

## The interaction between self-efficacy and sports performance

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### Abstract

Recently Bandura's self-efficacy theory (1977) has been adapted to a variety of academic fields. The core of the theory suggests that self-efficacy is one of the psychological components that influence or change human behaviour. The present study focused on sports performance and examined how it interacts with self-efficacy. In this study the degree of self-efficacy was divided into magnitude and strength, and analysed separately. 165 Japanese amateur golfers (152 men, 13 women) were measured for their degree of self-efficacy just before competition. After competitions the degree of self-efficacy was compared with actual score. Our study found that the degree of both magnitude and strength have effect on subsequent performance. Magnitude was found to be a more influential factor of enhanced superior performance. On the other hand, it was found that the actual performance had a great influence on the degree of self-efficacy for future performance.

Key words : Self-Efficacy, Magnitude, Strength, Golf, Performance

### Introduction

Much attention has been paid to Bandura's theory of self-efficacy in a variety of fields. Self-efficacy is defined as the subsequent expectation of our behaviour. A high level of self-efficacy leads individuals to high motivation and concentration. Moreover, self-efficacy can reduce one's anxiety which smoothes human behaviours (Eysenck, 1978). Bandura (1977) holds that the concept of self-efficacy has three dimensions. The first dimension is the level of expectation towards an action. The second dimension is the strength of conviction associated with an expectation. The third dimension is generality, the possibility of adopting self-efficacy mechanism to other scenarios. There are mainly four sources of information used to determine the degree of self-efficacy, namely "Enactive accomplishment,"

"Vicarious experiment," "Verbal persuasion" and "Emotional arousal." Of these sources, enactive accomplishment is considered the most effective factor for improving the level of self-efficacy (Bandura, 1977), while negative experiences decrease the level.

Mahony & Avener (1977) found that each finalist had performance that significantly related to the degree of self-efficacy resulting from the previous competition. Weiss, Weise & Klint (1989) examined self-efficacy and performance of female gymnasts in championship competition and found a significant correlation ( $r=0.57$ ) between the grade of competition and the level of self-efficacy. Apart from these studies, Feltz (1988) reviewed research on the relationship between self-efficacy and sport performance and concluded that these studies suggested that a higher level of self-efficacy leads to superior performance. Unfortunately, there have been

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few studies in which both the magnitude and strength of self-efficacy were measured separately. Therefore, the present study investigated both magnitude and strength of self-efficacy with sports performance.

### Method

The subjects were 165 Japanese amateur golfers (152 men, 13 women) observed in 7 amateur golf competitions. The average age of the subjects was 47.0 (SD=11.1). In order to measure the subject's self-efficacy, a questionnaire was filled out prior to the games. The main contents of the questionnaire were score expectations as magnitude of self-efficacy and the probability of achievement as its strength. The investigation was implemented between 1996 and 1997. In this study, the golf score expected by the subjects was employed as a measure of magnitude, which means magnitude increases as the expected score is lower. With regard to assessing strength, a 10 point scale was utilised. The subjects reported their average score and final score from their last competition.

Follow each competition their scores were recorded and compared with previous average and final scores. Based on these data, the average score (AS), the last score (LS) and the current score (CS) were divided into three groups (Low, Middle, High) utilising the following criterion for classification, "Mean  $\pm$  1/2 SD." Subsequently, these groups were analysed by One Factor Anova. Group LS and CS were classified into two groups (Score up, Score down) in order to analyse the degree of self-efficacy before and after the competitions.

### Result

Table 1 shows that high AS group had the highest magnitude and strength of self-efficacy (magnitude:  $F_{2,160} = 196.8$ ,  $p < .05$ ; strength:  $F_{2,160} = 5.25$ ,  $p < .05$ ). This result shows clearly that those who possess a high level of performance have a higher degree of both magnitude and strength than individuals in other groups.

As can be seen from Table 2, with regard to the relationship between LS and self-efficacy, the high performance group of LS ordered a relatively higher level in both magnitude and strength (magnitude:  $F_{2,139}$

$= 154.52$ ,  $p < .05$ ; strength:  $F_{2,139} = 3.73$ ;  $p < .05$ ). This result supports Bandura's theory (1977) of enactive accomplishment and shows this theory applies to sports performance as well as other human behaviours. Bandura suggested that enactive accomplishment is the most important factor which facilitates self-efficacy. This point may also be applied as an important factor in enhancing performance in sports.

Table 1. Average Score and Self-Efficacy

AS	Magnitude**			Strength**	
	N	M	SD	M	SD
High	49	86.7	4.3	70.8	13.6
Middle	73	96.4	5.7	68.8	18.8
Low	41	113.3	9.1	59.8	19.2

\*\* $p < 0.01$

Table 2. The Last Score and Self-Efficacy

LS	Magnitude**			Strength*	
	N	M	SD	M	SD
High	53	88.5	4.9	69.8	16.1
Middle	48	98.8	5.7	68.8	17.8
Low	41	113.2	9.6	60.8	20.5

\*\* $p < 0.01$

In terms of the relationship between CS and self-efficacy, Table 3 shows individuals who possess a high level of magnitude and strength also recorded superior scores. (magnitude:  $F_{2,162} = 92.68$ ,  $p < .05$ ; strength:  $F_{2,162} = 4.37$ ,  $p < .05$ ). This result supports the higher self-efficacy leads individuals to better performance. In other words, even though individuals possess competent ability or skill, they will not perform as well with lower self-efficacy. This is reminiscent of Schunk (1995), advocated that individuals with high self-efficacy are more willing to participate in work, handle hard work, display long persistence and reach higher level of achievement.

Comparing LS and CS is Table 4. The "Score up" group shows higher magnitude of self-efficacy than the "Score down" group (magnitude:  $t_{140} = 18.13$ ,  $p < .01$ ; strength:  $t_{140} = -1.39$ ,  $p < .20$ ). The data on average scores below 100 were extracted and divided into "Score up and Score down" groups for analysis. The high magnitude group

obviously decreased (improved) their score. This is similar to the findings in Barling and Abel (1983). However, there was no significant relationship between score improvement and self-efficacy strength in both cases. This result may suggest if individuals have vaguely high expectation regardless of degree of strength before performance, actual performance can be better. In other words, the degree of expectation would be more directly associated with improving actual performance.

Table 3. Current Score and Self-Efficacy

CS	Magnitude**			Strength*	
	N	M	SD	M	SD
High	51	87.8	6.8	71.9	15
Middle	66	96.7	6.8	67.5	17.9
Low	48	110.8	11	61.5	19.5

\*\*p<0.01

Table 4. Score Up/Down and Self-Efficacy

	Magnitude			Strength	
	N	M	SD	M	SD
Up	72	91.1	7	68.5	17
Down	70	106.8	11	64.2	19.6

\*\*p<0.01

Table 5. Score Up/Down and Self-Efficacy  
(Average Score below 100)

	Magnitude			Strength	
	N	M	SD	M	SD
Up	17	99.5	6.3	66.5	18.7
Down	59	108.3	9.9	64.5	19.7

\*\*p<0.01

## Discussion

This study investigated the relationship between self-efficacy and amateur golf performance as one of human behaviours. Although there have been a number of studies on the relationship between self-efficacy and human behaviour, it may be difficult to analyse objectively because individuals may not be able to determine consciously the degree of self-efficacy towards one particular behaviour. In addition, self-efficacy as a complex psychological factor could be

influence by other factors.

In this study we employed the score expectation as the magnitude scale in order to assess self-efficacy more objectively. As amateur golf is a single person, less competitive sport, we believe it would be less effected by physical and psychological factors such as opponents or teammates. As far as we observed during the investigation, all subjects in the golf competitions had their own expectations and goal setting, depending on their levels. Therefore, unlike other sports such as team sports, we thought that golf performance was more suitable for examining the relationship between individual self-efficacy and performance.

We found that both magnitude and strength of self-efficacy were significantly associated with individual performance level and actual performance. Moreover, those who had higher magnitude expected and set higher goals, and, subsequently they significantly approached these goals. This supports Bandura's theory and other studies, which asserted that higher self-efficacy result in higher motivation and concentration (Bandura, 1977). High motivation and concentration resulting from high self-efficacy is, in turn, likely to facilitate better performance.

As many research have shown, the most effective way to reinforce self-efficacy is an element of enactive accomplishment in both magnitude and strength. This study also found that enactive accomplishment was a strong determinant factor of the degree of self-efficacy. Thus, enactive accomplishment can lead to high degree of self-efficacy, and may enhance subsequent enactive accomplishment.

With regard to the relationship between the magnitude and strength of self-efficacy and performance, one of the main findings of this study, was that magnitude was a more influential factor in facilitating performance, then was strength. Self-efficacy, however, consists of both magnitude and strength, and considering these two dimensions separately may be important in future studies, because of variety of situation in which both of factor could be related to not only sports performance, but other human behaviours.

### Conclusion

This study found the degree of magnitude and strength of self-efficacy was significantly and directly associated with sports performance, and that magnitude and strength of self-efficacy will function both adhesively and independently, depending upon the situation. Although this study found that the magnitude and strength functioned individually with performance, it left accurate mutual relationship between two factors. Further study will be needed to establish the mechanism behind these relationships.

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## 自己効力感とスポーツパフォーマンスとの相互作用

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本研究では165人の日本人アマチュアゴルファーを対象に自己効力感の大きさ・強度とスポーツパフォーマンスとの関連について検討した。参加者の自己効力感はゴルフコンペ直前に測定され、そのデータを実際のパフォーマンスと比較し関連を調べた。結果として自己効力感の大きさと強度はその後のパフォーマンスに影響を与えており、特に大きさはパフォーマンスの促進に重要な要因となっていることがわかった。さらに、実際のパフォーマンスはその後の自己効力感に影響を与え、自己効力感とスポーツパフォーマンスに相互作用が認められた。

キーワード：自己効力感、大きさ、強度、ゴルフ、パフォーマンス