starting point to strategically plan for talent development environments at their respective sport organisations. The development of a nurturing talent environment would provide support for athletes during their years of specialisation thereby improving their chances to transition to the elite level.

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