The cognitive emotion regulation strategies and defense mechanisms in the elite athletes

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Abstract

There is no research on the relationship between cognitive emotion regulation strategies and defensive styles especially in elite athletes that face different emotions in the competitive atmosphere. The present study was carried out with the purpose of analyzing the cognitive emotion regulation strategies and defense styles in elite athletes. In total, 385 (285 male and 100 female) elite athletes were selected applying random cluster sampling method. All the participants completed cognitive emotion regulation questionnaire short version and Defense Styles Questionnaire version 40. The results showed that mature defense style is positively associated with acceptance, positive refocusing, and positive reappraisal; where as, it is negatively associated with self-blame. Immature defense style was negatively associated with acceptance and positive reappraisal but positively associated with rumination. Moreover, neurotic defense style was negatively associated with acceptance but positively associated with self-blame. The results of regression analysis indicated that mature defense styles can be positively predicted by acceptance and positive refocusing. In addition, self-blame could positively predict the neurotic defense style and both immature, neurotic defense styles could be negatively predicted by acceptance. It can be concluded that ego defense mechanisms are influenced by cognitive regulation unconsciously.

Keywords: Athletes, Cognitive, Defense Mechanisms, Regulation

Introduction

Athletes like most people in progressive efforts are under a lot of pressure, for optimal performance [1]. Athletes experience a lot of stress because of the psychological demands of competition, fear of failure, feelings of inadequacy, guilt, loss of control, parental involvement, performance achievement, personal conflicts, reward, rivalry, social evaluation, media security, and dastardly behavior [1].

The functional effects of emotion in sports may be used as facilitators (useful, optimal, and positive), destructive (harmful, dysfunctional, and negative) or neutral. Emotional experiences related to athletic performance show that competitive athletes will usually encounter three situations, including how they recognize the emotional states associated with individual achievement and poor performance; how they anticipate the relationship between emotion and performance; and how they choose the techniques of self-regulation and emotional regulation [2].

According to previous studies, high competitive level athletes who experience various stressors need to use different coping strategies [3]. Cognitive emotion regulation strategies are useful to cope with stress and increase, decrease, or maintain emotions [4]. These strategies have been considered

synonymous with cognitive coping, which refers to the processes through which people manage the input information of stimulating emotion, especially when the person will be faced with a negative emotional experience or a threatening event [5]. The cognitive emotion regulation strategies can be created in different strategies such as adaptive (acceptance, positive refocusing, planning, positive appraisal, and putting into perspective) and maladaptive (self-blame, blaming others, catastrophising, and rumination) strategies [4].

Emotion regulation plays a prominent role in the development and maintenance of emotional disorders and includes a wide range of conscious and unconscious processes [6]. In fact, in emotion regulation, there is the need for the optimal interaction of cognition and emotion to deal with negative situations. Because in most people, cognitive interpretation determine people's reactions [7]. In new approaches, the cause of emotional disorders are attributed to deficit in cognitive control so that difficulty in controlling negative emotions are related to negative thoughts and beliefs about worry and also using maladaptive coping [8].

There is a lot of stress on athletes in professional sports that may eliminate their emotional balance [9]. When the cognitive emotion regulation strategies of athletes have been defective or deficient, their psychological distress will be increased; therefore, the athletes may unconsciously use mental mechanisms. Defense mechanisms are automatic regulating processes that act to reduce cognitive dissonance and minimize sudden changes in internal and external reality by influencing the perception of threatening events [10]. Defense mechanisms can be defined as the ego's unconscious strategies to deal with anxiety, protecting feelings of inadequacy, and maintaining self-esteem [11].

Andrews, Singh and Bond [12] divided 20 defense mechanisms into three; mature, neurotic and immature defense styles [12]. Mature defense mechanisms are considered as an adaptive, normal, and efficient exposure methods while neurotic and immature defense mechanisms are maladaptive and dysfunctional exposure methods [13]. In general, defense mechanisms distort the perception of emotional consequences; for example, in reaction formation defense mechanism, feelings of aggression will transform into more acceptable affection (the opposite). Defenses regulate emotional experiences through attention shift which prevent conscious processing of distorted information [14].

The concept of cognitive emotion regulation strategies is related to social cognitive perspective; while, defense mechanisms are related to psychoanalysis view. Within each of these perspectives, the functional role of emotion regulation strategies or defense mechanisms in individual compatibility or their dysfunctional role are widely known. Recent studies have shown that there is a relationship between coping strategies and defense mechanisms [15]. For example, in investigating the role of defense mechanisms and coping strategies on marital satisfaction, it was found that the avoidance strategy and immature defenses are negatively associated with marital satisfaction while reappraisal strategies and mature defenses, are positively correlated with marital adjustment. According to previous studies, both the coping strategies and the defense mechanisms can be created as a result of general threatening situations or very specific situations [16]. In a study on college students, it was found that immature defenses are associated with maladaptive coping processes while mature defenses are associated with adaptive coping processes [17].

Despite the importance of defense mechanisms in coping with stressful situations [16], there are few studies on the role of defense mechanisms in sports and the role of these mechanisms have been ignored in the field of sports psychology. In an exploratory study on athletes, it was shown that defense mechanisms are essential to increase compatibility with sport performance, and there is a significant relationship between

coping styles and defensive styles [18]. Although researchers have discussed a wide range of emotions in sports [19,20], there is no research on the relationship between cognitive emotion regulation strategies and defensive styles, especially in elite athletes that face different emotions in the competitive atmosphere.

Such a study will be an attempt to act according to the same concepts and structures in psychoanalysis and cognitive-behavioral views. Therefore, the aim of this study is to analyze the cognitive emotion regulation strategies and defense styles in elite athletes.

Method

This cross-sectional study was done in Tehran in 2014. The participants of this study consisted of Iranian elite athletes (male and female) from 10 sports; 4 team sports (football, handball, volleyball, and basketball) and 6 individual sports (track and field, wrestling, weightlifting, wushu, shooting, and canoeing) who were selected using random cluster sampling method. So that, 10 sports for the first stage sampling were selected from the different federations, the next step among these groups of sports, 405 elite athletes were chosen.as the final sample. After eliminating incomplete questionnaires, 385 (285 men and 100 women) elite athletes were recruited. The sample selection criterion was highly competitive athletes which experience national championships. In this study, the principles of determining the sample size were used in a multivariate regression analysis and structural equation modeling. In multivariate regression analysis, the ratio of sample size (observations) to the independent variables should not be less than 5.

Defense Styles Questionnaire (DSQ): This scale measures defensive behavior through empirical evaluation of consciousness derivatives of defense mechanisms in everyday life. The new version (DSQ-40) was developed by Andrews et al, [12] which contains 40 items with 20 defense mechanisms and consists three levels; mature (4 subscale: sublimation, anticipation, humor) (8 items), immature ((12 subscale:

rationalization, projection, denial) (24 items), and neurotic (4 subscale: reaction formation) (8 items) [12]. In this study, it a good internal consistency was found for the factors of this scale (Cronbach's alpha of 0.76 to 0.79) and also test-retest correlation coefficients of 0.61 to 0.79, which represents a good reliability of scale. The scoring scale is based on 9-degree Likert scale. A total score for each of defense mechanisms was ranged from 2 to18. Higher scores indicate greater defense mechanisms.

Cognitive Emotion Regulation Questionnaire short version (CERQ-P- short): This scale was developed by Garnefski and Kraaij [4] and includes 18 items and measures 9 sub-scale as an adaptive (acceptance, positive refocusing, planning, positive reappraisal, and Putting into perspective) and maladaptive (self-blame, blaming others, catastrophising, and rumination) strategies. Questions were answered based on a 5 Likert scale ranging from almost never to almost always. The reliability coefficients through test-retest for subscales were obtained in the range of 0.41 to 0.59 after 5 months [4]. In Iran, the results of Cronbach's alpha was in the range of 0.68 to 0.82 indicating that the 9 subscales of the questionnaire has a good validity [21]. The range of Cronbach's alpha in the present study was 0.71 to 0.78 which shows the acceptable validity of the questionnaire and gives a total score for each of sub-scale ranging from 2 to 10. Higher scores indicate greater cognitive emotion regulation questionnaire.

Results

The indicators and methods of descriptive and inferential statistics (Pearson's correlation and multivariate regression analyses) were used for the statistical analysis. The mean age of the participants was 23.5 in a range of 18 to 31 years with a standard deviation of 2.98. Table 1 shows the descriptive indicators of cognitive emotion regulation strategies and defense styles.

The results of pearson correlation in Table 2 shows that mature defense style was positively associated with acceptance, positive

refocusing, positive reappraisal but negatively associated with self-blame. Immature defense style was negatively associated with acceptance, positive reappraisal but positively associated

with rumination. Furthermore, neurotic defense style was negatively associated with acceptance but positively associated with self-blame.

Table 1 *Descriptive indicators of cognitive emotion regulation strategies and defense styles*

Variables	M	SD	Minimum	Maximum
Acceptance	4.90	1.94	2	10
Positive refocusing	6.75	2.11	2	10
Positive appraisal	7.42	2.33	2	10
Planning	7.91	2.17	2	10
Putting into perspective	6.99	2.01	2	10
Self-blame	4.72	1.50	2	10
Blaming other	4.18	1.42	2	10
Rumination	6.07	1.85	2	10
Catastrophising	5.74	1.73	2	10
Mature defense style	51.81	8.18	19	72
Immature defense style	111.68	26.11	48	211
Neurotic defense style	37.25	9.21	14	68

p<0.01**   p<0.05*

Table 2 *Pearson correlation coefficient between defense styles and cognitive emotion regulation strategies*

Variables	Acceptance	Positive refocusing	Positive reappraisal	Planning	Putting into perspective	Self-blame	Blaming others	Rumination	Catastrophising
Mature defense	0.49**	0.32**	0.15*	0.10	0.11	-0.14*	-0.09	-0.02	-0.11
Immature defense	-0.25**	-0.05	-0.13*	-0.11	-0.07	0.08	0.05	0.15*	0.12
Neurotic defense	-0.22**	-.011	-0.05	-0.08	-0.10	0.39**	0.09	0.06	0.03

p<0.01**   p<0.05*

In the next step, to determine the contribution of changes related to each criterion, variables were analyzed using a stepwise multiple regression analysis. To examine the independence of errors in all equations, initially presuppositions of regression model were analyzed. Indicators of colinearity tolerance coefficients (0.7 to 1) and variance tolerance factor (1 to 1.29)

showed that there are not colinearity among the predictive variables and the results of the regression model were reliable. The value of Durbin-Watson test indicated no serial correlation (1.91). Skewness and kurtosis were reported less than 1.96, so normal distribution of the data was assumed and parametric tests were run.

Table 3 *Results of stepwise regression analysis of cognitive emotion regulation strategies on mature defense style*

Criterion variable	Predictor variables	R	R Square	F	B	Beta	t
Mature defense style	Acceptance	0.53	0.32	13.80**	0.45	0.29	6.70**
	Positive refocusing				0.27	0.27	5.70*
Immature defense style	Acceptance	0.41	0.18	8.50**	-0.41	-0.26	-2.78*
Neurotic defense style	Self-blame	0.41	0.18	9.78**	0.52	0.27	3.70**
	Acceptance	0.43	0.20	7.98**	-0.35	-0.23	-2.57*

p<0.01**   p<0.05*

According to the results presented in Table 3 and with respect to coefficients of determination in the first step of the regression analysis, the

acceptance explained 29% of variation in the criteria variables (mature defense style) (p<0.01). In the second step of analysis, adding

the positive refocusing increased the power of prediction by 32% and this was significant (p<0.01). In general, acceptance and the positive refocusing could predict 32% variance of the mature defense style. Moreover, based on the coefficients of determination in the first step of analysis, acceptance explained 18% of variation in the criteria variables (immature defense style) (p<0.01).

According to the results presented in Table 3 and considering the coefficients of determination in the first step of analysis, self-blame explained 18% of variation in the criteria variables (neurotic defense style) (p<0.01). In the second step of analysis, adding the acceptance, increased the power of prediction by 20% and this was significant (p<0.01). In general, self-blame and acceptance could predict 20% variance of the neurotic defense style.

Discussion

The present study was carried out with the purpose of analyzing the cognitive emotion regulation strategies and defense styles in elite athletes. The results showed that mature defense style is positively associated with acceptance and refocusing but negatively associated with self-blame. Immature defense style was negatively associated with acceptance and positive reappraisal but positively associated with rumination. In addition, neurotic defense style was negatively associated with acceptance but positively associated with self-blame. These findings are aligned with Bouchard & Theriault [16], Callahan & Chabrol [17], Nicolas & Jebrane [18], Maricutoiu & Crasovan [22], Cramer [23], and Kramer's [15] studies. According to these studies, there are common characteristics between defense styles and coping styles, and both play a crucial role in adaptation [16]. Defense mechanisms can facilitate or destroy cognitive or behavioral coping [15]. Adaptive coping style can be restricted by immature defense mechanisms and strengthened by mature defense mechanisms [15]. According to Maricutoiu & Crasovan [22], coping strategies and defense styles are similar concepts that

describe the same adaptation processes.
The results of regression analysis indicated that mature defense style can be positively predicted by acceptance and positive refocusing. Moreover, both immature and neurotic defense styles could be negatively predicted by acceptance. Therefore, the athletes who regulateed their emotions using cognitive strategies (acceptance and positive refocusing), had tried to use more adaptive defense mechanisms (suppression, anticipation, and sublimation). In addition, athletes who used more self-blame strategy in unpleasant situations, had tried to use more maladaptive defensive mechanisms (denial, rationalization, and projection). These result are in line with Nicholas and Jebran [18] who compared high performance athletes' level with low performance athletes' level using more mature defensive style. According to aforementioned study, reducing the use of neurotic defense mechanisms, especially in difficult and stressful conditions of competition, can help athletes increase their chances of success by confident and positive adaptation with negative experiences of competition. Sun and Wu [24] also showed that the successful self-regulation of athletes occurre in the psychological state of calm, flow state and focus on sport performance; while, the unsuccessful self-regulation occurs in conditions such as stress, mental fatigue, and lack of mental performance.

Both of the defense mechanisms and cognitive regulation emotion strategies are the structures that explain how self-protection occurred against intense and negative emotions [25]. Based on neurological studies, the neurological processing of emotional information was conducted in the amygdala, which is one of the subcortical brain structures [26]. Therefore, emotions are experienced at different levels of consciousness and people are not aware of some emotions or of their impact on behavior. The defenses regulate emotional experiences through shifting attention and prevent the conscious processing of annoying information.

Cognitive strategies (accepting and positive refocusing) make it possible for the athlete to unconsciously use more mature defense mechanisms for managing and regulating emotions. In a nutshell, tt can be concluded that ego defense mechanisms are influenced by cognitive regulation in an unconscious level.

According to Cramer, there is no difference between defense mechanisms and coping processes in terms of performance and adaptability index [23]. The aim of both processes are emotion regulation and balancing of the body's systems. Defenses in the adaptability level regulate the negative effect by balancing between the unacceptable impulses and expectations of society and between expectations and coping resources.

According to Vaillant, defenses are the structures of the mind and behavior with the aim of creativity, maintaining health, and creating the coping [10]. People with high creativity use more defense mechanisms like humor, sublimation and suppression than people with low creativity, [27]. Elite athletes are also placed in the process of sublimation defense with competitive sports.

According to similar studies, negative assessments and negative emotions during a race have a debilitating effect on the future of an athlete's performance and affects the behavior of athletes due to lack of athlete's control over thoughts [28]. For example, the amount of emotional intelligence and its components, such as emotion regulation and cognitive processing of information are more significant in athlete students than in non-athlete students [29]. Athletes by regulating their emotions, could be stronger and more efficient [30]. The players who manage their emotions successfully can use such experienced emotions during competition to improve their performance [31].

This study had some limitations, including the use of athletes sampling and selecting only from Iran elite athletes. Therefore, generalization of the findings is not possible. Further research is recommended to be conducted on athletes from other countries while considering the cultural and ethnic status of the athletes.

Conclusion

According to the results of the study, athletes could create an efficient sport environment by improving the cognitive emotion regulation skills and defensive styles. The study provides an encouragement for the integration of results from the two theoretical perspectives in sports psychology. Training cognitive emotion regulation strategies and defense mechanisms as a coping strategy are suggested for promoting psychological well-being and solving conflicts related to the demands of athletes. Athletes with insight into psychological mechanisms will achieve satisfying integrity and the instinctive drives for managing their social environment.

Contribution
Study design:AM
Data Collection and analysis: MH, AM, MVM, HY
Manuscript preparation: AM, MVM

Conflict of Interest
"The authors declare that they have no competing interest".

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