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Influence of Regulatory Adaptation on Sport Performance

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ABSTRACT

The purpose of this study is to investigate the influence of the regulatory adaptation on sport performance. Regulatory Focus Theory thinks that there are two different focus orientations in both individual and environment threat which are promotion focus and prevention focus, respectively. The past studies have verified that when individual's focus orientation is coincident with environmental focus orientation (regulatory adaption), the optimum effect occurs, this conclusion is also verified by many other studies. However, in the sports context, very few researchers applied this theory to explore its effect on sport performance. In view of this, sixty college students were recruited as subjects and conducted simple throwing experiment to examine whether the optimum effect exists when regulatory focus of individuals and situation become adapted. This study measured individual's regulatory focus at first and then manipulated the regulatory focus in the procedure of experiment design. The result of this study supports the presented hypothesis: The influence of relative strength of individual's focus to throwing performance was adjusted by experiment manipulation. Put it plainly, the result shows that with the manipulation of promotion focus, the influence of high relative strength to sport performance is enhanced, similarly, with the manipulation of prevention focus; the influence of low relative strength to sport performance is enhanced too. Overall, the results of this study supports that regulatory focus adaption have an influence on the sport performance.

Key words: Regulatory focus, regulatory focus fit, sport performance

INTRODUCTION

Tailoring Teaching has been a familiar idiom, it means providing different teaching method to subjects according to their individual education degree, characteristic and preference. Although it will be a tough mission to develop different teaching method for each particular person in practice. One can still find a good way to simplify target groups just by integrating factors like requirement, preference, habit, etc. and dividing the individual with similar factors into several small groups.

Regulatory Focus Theory which was put forward by psychologist Higgins (1997) is one of the simplified principles

mentioned above. He thought that every person has two different regulatory focus which are promotion focus and prevention focus. Promotion focus pursues satisfaction of one's demand and realization of one's goal, any positive results brings pleasure. Prevention focus emphasizes satisfaction of security as well as responsibilities and obligations and the loss of any negative results brings pleasure. Depend on his point of view, Regulatory Focus Theory can be used to distinguish different groups, so, it would possible to simplify all the people into two groups according to population nature and develop suitable strategy for the groups to achieve the purpose of individualized. This study, basing on Regulatory Focus Theory and focusing on practical sport

action, explores its application in the field of recreational sports and verifies its adaption on sport performance by controlling experiment procedure.

Regulatory focus have many manifestations, it not only exists in individual goal orientation but also occurs in frameworks of environment and message. For example, the atmosphere of a team may be aggressive or may be law-abiding, when the goal-oriented people join the corresponding team (the promotion focus people join the aggressive team and the prevention focus people join the rigorous team), the phenomenon of (Feeling Right) occurs. This phenomenon is call 'Fit' which is at the core of the operating mechanism of Regulatory Focus Theory. When a person achieve 'Fit' with the environment he is in or with the message he receives, the greatest effect is produced. That is, when the promotion focus people receive promotion focus message, they are more likely to believe its content and then to change their decision and even behavior patterns to achieve the desired objectives.

Regulatory Focus Theory has been confirmed can affect the individual's judgment, decision-making, attitudes, behavior change and performance of task. For example, decision-making behavior of commodities, with toothpaste ad as a theoretical manipulation, fresh breath belongs to promotion focus, prevention of tooth decay belongs to prevention focus which is coincident with the focus of the customers, makes customers to choose the commodities to its adaptation and influence the final decision of consumers, the change of customer's action, different message the subjects received. The message of promotion focus stresses gain of benefit of activity while the message of prevention focus pay attention to the cost of loss for not to participate in the activity. The result shows that when the attention of subjects is coincident with what message they get, they increase the number to take part in activities so to influence their action. In other words, the field of application of regulatory focus theory can used in areas of business, health care, education and recreational sports, etc., because of its ultimate impact. One of the most common is in business to explore the convincing effect of advertisement and the decision-making behavior of customer while the application in the field of recreational sports is relatively rare.

In fact, in the field of recreational sports, only a few studies talk about the relationship between behavior and theory. For example, Chih-Long Yen talked about connection between baseball fans and the game, however, although some literature has verified behavioral change related research but they are limited to the local movement behavior. For example, reaction behavior fingers (Worthy *et al.*, 2007) or Shoot-the-Moon operation behavior experiment (Higgins *et al.*, 2010), these studies confirm that the regulatory focus theory does affect behavior. But these cannot be considered as sport which has a specific rule. In the current literature, the closest research about actual athletic performance is shooting performance of football (Plessner *et al.*, 2009). Plessner *et al.* (2009) made two assumptions in his preliminary research: (1) Different sports

have different focal regulation, (2) Regulation of team ball sport depends on specialization of player. Subjects of Plessner's experiment came from sports club near Heidelberg. In the 211 tested athletes, there were 142 men and 69 women. These subjects were engaged in a total of eight sports including basketball, field hockey, football, American football, athletics, swimming, tennis and gymnastics. The first four are group projects and the after four are individual projects. The subjects were asked to fill out a questionnaire about oriented focus and were assigned into two different groups as team sports versus individual sports and offensive versus defensive. The result find that adjustment orientation of team sport tend to promotion focus while adjustment orientation of individual sport tend to prevention focus and the offensive players tend to promotion focus.

After specified the difference of variation between team sports and individual sports, offensive and defensive, Plessner focus his research on football by discussing regulatory focus under different cases in team sport. Subjects were 20 male football league players from Heidelberg who participate in regional football game with an age range of twenty-three to thirty nine. Individual-oriented focus in the questionnaire used in the study was changed to focus on describing sport goals. The question include "I afraid of suffering failure before achieving my goal", "I often imagine how I successfully achieve my goal". And in accordance with the situation of twelve yards free throws in football game, provided offensive players who participate in the experiment with different focus hint. The offensive players who were provided with promotion focus should get three points at least. The offensive players who were provided with prevention focus should avoid mistakes twice. And the goalkeeper was asked to defense offense from left and right each twice and one time from the center. The result showed that although main effect was not significant, there is a significant interaction between regulatory focus and task framework. And the performance of the prevention focus group was better than the promotion focus group. It also confirmed that the case of free throw fit the case of prevention focus better indirectly. So, when the subjects were provided with prevention focus which fit their mission, they had a better performance.

Although Plessner's study result is coincident with the deduction of theory, it is still questioned, like the control of environment. For pursuing a real sport situation, the football field was chosen as the experimental site, the role of the goalkeeper was the biggest variable except the weather condition and field condition. Even the manipulation of giving order to the goalkeeper to defense so to exclude the problem of successfully defensive rate by the way of randomizing defensive direction became a uncontrollable factor to the experiment which make the result not pure enough to verify the actual effect of Regulatory Focus Theory in the field of recreational sports.

It is known from the above experiment that Regulatory Focus Theory does not show a stable effect in the field of recreational sports, of which there are many issues that need to

improve. For example, indoor field is a better choice for team sport because it reduces environmental impact. Besides, simplification form of scoring and reduction of face to face offensive and defensive (like free throw in basketball, shooting) or direct coordination between individual project and situation or purify the effect of regulatory focus are all need to improve.

This study makes regulation for several problems that can be improved. At first, the new study rules out possible confounding factors. In the domain of environment affect, by excluding of variation of climate, affect of light and instability of field can make the environment controllable. Besides, in order to avoid all kinds of sports expertise to become variables affect to the outcome of the study, we chose an easy movement of throwing which fit the people without professional competence. The freshmen were chosen as subjects randomly. After elimination the problem of sports expertise, we took use of implementation about focus situation and make interaction analysis with individual focus orientation of subjects to verify whether the actual performance of the subjects affected by regulatory focus operation. The whole experiment was purer than the study of Plessner while could still verify whether regulatory focus theory has a significant effect on actual sport performance.

According to regulatory focus adaptation hypothesis mentioned above, this study makes assumption for non-adapted conditions as follow: First, when subjects receive message of promotion focus, their individual performance will have a significant improvement. Second, when subjects receive message of prevention focus, their individual performance will have a significant improvement.

MATERIALS AND METHODS

Objects: The sample of this study was 60 undergraduate from Yongin University with age scope from 19-24. The subjects filled in the registration form in the laboratory and complete the experiments at a specified time, it cost about 30 min. After all the data was recovered, the researchers conducted a preliminary screening, excluding answer with obvious coping tendencies (For example, all the digit they filled was 3 or 5) and those were not complete and those fail to pass examination. Finally, the number of samples was 51 with 35 boys (68.6%) and 16 girls (31.4%).

Materials and environment: For eliminating the impact of weather and other outer environment, we conducted the experiment indoor. The balls we used in the throwing experiment were white ping-pong designated by the International Table Tennis Federation. The throwing target was a plastic bucket with a diameter of 23 cm and a height of 28 cm, placing 1.8 m from the subjects. Inside the bucket was 3 cm thick bedding of paper so to prevent ping-pongs from popping up and affecting the results. Above the target was electronic display which showed 0-100 of the counter.

Experimental procedure: Every subject would do as the experiment procedure, at first they read and realized experiment procedure and began to fill in the regulatory focus scale. They made throwing exercise after finish filling the regulatory focus scale. Before throwing exercise, movement and rule was illustrated; the subjects sat on the specified position, raised their arms and throw from back to front instead from bottom to top. When they were exercising, the number showed by the counter above the bucket changing. Under the situation of promotion focus, the counter added every 2 point for each hit while it subtracted every 2 point for each hit in the situation of prevention focus. At the end of the exercise, subjects received different message about regulatory focus. Under the situation of promotion focus, the message was “To thank you for your participation, you have a chance to get extra bonus, there are 50 balls in your hand bag, you can get one Yuan for each hit, the more you hit, the more money you get. you can get up to 50 Yuan bonus the maximum”. Under the situation of prevention focus, the message was “To thank you for your participation in this we will provide you 100 Yuan bonus, there are 50 balls in your hand bag, you will lose one Yuan for each miss, the more you miss, the more money you lose. you will lose up to 50 Yuan bonus the maximum”. After receiving the message, the researcher would confirmed one more time to the subject “do you know one ball you hit/miss, you will get/loss one Yuan”. When the subjects began throwing, the researcher manipulated the counter after the subjects (Note, Won KRW 200 is approximately equal to the Yuan CNY 1 Yuan).

Manipulation and examination: After the subjects finishing throwing, they were asked to make a choice between these two choices: (before you miss you ball, the instructions you got were (you can get one Yuan for each hit and you can get up to 50 Yuan the maximum) or (you will lose one Yuan for each ball you miss and you will lose 50 Yuan the maximum). Those who answer the question correctly passed the examination and those who answer the question incorrectly could not passed examination and their experiment data would be eliminated in the following analysis.

Regulatory focus scale: The regulatory focus scale used in this study was translated by Yang Shuwen, authorized by Lockwood *et al.* (2002), etc. It can be divided into two parts which are promotion regulatory focus and preventive regulatory focus, 18 questions in all. Nine points scale is used to evaluate its answer. All topics are all positive title and the higher average score of all subscales indicated the stronger individual-oriented focus. The purpose of the scale is to measure regulation focus tendency of individual habitation. In the study of Yang Shuwen, the internal consistency coefficient of subscale of promotion regulatory focus is 0.85 and the internal consistency coefficient of subscale of preventive regulatory focus is 0.75. In this study, the internal consistency coefficient of subscale of promotion regulatory focus is 0.77 and the internal consistency coefficient of subscale of preventive regulatory focus is 0.78.

RESULTS

Before testing moderating effect, we take use of Pearson product-moment correlation to evaluate the relationship between the variables. We subtract the score of preventive regulatory focus from promotion regulatory focus and get the tendency of individual regulation (Relative Strength). The higher score means the strength of individual promotion regulatory focus is stronger than preventive regulatory focus. The average of relative strength is 0.90 and the standard deviation is 1.55. Table 1 show that gender is the only factor significantly associated with sports performance ($r = 0.34$, $p < 0.05$). While sports performance didn't show a significant association between experiment manipulation and relative strength ($r = 0.09$, $p = 0.55$).

Next, the researchers will conduct hierarchical regression analysis, investigate the effects of relative strength to sport performance when took the experiment manipulation as the manipulated variable. Gender was placed on the first layer of regression equation as a control variable; the relative strength and experiment manipulation are placed in the second layer while the product of relative strength and experiment manipulation is placed in the third layer. If the regression coefficient of the third layer reaches a significant effect, it indicates a significant interaction. After the factor of gender is control, it can be found that there is no significant association between experiment manipulation ($b = 1.09$, ns) and relative strength ($b = 1.75$, ns) when the factor of gender is control. However, the product of experiment manipulation and relative strength is significant ($b = 3.83$, $p < 0.05$) which mean the impact of relative strength to sport performance was regulated by experiment manipulation (Table 2).

The adjusted renderings can be drawn following the advice of West *et al.* (1996) so that readers can understand the result without too much effort. The way we cope with it is to divide the relative strength and experiment manipulation into high relative strength(+1) versus low relative strength(-1) and promotion focus group(+1) and preventative focus group(-1) by positive and negative standard deviations and substituted them into the regression equation:

$$(Y = b1X+b2Z+b3ZX = (b1+b3Z)X+(b2Z+b0)$$

Inside the regression equation, b_0 is intercept and b_1 , b_2 , b_3 are independent variables, adjusting variables and unstandardized regression coefficients of cross multiply items. According to the regression equation, the average score of subjects from high relative strength and promotion focus group is $Y = 0.82+1.16+3.83+35.19 = 41$ and the average score of subjects from high relative strength and preventative focus group is $Y = (-0.82)-1.16+3.83+35.19 = 37.04$. Besides, the average score of subjects from low relative strength and promotion focus group is $Y = (-0.82)+1.16-3.83+35.19 = 31.7$ and the average score of subjects from high relative strength and preventative focus group is $Y = 0.82-1.16-3.83+35.19 = 31.02$. The result (Fig. 1) shows that the impact of relative

Table 1: Variable correlation matrix

Variables	M	SD	1	2	3	4
Gender	-	-	1.00			
Experiment	-	-	-0.12	1.00		
Relative strength	0.90	1.55	-0.13	0.05	1.00	
Sport performance	38.78	13.54	0.34*	0.04	0.09	1.00

* $p < 0.05$

Table 2: Hierarchical regression summary table

Variables	M1	M2	M3
Gender	9.79*	10.55*	10.16*
Experiment manipulation (regulatory focus)		1.09	1.16
Relative strength		1.75	0.82
Experiment manipulation			
Relative strength			3.83*
ΔR^2	0.12	0.02	0.08
F	6.35*	2.52	3.12*
ΔF		0.64	4.38*

* $p < 0.05$. Tables are not standardized coefficient of the regression coefficients

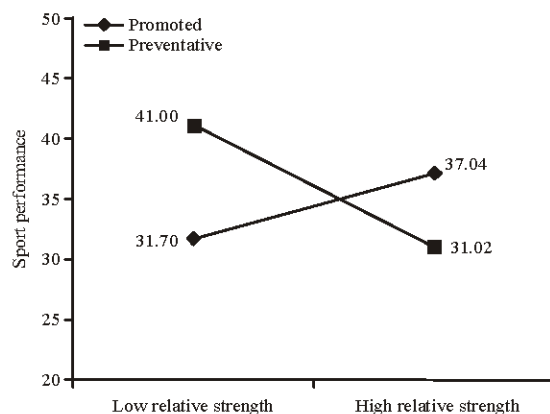


Fig. 1: Regulating renderings of situation manipulation to relative strength

strength to sport performance was enhanced in the promotion focus groups; in contrast, the impact of relative strength to sport performance is weakened in the preventative focus groups.

DISCUSSION

The main problem of this study is to investigate if there is a substantial impact of regulatory focus theory on the individual's athletic performance. In the common sports events, athletic performance is a key factor of success. So, at the critical moment, the players should strengthen the offensive, scoring actively or avoid mistakes and hold their ground? These two choices are always instruction they get from their coach and are indicate two focus orientations in Regulatory Focus Theory which are promotion focus and preventative focus. So the researchers created a similar situation and imitated and extended Plessner *et al.* (2009) football study by giving two different hints to try to verify the effect of regulatory focus. According to what we got, it was found that when individual's regulatory orientation consistent with the mission situation framework, the subjects performed

the best because the effect of adaption. From the significant interaction result in this study, the effect of regulatory focus is proved in motor skills. Regulatory Focus Theory claims that adaption effect achieved only when individual's focus coincident with mission situation and message framework. It means the premise of the establishment of the optimum effect must be the mutual cooperation between individual's focus orientation and mission and message. If individual's focus orientation or situation is open to independent, the basic requirements of Regulatory Focus Theory are not satisfied (Aaker and Lee, 2006). This may explain why the main effect of argument is not significant in most study about Regulatory Focus Theory. The result of this study is identical to Plessner's study on football performance. Both of them showed that the two main effect of experiment manipulation and regulator focus don't reach significant level while the interaction item reaches a significant level. Besides, in the study of Kutzner *et al.* (2012) which is based on golf and observe player's putting performance by manipulating message and focus orientation of the golf players. We find that in his study experiment manipulation and regulator focus don't reach significant level as well while the interaction item reach a significant level. So, in the present study, although both experiment manipulation and relative score could not make a significant predictor of throwing performance, the interaction between experiment manipulation and relative score does make a significant predictor of throwing performance. It means that the influence of relative strength of individual's regulatory focus is adjusted by experiment manipulation and this is the premise of Regulatory Focus Theory. So, Regulatory Focus Theory was proved by empirical evidence in our study once again. The result of this study is quite similar to the result of Plessner which support the view that sports performance is affected by regulatory focus theory. However, in the football study of Plessner, the research environment close to the actual sporting event scenario, in which the subjects, who had received instruction about promotion focus and preventative focus, were asked to kick penalties on the outdoor field and the influence of Regulatory Focus Theory was observed and record. Similarly, in the study base on golf of Kutzner *et al.* (2012), the experimental environment was the outdoor hillside. Besides, as the test requires some specialized skills, the subjects were all professional football and golf players. Although both their results shows that sports performance is affected by regulatory focus theory, people cannot help questioning them as the environmental and technical factors were not completely controllable. Because of the above factors, the present study was conducted indoor in order to exclude the impact of environment. What's more, the test was replaced which needs higher degree of specialization with simple throwing action so to exclude the impact of individual skill to the final sport performance. Subjects in this study and therefore, the general public mostly and help to prove the applicability of regulatory focus theory for everyone better.

Practical application: The result of the present study shows that individual's sport performance is influenced by one's regulatory focus tendency and situation thread. This also means that Regulatory Focus Theory may have practical implications in recreational sports. From the director's point of view, when the coaches realize their player's focus orientation, they can provide different focus orientation with different instruction methods to improve the results of the training. When issuing tactics, Regulatory Focus Theory can be used to instruct arrangement of offensive or defensive. From the players' point of view, when the message or mission he get match his focus orientation, they can be able to perform well or even enhance performance. In the fitness club, the instructor can influence members' sport performance by conveying the message of regulatory focus, so to enhance members' exercise to achieve the purposes of sports and fitness; this may help them to promote commercial interests by increasing members indirectly.

Limitations of the study: In the study, subjects only had simple throwing test which may makes the results inappropriate to deduce movement that needs more skill sets. This is because the easy throwing movement is a far cry from the actual sport, like basketball shooting. But we just know that Regulatory Focus Theory does have promotion effect to the excellent players and the easy action so far. So, in the real situation, whether the learner can learn a motor skill through regulatory focus is what this study cannot explore and is a limitation of the effectiveness of Regulatory Focus Theory. Although it has been verified that regulatory focus will affect sport performance, whether the regulation effectiveness maintain when there are influence factors like time pressure is still not sure. So the future research can move in the direction of the real sport situation so to perfect the result. Besides, there is no discussion about psychological functioning mechanism of regulatory adaption in this study, although it has mentioned above that the reason for regulatory adaption is the phenomenon of feeling right, there is no relative measure about it. The future researchers were recommended to further explore its psychological functioning mechanism.

CONCLUSION

This study uphold the concept of individualized and regard the Regulatory Focus Theory as the theme, explore the influence of Regulatory Focus Theory to sport performance. In the past study, it has been verified that regulatory focus has an influence on the excellent players, further; it was proved that the influence of Regulatory Focus Theory to easy action in this study. This result is an improvement for application of Regulatory Focus Theory in the field of recreational sports. It was believed that the results of this study can also be a basis for future research about influence of Regulatory Focus Theory to sports which means base on Regulatory Focus Theory and extend its usefulness in the field of sport.

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