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The influence of goals, commitment, self-efficacy and self-satisfaction  
on motor performance

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F I N A L

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### Abstract

The study examined how goals combine with other factors in determining performance in a sport setting. More specifically, the effects of goal setting, commitment, self-efficacy, trait-efficacy, ability, and self-satisfaction on tennis performance were examined. Subjects (N=48) performed four trials of a specific service task. Before the third and fourth trials subjects set personal goals. The psychological variables, self-efficacy, self-satisfaction and commitment, were also assessed prior to each trial. Results showed that ability, self-efficacy, goal setting, and goal commitment were predictors of performance at the various stages of the experiment. Analysis of two LISREL VI models (one for each trial) indicated that personal goal setting was affected by level of ability, as well as by perceived self-efficacy and satisfaction. Self-efficacy and goal commitment were a direct as well as indirect determinants of performance. Based on the findings in the proposed model, self-efficacy, goal commitment and personal goal setting appear to be significant determinants of performance in sport setting.

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Locke and Latham (1990) reviewed a great number of studies over the last 25 years which supported the effectiveness of goal setting theory in various settings. Most of these studies have shown that self-efficacy, ability, personal goal setting, performance valence (Bandura & Jourden, 1991; Earley & Lituchy, 1991; Locke, Frederic, Lee, & Bobco, 1984), task strategy (Bandura & Jourden, 1991; Locke et al. 1984), goal level (Cervone, Jiwani, & Wood, 1991;

Garland, 1982) and commitment (Hollenbeck, Williams & Klein, 1989) positively affect performance.

The present study examined goal setting models relating personal goals, self-efficacy expectations, self-satisfaction, goal commitment and performance. In sport and exercise settings, Feltz (1988) and McAuley (1992) reviewed a number of studies that have examined the relationship between efficacy and subsequent performance. Self-efficacy is defined as an expectation that one can successfully perform a specific behavior required to produce a certain outcome (Bandura, 1977). In considering the relationships between self-efficacy and goal setting, Locke and Latham (1990) reported several studies in which self-efficacy affected the level of the personal goals but was also independently related to performance. Specifically, highly efficacious individuals set challenging personal goals, whereas inefficacious individuals set more modest goals for themselves.

Trait efficacy, that is general self-efficacy expectations, is another variable that was examined in a study by Eden (1988). He differentiated between state expectancies (which refer to self-efficacy expectations in a specific setting) and to trait expectancies (which is a cognition concerning generalized self-competence or trait-efficacy). Eden's construct of trait expectancy appears to be a form of generalized efficacy. Results indicated that trait efficacy was positively related to self-efficacy and to personal goals. In a study by Early and Lituchy (1991), trait efficacy had no impact on performance but it was correlated with self-efficacy and personal goal. It appears that trait efficacy is not a direct predictor neither of performance nor of self-efficacy. Rather it probably affects personal goals (Eden, 1988).

According to social cognitive theory, goals are not motivational themselves. The discrepancy created by what individuals do and what they aspire to achieve creates self-dissatisfaction, which serves as an incentive (Bandura & Jourden, 1991). People seek satisfaction from fulfilling valued goals and are prompted to intensify their efforts by discontent with substandard performances. By making self-satisfaction conditional on matching adopted goals, people proactively give direction to their actions and create self-incentives to persist in their efforts until they accomplish what they seek. Relevant studies (Bandura & Cervone, 1983; Bandura & Jourden, 1991) have shown that the higher the self-dissatisfaction with a standard performance, the greater the subsequent intensification of effort. Locke and Latham (1990) concluded that the effect of satisfaction on action is indirect and that it is a key to high performance in conjunction with other factors.

Another variable that has been given a critical role in the goal setting process is goal commitment. The important role of goal commitment in goal setting theory has only recently received recognition (Whight et al. (1994). Goal commitment can be defined as the determination to try for a goal and the persistence in pursuing it over time (Hollenbeck & Klein, 1987). Hollenbeck and Klein (1987) pointed out that the commitment to difficult goals should be distinguished from acceptance of difficult goals. Goal acceptance does not necessarily imply that the individual is bound to the standard. For example, one can initially accept a difficult goal and yet not demonstrate subsequent commitment to that goal over time.

Relevant studies in sport psychology have focused on how commitment influences continued involvement in organized sports (Carpenter, Scanlan,

Simons, & Lobel, 1993; Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993).

In addition, researchers (Hollenbeck & Klein, 1987; Hollenbeck, et al. 1989)

have examined the role of goal commitment in the goal setting process.

Hollenbeck and Klein (1987) stated that commitment implies the extension of effort, over time, toward the accomplishment of an original goal and emphasizes an unwillingness to abandon or to lower the goal. Also, goal acceptance and commitment to goals are necessary conditions for the effectiveness of goal setting. They presented a conceptual model of the antecedent factors that may enhance the commitment to difficult goals. These are situational factors (like publicness, competition, reward structure) and personal factors (like endurance, ability, locus of control) affecting the attractiveness and expectancy of goal attainments.

The Hollenbeck et al (1989) study showed that commitment to difficult goals was higher when goals were made public, when locus of control was internal, and when subjects set personal goals instead of having assigned goals. The study of Lerner and Locke (1995) showed that goal commitment related to self-efficacy, personal goal level and performance in a positive way. Finally, Hollenbeck and Klein (1987) stated that given the central role of goal commitment in goal setting theory, this variable should always be included in goal setting research.

In order to predict performance attainment, studies have attempted to integrate variables into a model of goal setting (Bandura & Jourden, 1991; Early & Lituchy, 1991; Eden, 1988; Garland, 1985; Locke et al., 1984). Locke et al., (1984) showed that assigned goals simultaneously affect an individual's self-efficacy expectations and personal goals which in turn influence performance.

Ability affects self-efficacy expectations or personal goals. Similarly, in the study of Early and Lituchy (1991) assigned goals influenced both self-efficacy and personal goals which, in turn, had direct effects on performance.

In a related study (Bandura & Jourden, 1991), results showed that perceived self-efficacy enhanced performance both directly and indirectly by affecting personal goal setting, affective self-reactions, and the use of analytic strategies. Goal setting was also affected by level of prior attainments. Finally, according to Garland's (1985) study, goals influenced performance in part through the mediating effects of efficacy expectations and performance valence. In Eden's (1988) model, self-efficacy expectation and goals are reciprocally determined and are both influenced by trait efficacy.

There is a plethora of goal-setting studies examining various elements of its application to sport and exercise environment (e.g., Boyce, 1994; Giannini, Weinberg, & Jackson, 1988; Hall & Byrne, 1988; Smith & Lee, 1992; Weinberg, Burton, Yukelson, & Weigand, 1993; Weinberg, Sticher, & Richardson, 1994). These studies have focused primarily on the areas of goal specificity, goal difficulty, and goal proximity. However, a few studies attempted to develop a causal model in order to predict performance. One of them was by Garland, Weinberg, Bruya, and Jackson (1988), in which individual task goals influenced performance (sit-ups) through their influence on self-efficacy. Lerner and Locke's (1995) study also, investigated the effects of goal setting on the performance of a sit-up task. They found a main effect of goal level on performance and this effect was mediated by personal goals and self-efficacy.

The aim of the present study was to focus on the effects of goals, commitment, perceived self-efficacy, trait self-efficacy, ability and self-satisfaction in sport and exercise environment. In the proposed model, it was hypothesized that high self-set goals, positive self-evaluative reactions, strong perceived self-efficacy and goal commitment, trait efficacy and ability would enhance the level of performance. Figure 1 presents the model that was tested in this research tested using a specific tennis task. In this model it was specified that: (a) ability would affect self-efficacy, self-satisfaction, personal goals, and performance, (b) personal goals would partially mediate the effect of self-efficacy expectations on performance, (c) self-efficacy would affect both personal goals and performance, (d) trait efficacy would affect self-efficacy, and finally, (e) goal commitment would affect personal goals and performance.

## **Method**

### Design and Procedure

Forty eight university physical education students (22 male and 26 female), enrolled in tennis classes agreed to participate in an experiment. They ranged in age from 19 to 23 years, with an average age of 21,2 years. All subjects had at least 1 year of tennis playing experience. The subjects tried to achieve the greatest number of correct service in a court task. Each trial consisted of 15 serves. A pilot study using 30 students (who did not participate in the subsequent experiment) was conducted to determine which level of goals would be difficult for most of the subjects. During the pilot study, the service area was shortened about 20 cm in length in order for the test to be very difficult for the subjects. This was in line with Locke's (1991) suggestions that no more than 10% of the

subjects should be able to achieve the difficult goal. From the pilot study, 10 out of 15 correct serves were operationalized as very difficult for the subjects.

A total of four trials was given to all subjects. Subjects were given a 10 min warm up and then performed two trials. These two trials were a pretest which was used as a measure of the ability variable. A 10 min rest period was given to enable the subjects to recover from fatigue. Then subjects were informed about their performance, and completed trait efficacy, self-efficacy expectations, and self-satisfaction scales. After that, they set a personal goal and, finally, they completed the goal commitment scale. After the assessment of the psychological variables, the third trial was performed. Again, a 10 min interval was given. Next, subjects were informed about their performance, self-efficacy and self-satisfaction were assessed, and they again set a new personal goal. Then goal commitment was assessed and the fourth trial was performed.

### Measures

Trait efficacy. It was assessed with the self-efficacy scale developed by Shere, et al. (1982). This instrument consists of 23 items assessing two aspects of efficacy, general/achievement (17 items) and social (6 items). Shere, et al. (1982) reported internal reliability coefficients of .86 and .71 respectively. In the present study, the recommendation of Early and Lituchy (1991) was followed, and the general achievement subscale was used because this scale focuses on performance attainments. Item examples are: «When I make plans, I am certain I can make them work», «If I can't do a job the first time, I keep trying until I can», and «I give up easily». Cronbach's alpha was .72 in the present study.

Self-efficacy expectations. Subjects were asked to rate the strength and magnitude of their self efficacy expectations for five performance levels: 3, 6,



9, 12, and 15 correct serves out of 15. The format used is comparable to that of the Locke et al., (1984) and Bandura and Jourden (1991) studies (e.g. "I can hit 3 correct serves out of 15", Yes-No) and "How certain you are?" answered in a 10 point scale anchored by "certain" (10) and "uncertain" (1). The strength of perceived self-efficacy was the sum of the certainty scores for the five levels of performance. Cronbach's alpha for these scales were .81, and .85 for the two trials respectively.

Self-satisfaction. Subjects were asked to indicate how satisfied they would be if they hit 3, 6, 9, 12, and 15 correct serves out of 15. Responses were given on a 7 point scale ranging from "extremely dissatisfied" (1) to "extremely satisfied" (7). Cronbach's alpha for these scales were .71, and .75 for the two trials respectively.

Goal commitment. Goal commitment was assessed with a nine item scale developed by Hollenbeck et al. (1989). Subjects rated their commitment to their goals by using a scale that ranged from 0 (uncertain) to 10 (certain). An item example is: "I am strongly committed to pursuit this goal". Cronbach alphas were .73 and .79 respectively.

Performance. The scores that subjects achieved during the third and fourth trials were used as performance 1, and performance 2 variables respectively.

Ability was indicated by the mean score from the first two trials.

## **Results**

Table 1 presents means and standard deviations of all the examined variables in the third trial. The correlation matrix among the examined variables is also presented in Table 1. Performance correlated with personal goals, ability, and goal commitment. Personal goals correlated with ability, self-satisfaction,

self efficacy, and commitment. Self-efficacy was also correlated with self-satisfaction. Trait efficacy was the variable that had no correlation with any variable. Regression analysis showed the ability of the examined variables to predict performance. The multiple correlation for the prediction of performance 1 was  $R=.68$  ( $F_{5,43}=5.89$ ,  $p<.001$ ). Finally, significant differences between ability and performance 1,  $t(47)=2.19$ ,  $p=.03$ , was observed, indicating that subjects improved their performance by setting personal goals.

Table 2 presents means, standard deviations, and correlations of all the examined variables in the fourth trial. Again, performance correlated with personal goals, ability, self efficacy and goal commitment. Personal goals correlated with ability, self-satisfaction, self efficacy, and commitment. Self-efficacy was also correlated with self-satisfaction and goal commitment and trait efficacy was correlated with goal commitment. The multiple correlation for the prediction of performance was  $R=.58$  ( $F_{5,43}=3.46$ ,  $p<.001$ ). As in the previous trial, a difference between ability and performance,  $t(47)=1.89$ ,  $p=.05$ , was observed. Moreover, there were no differences between self efficacy, satisfaction and commitment measures in the two stages of the experiment. Finally, the negative correlations between self satisfaction and the other variables are in agreement with Bandura and Cervone's (1983) claims that the higher the self-dissatisfaction with a standard performance, the greater the intensification of effort.

Structural equation modeling analysis using LISREL VI (Joreskog & Sorbom, 1984) was employed in order to examine the network of relationships among the examined variables. Self-efficacy was modelled to mediate the effect of ability on personal goal setting which, in turn, was assumed to influence

performance. Self-efficacy, self-satisfaction and goal commitment were assumed to influence both personal goal and performance. Finally, it was hypothesized that ability would affect performance and trait efficacy would affect self-efficacy (see Figure 1). However, the indices of fit provided by LISREL were not satisfactory. The modification indexes provided by the LISREL program, suggested the ways for the improvement of the model. Figure 2 presents the structural coefficients for the model of the variables examined in trial 3. In this model, self-efficacy affected personal goals, and self-satisfaction; its contribution to performance was not significant. The satisfaction variable affected only personal goals. Goal commitment was affected by trait efficacy and ability variables; its contribution to personal goals was not significant. Paths from commitment and self-satisfaction to performance were also eliminated because they did not contribute in the fit of the model. In this analysis, the goodness of fit index and the adjusted goodness of fit index for this model, as provided by LISREL, were 0.982 and 0.929 respectively. Also the mean square residual was .035, which is also considered satisfactory.

Figure 3 presents the structural coefficients for the model with the variables examined in trial 4. Again, the steps of the previous analysis were followed. Again, in this model, self-efficacy affected self-satisfaction. In contrast to the previous model, the contribution of self-efficacy to performance was significant, and its contribution to personal goals was not significant. The satisfaction variable affected the personal goals but its contribution was not significant. Goal commitment again was affected by trait efficacy and ability variables. It is important that the contribution of goal commitment to performance was significant. The path from self-satisfaction to performance was eliminated

because it did not contribute to the fit of the model. Finally, contrary to expectation, the contribution of personal goals to performance was not significant. In this analysis, the goodness of fit index and the adjusted goodness of fit index for this model, as provided by LISREL, were 0.977 and 0.893 respectively which indicates an acceptable fit. Also the mean square residual was .033, which is also considered satisfactory.

In these two models, the ability variable was an important causal factor for all the other variables. Finally, trait efficacy affected only goal commitment.

### Discussion

The results of the present study showed that self-efficacy, goal commitment, and personal goal appear to be significant determinants of performance in a sport setting. Results provided support for the mediating role of personal goal setting between self-efficacy and performance. The effects of self efficacy to performance were both direct and indirect through goal setting. These findings are consistent with similar studies by Bandura and Jourden (1991), Locke et al. (1984), and Early and Lituchy (1991). Results also indicated that ability was the stronger regulator of performance. In the model that was proposed and tested in Garland et al's (1988) study, past performance played a crucial role in influencing an individual's task goal, self-efficacy, and future performance.

In considering the role of self-satisfaction in the goal-efficacy models, the present results indicated that self-satisfaction and performance are not related. These finding are consistent with Early and Lituchy (1991) study. However, in the present analyses, self-satisfaction was a determinant of personal goal setting in trial 3. Also, as can be seen in Tables 1 and 2, these two variables were

significantly correlated. It seems that self-satisfaction influenced the self-set goals of the subjects. This finding provides support to Bandura and Jourden's (1991) claims that in complex tasks which make heavy attentional and cognitive demands, self satisfaction with personal progress toward challenging standards provides a positive motivational orientation for performance accomplishments.

The path analysis also provided some support for the inclusion of the goal commitment variable in the model. Although goal commitment had a nonsignificant contribution into the first model, in the second model there was a direct effect from commitment to performance. Poag and McAuley (1992) stated that the measurement of goal commitment would enable us to better unravel any relations among efficacy, exercise, and goal-setting. The inclusion of a goal commitment measure is a strategy highly recommended in future goal-setting and exercise studies.

In considering the role of trait efficacy, it seems that generally it has little predictive and explanatory value. In the Early and Lituchy (1991) study, analyses failed to support a significant role for trait efficacy in the prediction of performance. However, in the present study, the significant contribution of trait efficacy to commitment in both phases of the experiment indicates that subjects with high general self-efficacy expectation are those that are more committed in a given task.

To turn to the practical implications of these results, the importance of self-efficacy, and goal commitment in motor performance was supported. The examined variables played a central mediating role in sport and exercise motivation. Personal goal setting combined with self-efficacy enhancement and goal commitment strategies should help athletes to enhance their performance in

sport and physical activities. It was shown that the more confident and the more committed an athlete is, the higher is the personal goal and its subsequent performance attainment.

In order to enhance self-efficacy, certain techniques are suggested in the sport psychology literature including participant and life modeling (Garland et al., 1988). Moreover, if the task goal is represented as an image of some future performance, then these direct and vicarious performance experiences operate directly on this image, enhancing both its vividness and stability.

In considering the role of goal commitment, the present study showed that coaches and sport psychologists should use self-set goal conditions in order to enhance the athletes' commitment to difficult goals. Publicness, which is the extent that significant others are aware of athlete's goal, others' performance, others' goals, and others' goal commitment, supervisor supportiveness and friendliness are some other suggested methods (Hollenbeck & Klein, 1987).

There are a number of limitations in the present study that should be considered when interpreting the results and designing future research. There was some contradicting results from trial to trial in paths between some variables such as self-efficacy, personal goals, self-efficacy and performance. In the fourth trial, self-efficacy made greater contribution to performance than to personal goals. In the forth trial, again there was a direct effect of commitment to performance, a finding that was not confirmed in the previous trial. These findings are not unexpected in such experiments since the type of tasks is different between the general or organizational/industrial and the sport psychology. Also, this was the first structural equation analysis which used the commitment variable, and the addition on any variable generally alters existing

models. In Lacham and Lituchy's (1991) study in which several models were tested, differences were found from model to model. On the other hand, the temporal phase of the experiment may have influenced the subjects to make different assessments of the self-regulatory factors. It would be expected that the subjects would make more accurate judgment of their self-efficacy and goal commitment factors in the fourth trial, as they had feedback from the previous trial. This may be the explanation for the main effect of self-efficacy and commitment to performance on the fourth trial. Generally speaking, we need more studies of this type testing a new and growing theory.

Results of the present study showed that the more confident, the more satisfied, and the more committed an athlete was, the more higher was the personal goal and its performance attainment. All the examined variables affected by the previous performance and self-efficacy affected performance directly or indirectly through personal goals. Finally, the role of commitment in goal-setting and performance relations should be considered. Additional studies with alternate tasks and with designs in experimental and sport specific field settings are necessary. It seems that a number of variables interact between goal setting and performance. These variables are self-efficacy, self-satisfaction, ability and goal commitment. Future studies should explore the paths between all these variables.

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Table 1

Means, Standard Deviations, and Intercorrelations for Performance, Personal Goals, Ability, Performance Valence, Self-efficacy, Commitment, and Trait efficacy for Trial 3

Variable	Mean	SD	1	2	3	4	5	6
1.Performance 1	6.79	3.02	-					
2.Personal goal 1	9.38	2.65	.60**					
3.Ability	6.00	2.48	.60**	.70**				
4.Self-satisfaction 1	23.46	5.10	-.13	-.49**	-.22			
5.Self-efficacy 1	28.27	10.14	.33	.62**	.53**	-.59**		
6.Commitment 1	73.71	10.84	.37*	.37*	.44**	-.04	.11	
7.Trait efficacy	249.50	33.07	.23	.15	.18	-.14	.10	.28

\*  $p < .01$

\*\*  $p < .001$

Table 2

Means, Standard Deviations, and Intercorrelations for Trial 4

Variable	Mean	SD	1	2	3	4	5	6
1.Performance 2	6.77	3.28	-					
2.Personal goal 2	9.50	2.60	.45**					
3.Ability	6.00	2.48	.48**	.87**				
4.Self-satisfaction 2	23.48	5.17	-.13	-.50**	-.29			
5.Self-efficacy 2	29.83	11.46	.47**	.77**	.69**	-.66**		
6.Commitment 2	74.13	12.11	.38*	.46**	.48**	-.12	.36*	
7.Trait efficacy	249.50	33.07	.12	.28	.23	-.14	.20	.43**

\*  $p < .01$

\*\*  $p < .001$

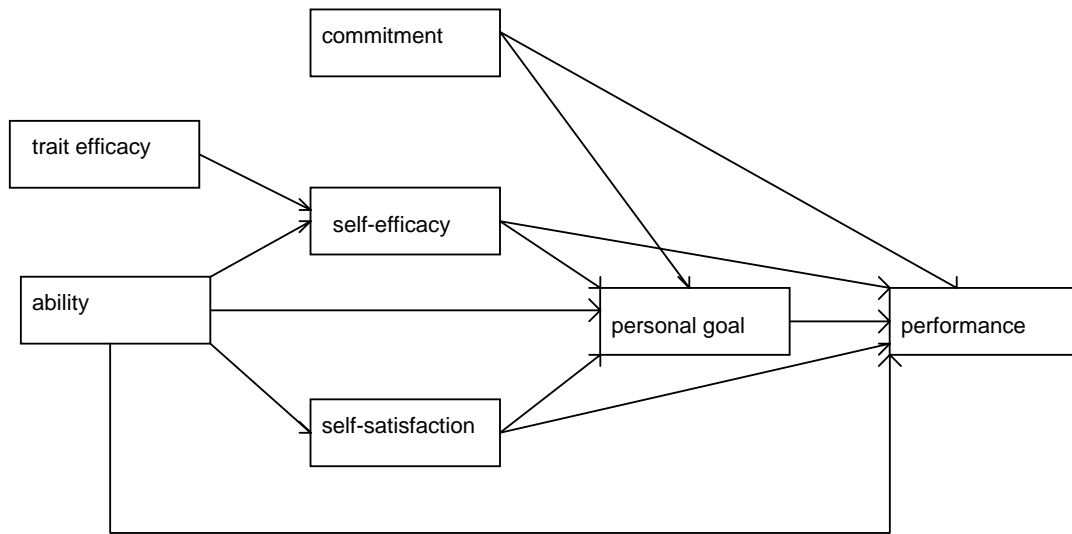
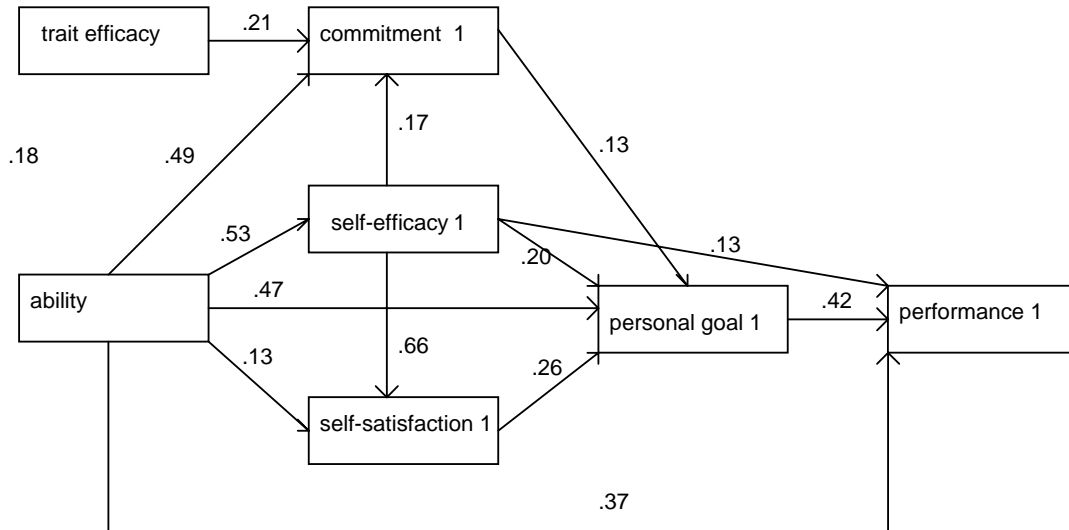


Figure 1

Path diagrams of proposed relations among ability, trait-efficacy, commitment, self-efficacy, self-satisfaction, personal goals and performance.





GOF=.982  
AGOF=.929

Figure 2

Path diagram of the estimated structural models for trial 3. Straight lines represent direct causal influence while curved lines bidirectional relationship. Path coefficients greater than .19 are significant at  $p < .01$ .



GOF=.977  
AGOF=.893

Figure 3

Path diagram of the estimated structural models for trial 4. Straight lines represent direct causal influence while curved lines bidirectional relationship. Path coefficients greater than .19 are significant at  $p < .01$ .