

Individual Differences In Sticking To A Task Strategy

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Abstract

This study examined how much people would adhere to their task strategies within a competitive context. As indicated by the extant theories, performance feedback was always one of the determinants. Moderated by availability of additional knowledge, self-esteem and gender were found to have significant effects on task-strategy persistence.

Key Words: Individual Differences, Persistence, Self-esteem, Gender Differences, Locus of Control, Need for Cognition.

1. INTRODUCTION

During a given time period after having chosen a certain task strategy or a way of doing things, a person can be psychologically stuck with that task strategy. Simon (1957: 95) recognized this phenomenon and observed that "this is true even when the original choice of activity was a matter of relative indifference."

As implied in previous studies (Landy, 1985; Landy & Becker, 1987; Locke & Latham, 1990), in a course of action people can adjust their behavior in four ways: direction of effort, intensity of effort, persistence, and task strategy. Therefore, commitment to a chosen course of action is reflected in the levels of persistence in these four aspects, i.e., whether people persist in the direction of effort, the intensity of effort, the duration of effort, and adherence to a task strategy.

Previous studies rarely paid attention to all four aspects of behavioral persistence in a course of action. For example, the studies of escalating commitment focused on the direction and intensity of the effort (Staw, 1976; Staw & Fox, 1977; Bazerman, Giuliano & Appelman, 1984). The traditional persistence research focused on persistence in terms of time (Violato & Travis, 1988). In contrast, little attention has been paid to how much people would persist in their task strategies.

A common thought in the existing literature, especially in the goal-setting literature, is that goals affect strategies (Chesney & Locke, 1991; Locke &

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Latham, 1990): that is, once people commit their efforts to a course of action in terms of direction, intensity, and duration, they will try to attain the desired goal by using the appropriate task strategies. Hence, whether a person persists in his or her task strategy was generally not considered as one of the essential determinants for goal attainment.

One can argue, however, that when goal commitment is low so that little incentive is offered for seeking a certain task strategy, the extent to which a person persists in task strategies may ultimately determine the task strategy used and affect a person's behavior accordingly. The present study aimed to clarify the existence of individual differences in people's persistence in their task strategies within a competitive context.

2. HYPOTHESES

2.1 The Choice of Independent Variables

In studying how people would persist in their task strategies, we looked into the effects of individual differences, i.e., the variables on which people differ. These individual differences can vary from the demographic (e.g., gender, age, or race) to the functional (e.g., self-esteem) (Landy, 1985: 399). This study included one demographic individual difference: gender, and four functional individual differences: locus of control, self-esteem, need for cognition, and self-efficacy.

Gender is the demographic individual difference included in this study, not only because it is too important to be omitted from any discussion of personality traits (Buss & Finn, 1987), but also because it is the most obvious individual difference among the sample in the present study.

Locus of control refers to one's perception of the causes of events. Need for cognition reflects the extent of thinking individuals prefer. Self-esteem refers to the feeling of one's self-worth. These three cognitive personality traits roughly correspond to Jungian defined cognitive types (Jung, 1968), as described by Mason and Mitroff (1975): "Perception is the process of becoming aware of things, people, occurrences or ideas... Judgement is the process of evaluating what has been perceived. The two modes for judgement are thinking and feeling. Thinking is a logical process that is impersonal and rational in nature... feeling is a process of association, subjective in nature."

Because there is a gap between cognition and behavior (Cervone & Peake, 1986), an additional judgment, the "self-efficacy" judgment may be relevant to decisional persistence and, thus, was included in the present study. According to Bandura (1977), from thought to action, people require judgments of their capability to execute actions, i.e., self-efficacy. Unlike the personality traits, judgments of self-efficacy are not generalized measurements, but assessments of how well one can perform in specified settings (Bandura, 1977, 1986). Nevertheless, self-efficacy should be considered as a relevant factor in the present study because, as Ross (1987) noted, personality is not only about cognition and emotion, it is also about how cognition and emotion find expression in behavior. Moreover, by treating self-efficacy as one of the independent variables in the model, we can compare the main effect of self-efficacy (i.e., a task specific self-construct) with that of the self-esteem (i.e., a global self-construct).

In sum, for a parsimonious model, the present study included five important independent variables: gender, locus of control, need for cognition, self-esteem, and self-efficacy. Each of these five variables is discussed in the following sections, and four hypotheses are proposed.

2.2 Gender Differences

Stark (1985) asserted that differential socialization of males and females undoubtedly explains most of the gender differences. An often-cited work by Maccoby and Jacklin (1974) confirmed that there is clear evidence for sex-related differences with aggression. The greater aggressiveness of males, compared with females, is generally regarded as a consistent and large phenomenon (Maccoby & Jacklin, 1974; Buss & Poley, 1976; Hyde, 1986). Because of their aggressiveness, males are more likely than females to try other possible task strategies attempting to better their performance. Many other empirical findings are also in line with this tendency. To name a few, males are higher in rebelliousness and activity (Buss & Finn, 1987), excitement seeking (Zuckerman, 1979), and curiosity in problem-solving (Lloyd & Archer, 1976). The general findings of these studies point to the following hypothesis:

Hypothesis 1: Male decision makers tend to persist less in a task strategy than do female decision makers.

2.3 Self-esteem

Rosenberg (1965) defines self-esteem as "the evaluation which the individual makes and customarily maintains with regard to himself: it expresses an attitude of approval or disapproval." A straightforward definition of self-esteem is the extent to which one prizes, values, approves, or likes oneself (Blascovich & Tomaka, 1991).

Evidences from studies on adaption-innovation theory (Kirton, 1976) suggested an existence of the effect of self-esteem on task-strategy persistence. Kirton (1976) labelled two types of changes as "adaptions," i.e., "doing things better," and "innovations," which Kirton described as "doing things differently." He contends further that all individuals can be located on an adaption-innovation continuum. According to Kirton, when sponsoring competing answers to seemingly similar problems, innovators are those who change the framework of problems as they seek solutions, while adaptors try to modify and improve existing structures. That is, adaptors' solutions do not fundamentally change the contexts in which problems appear.

As a positive relationship has consistently been found between innovation and self-esteem among various American populations (Goldsmith, 1985; Gryskiewicz, 1982; Keller & Holland, 1978), self-esteem appears to be one of the fundamental traits acting to produce the differences described by adaption-innovation theory. Past studies support the generalization that innovators are more likely than adaptors to describe themselves as high in self-esteem (Goldsmith & Matherly, 1985). In sum, high self-esteem persons are more likely to be innovators, and innovators, by doing things differently, are less likely to persist in task strategy. The following hypothesis can be proposed:

Hypothesis 2: Decision makers with high self-esteem are less likely to persist in their task strategies.

2.4 Self-efficacy

Self-efficacy is the belief an individual has regarding his or her ability to perform specific tasks at a particular level (Bandura, 1977, 1982, 1986). In more formal terms, Bandura (1986: 391) defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances." Bandura (1977, 1986) contends that, in addition to skill-based competencies, an individual must also have self-beliefs of efficacy to use those skills. Otherwise, competent functioning will not occur.

Bandura (1977) further hypothesized that perceived self-efficacy determines whether action will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles. This hypothesis not only has obtained empirical support (Bandura, 1982, 1986; Wood & Locke, 1987), but can also be explained by propositions of some motivational theories (Wood & Locke, 1987).

According to Bandura (1977), expectations of personal efficacy are based on four major sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states. The information about performance accomplishments is especially influential because it is based on personal mastery experiences. While negative experiences decrease self-efficacy, positive mastery experiences increase self-efficacy (Bandura, 1986; Gist, 1987; Mone & Baker, 1992). Therefore, it can be argued that high self-efficacy people have higher confidence and, thus, higher persistence in their previous decisions on task strategy.

Hypothesis 3: Decision makers who have acquired a high level of self-efficacy through performance accomplishments are more likely to persist in their task strategies than those who have a low level of self-efficacy.

2.5 Moderated Relationship between LC and NC

Locus of control (LC), or internal versus external control, is described as the dimension of personality that reflects the general beliefs a person holds about the causes of events (Rotter, 1966). That is, locus of control refers to the beliefs that individuals hold regarding the relationship between actions and outcomes. Perceived internal control indicates that people perceive that they determine, and are responsible for, their own level of performance. In contrast, perceived external control indicates that people believe that their performance is controlled and determined by other factors (e.g., luck, chance, fate, or powerful others). As a result, the externally controlled persons (hereafter called "externals") see the consequences of their actions as unrelated to what they do. Hence, locus of control may lead to different decisional behavior because those internally controlled persons (hereafter called "internals") are more likely to take action than externals. In other words, the internals will change their task strategies if they see fit to do so while the externals simply don't bother to change at all. Therefore, it can be hypothesized that internals are less likely to persist in their task strategies. This is a motivation-based argument.

However, an opposite hypothesis can also be proposed from a persuasi-

bility viewpoint. In review of early locus of control studies, Ryckman (1979, 1982) concluded that internals gather more information than externals about their situations. He also concluded that, in an attempt to cope with and control outcomes, internals learn the rules necessary to solve problems more quickly. Because internals have more information about their situation and greater problem-solving ability than externals, they should be more resistant to the environmental influence (Lefcourt, 1971). Therefore, it can be hypothesized that internals, as compared with their external counterparts, are more likely to persist in their task strategies.

These two hypotheses, one a motivation-based argument and one a persuasion-based argument, make opposing predictions. Because previous studies found that individuals high in need for cognition (NC) are more likely to organize, evaluate, and elaborate on the available information (Cohen, 1957), it seems that need for cognition can be a moderator to determine which hypothesis would be true. That is, the persuasion argument may be true for high-NC individuals, while the motivation argument may be true for low-NC individuals.

Need for cognition (NC) is the personality variable that identifies differences among individuals in their tendency to engage in and enjoy thinking (Cacioppo & Petty, 1982). As pointed out previously, internals are motivated to take actions. But those internals with high NC are not only motivated to take actions, but also motivated to gather information to make correct actions so that later on they do not have to change (noted that it should not be interpreted as they do not take actions. Rather, they take actions of no actions).

In contrast, externals are not motivated to take actions. But externals not only are not motivated to take actions, but also are not motivated to gather information. Thus, it is presumable that externals do not possess latest information, and that externals with high NC are the persons who enjoy thinking but without latest information. Because thinking without latest information may lead to incorrect judgments that in turn leads to incorrect actions, the externals with high NC always have to change in order to "correct" their previous incorrect actions (noted that these externals change their actions not because they believe their actions will bring results. Rather, their actions were caused by their effortful cognitive endeavors). Hence, externals with high NC can be hypothesized to be less likely to persist in their task strategies than externals with low NC.

In sum, a moderated relationship between locus of control and need for cognition on task-strategy persistence can be proposed as follows:

Hypothesis 4: Internals are more likely to persist in their task strategies if they have a high NC; they are less likely to persist if they have a low NC. Externals are more likely to persist in their task strategies if they have a low NC; they are less likely to persist if they have a high NC.

3. METHODS

3.1 Use of Simulation

The present study used a method of behavioral simulation. There were

two major advantages for this methodology. First, the use of a simulation game allowed experimental control over key situational variables so that the effects of individual differences can emerge. Secondly, the simulation game enabled the participants to make decisions in a competitive context that is similar to the naturally-occurring world of organizations. This ability of a simulation method is important because, according to Porter (1979), the essence of strategy formulation consists of coping with competition. Until this study, interactive competition was not a major consideration in the previous persistence research, either because of the constraints of research designs, or because of the nature of the decisions (e.g., building a nuclear power plant in Ross & Staw, 1993; hosting a world's fair in Ross & Staw, 1986).

The simulation used in the present study is a modified version of The Multinational Management Game (MMG) designed for Strategic Management and International Management courses (Keys, Edge, & Wells, 1992). This simulation provides a challenging decision-making experience. Although it is potentially international in scope, in this study it was played in the domestic market only. Every eight participants competed in one market and each participant represented a firm. The market was dynamic and interactive; the decisions of one participant affected the sales of all participants in the market. The product of the simulated companies was personal computers. The game participants were required to make decisions on price, advertising, sales commissions, and number of employees.

3.2 Controlling Situational Effects

There are four relevant situational factors identified in this study: group effect, performance feedback, sunk cost, and usefulness of additional knowledge for problem solving.

3.2.1 Group Effect.

Group can affect the decision making through many ways such as group stimuli (Hackman, 1976), groupthink (Janis, 1972), and group polarization (Myers & Lamm, 1976). These possible group effects were avoided by allowing the participants to make decisions individually, not in a team context.

3.2.2 Usefulness of additional knowledge for problem solving.

After receiving feedback and observing others, people may have additional knowledge for solving the same decisions. It is conceivable that the usefulness of this additional knowledge should have effects on whether people would change their task strategies. Usefulness of additional knowledge was controlled in this study by stratification, as detailed in the discussion section.

3.2.3 Performance feedback.

According to control theory (Klein, 1989; Carver & Scheier, 1981; Powers, 1973), performance feedback is the fundamental building block of action. With a goal in terms of grades, a subject competed in this simulation game would compare the performance feedback with his/her goal. Any discrepancy between goal and performance feedback creates a corrective motivation: either a cognitive change (i.e., a change in the goal) or a behavior change (i.e., a

change in decisional persistence). Since cognitive change is a slower acting solution, while behavior change is a faster solution to discrepancies (Sibley and McFarland, 1975), behavior change is more likely to be produced. Therefore, the effect of performance feedback on behavioral persistence is obvious. Unlike the other situational factors identified in this study, performance feedback could not be controlled through the design of the simulation game. Thus, the effect of performance feedback must be controlled statistically by having it included in the model.

3.2.4 Sunk Cost.

Persistence in task strategy is a phenomenon that heavily affected by sunk costs (Thaler, 1980; Arkes & Blumer, 1985) so that individual differences would be minimal in a sunk-cost situation. The individual's behavior in a sunk-cost situation is generally explained by Kahneman and Tversky's (1979) prospect theory. Prospect theory suggests that outcomes are normally perceived as positive or negative in relation to some neutral reference point, and that people are more sensitive to losses than to gains. According to prospect theory, people are in a risk seeking situation if they perceive substantial sunk costs resulted from previous strategies, and in a risk aversion situation if they perceive substantial gains.¹ To detect the effects of personality traits on decisional behavior, the simulation game must be carefully designed so as to avoid these two strong situations.

Northcraft and Wolf (1984) defined sunk costs as the negative cash flows experienced in anticipation of future compensating positive cash flows. Hence, if flows of costs and revenues occur in the same time period, there can be no sunk costs. Among the major decisions made in a business organizational setting, R & D expenditures definitely incur sunk costs, whereas short-term marketing expenditures perhaps involve the least sunk costs. Therefore, in this simulation game, the participants were required to focus on three short-term marketing decisions: pricing, advertising, and sales commissions.

One decision in the game the participants could not avoid was "the number of employees hired for the year" because firms had to manufacture the products before they could sell them (in this game, one employee was supposed to produce about 150 units of "product A" annually). However, the decision to hire employees usually involves sunk costs that may indirectly affect the above mentioned marketing strategies. Therefore, the following important assumptions were made in this simulation: there were not any costs for recruiting, training and terminating the employees.

In sum, with the above assumptions, although untested, we believe that the sunk-cost effect would be minimal, if any, in this simulation game.

3.3 Sample

The sample consisted of 196 undergraduate students enrolled in three sections of an introductory management course at a large northwestern university in Summer 1993. There were 91 females and 105 males. The mean and standard deviation of their ages were 22.34 and 4.44 respectively. Subjects participated in the simulation game voluntarily to obtain participation credit for the course. They were assured that the performance in this simulation

game had no influence on their grades.

3.4 Task

Each participant represented one firm and was required to make only four decisions: Price of the product, expenditure of advertising, level of sales commissions, and number of employees in three simulated years. Initially (i.e., in year 0), all firms' strategies were identical and set by the game administrators. Specifically, in year 0, all individuals set a price of \$1,600, expended \$13,000,000 in advertising, set the level of sales commissions at 0.5%, and hired 700 employees for production. But from year 1 to year 3, each individual had to decide for his/her firm price level, advertising expenditures, sales commission and employment (maximum number can be hired is 1,200 due to the fixed full capacity). Beginning from year 1 (each round of decisions simulates one year of operation), each individual's firm competed with seven other firms for three years in a competitive market. The individuals competed against each other by trying to optimize the economic results from their four decisions.

3.5 Feedback of Performance

It was explained to the participants that net profit was the most important factor for them to earn high points for this simulation game.

After each round of decision making, financial operating statements and reports were generated by computer for each subject controlled firm. The reports included balance sheet, income statement, marketing and manufacturing report, finance and economic report, industry report, and overall firm evaluation. These reports were given to the participants at the beginning of the next round of decision making. From those reports, subjects knew all other firms' marketing decisions in the previous years. The information of each firm's sales and net profit was also available.

3.6 Procedures

196 participants were randomly grouped into 21 eight-competitor markets and 4 seven-competitors markets. Within a period of ten days, subjects participated in three rounds of competition. Three rounds of decision making simulated three years of operation. Participants made their first year decisions at home. Second-round and third-round decisions were made in regularly scheduled classes. At each round, every participant first received financial statements and a market report from the previous year. Participants then had thirty minutes to analyze the situation and to make new decisions for the year.

3.7 Measures

3.7.1 Persistence.

Persistence was operationalized as follows:

For price: $-\ln (\text{abs} (\text{PRI}_3 - \text{PRI}_2) / \text{PRI}_2)$

For advertising: $-\ln (\text{abs} (\text{ADV}_3 - \text{ADV}_2) / \text{ADV}_2)$

For sales commissions: $-\ln (\text{abs} (\text{COM}_3 - \text{COM}_2) / \text{COM}_2)$

Note that absolute values of the difference between the two year decisions gave only the magnitude not the direction of changes.

Negative signs reversed the values for easier interpretation so that the higher values indicated higher persistence.

Logarithmic transformation converted a nonlinear relationship between variables into a linear one (Consider the above operationalization of the dependent variable, in which the second-year decision was used as a base, if we ask a same person to make decisions under different bases and calculate the absolute values of the difference, the plot of differences against bases will likely result in a curve that declines nonlinearly, i.e., as the base increases, the difference may decrease. For the same reason, even a linear relationship between a certain personality trait with persistence when the base were kept the same will become nonlinear when participants used different bases).

3.7.2 Gender.

Females were coded as 0 and males coded as 1.

3.7.3 Self-esteem.

The Revised Janis-Field Self-Esteem Scale which included 17 items (Eagly, 1967; Brockner, 1988: 199) was used. Cronbach alpha for these 17 items was .88. In theory, scores could range from 17 to 85, but in actuality, they ranged from 34 to 82 with this scale. Previous study by Eagly (1967) reported a reliability of .84 for 144 subject. A literature review of self-esteem measures (Robinson & Shaver, 1973) suggested that this was one of the best for use with adults.

3.7.4 Self-efficacy.

Subjects were required to indicate their confidence in their abilities to achieve seven different performance levels (i.e., I will be ranked number 1; I will be ranked at least number 2; I will be ranked at least number 3;). Following Wood & Locke (1987), self-efficacy strength was defined as the mean confidence rating for these seven items. While possible strength could range from 0 to 9, actual strength ranged from .57 to 9. Cronbach alpha for these seven items was .91. Previous study by Mone and Baker (1992) reported a Cronbach alpha of .87 for 461 cases. Immediately before the self-efficacy questions, the participants were asked to make sure how many points they earned and how their rankings were in the previous year. By doing so, their self-efficacy could arguably result from their personal mastery experience.

3.7.5 Need for cognition.

Eighteen-item Need for Cognition Scale developed by Cacioppo, Petty & Kao (1984) was used. In theory, scores could range from 18 to 162. In actuality, they ranged from 40 to 143. Cronbach alpha was .88. Cacioppo et al. (1984) reported a Cronbach alpha of .90 for 527 cases.

3.7.6 Locus of control.

Locus of control was assessed with a forced-choice questionnaire-the Internal-External (I-E) Scale, which was constructed by Rotter (1966). The Rotter I-E Scale contains twenty-nine items including six items that were not scored but serve to disguise the purpose of the test. Cronbach alpha for the 23 items was

.70. After deleting items 3, 7 and 20, a Cronbach alpha of .72 for the 20 items was attained. Although scores could range from 0 to 20, the actual scores ranged from 1 to 20. High scores in this study indicated internally controlled. Previously, Rotter (1966) reported an internal consistency coefficient of .70 for 400 cases.

3.7.7 Performance.

Eight firms within each market were given points based on seven ratios (return on assets, return on sales, return on equity, market share, asset turnover, inventory turnover, debt to total assets). Sorted by these points, the firms' performance were coded from 1 to 8. The firm which earned the highest points was coded as 8 and the lowest performance firm was coded as 1.

3.8 Statistical Methods

Multiple regression analyses was used to analyze the phenomenon of persistence, involving five predictor variables (i.e., gender, self-esteem, self-efficacy, need for cognition, and locus of control), one control variable (performance), and one multiplicative term (need for cognition times locus of control). Regardless of decision type (pricing, advertising, or sales commissions), all assumptions about a multiple regression model were met satisfactorily.²

4. RESULTS

4.1 Descriptive statistics

Table 1 presents the descriptive statistics and the Pearson product-moment correlations of the variables. The fact that persistence in price was significantly related to persistence in sales commissions indicated the consciousness of overall strategy by the participants. That is, for a desired performance, a change in price must be accompanied by a change in sales commissions, and vice versa.

Performance feedback was positively related to persistence in the three types of decisions at different significant levels.

Gender had a low but significant correlation with performance, which showed that males outperformed females in this simulation game. Therefore, not surprisingly, males had a significantly higher level of self-efficacy because of the link between performance accomplishments and self-efficacy.

Performance had a low but significant correlation with need for cognition, showing that higher performance correlated with higher levels of cognitive effort.

Self-esteem, i.e., the global self-construct, had a low but significant positive relationship with self-efficacy, a more task specific self-construct. As expected, self-efficacy was significantly related to performance. And not surprisingly, the correlation coefficients also showed that the internals had significantly higher self-esteem and higher need for cognition.

4.2 Multiple Regression Analyses

Table 2 presents the results of the multiple regression models. The statistical significance of the estimated coefficients, along with the model's overall

significance and explanatory power, measures the strength of the evidence supporting acceptance or rejection of the hypotheses.

The F-statistics for the three regression models (on price, advertising, and commissions, respectively) are 2.025 ($p < .05$), 2.833 ($p < .01$) and 13.325 ($p < .001$). Thus, for every multiple regression model, the overall explanatory power is significant.

Hypothesis 1 that males exhibit lower persistence was supported in the advertising decision, but not in the pricing and commissions decisions. Hypothesis 2 that persons high in self-esteem exhibit lower persistence was supported in pricing and commissions decisions, but not in the advertising decision. However, hypotheses 3 and 4 were not supported.

Table 1
Descriptive Statistics and Correlations^a

Variables	Means	s.d.	1	2	3	4	5	6	7	8
1.Persistence in Price	2.85	1.17								
2.Persistence in advertising	1.97	1.08	.10							
3.Persistence in commissions	.06	1.60	.21**	.08						
4.Performance	4.62	2.24	.20**	.15 ⁺	.57***					
5.Gender	.54	.50	-.01	.24**	.05	.19**				
6.Self-esteem	92.90	9.51	-.17*	.01	-.07	.11	.10			
7.self-efficacy	5.30	2.06	.06	.01	.17*	.21**	.30***	.15*		
8.Need for cognition	98.31	18.62	.02	-.08	.19*	.15*	.06	.20**	.21**	
9.Locus of control	11.08	3.71	-.07	-.14 ⁺	.00	.01	.08	.28***	.08	.26***

^a Ns vary because of missing data.

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

5. DISCUSSION

5.1 Controlling for Additional Knowledge for Problem Solving

Before discussing the results of this study, we examine the evidence on the effects of the additional knowledge for problem solving. There are two general ways for individuals to obtain additional knowledge useful for solving problems. One way is from feedback of previous actions. The behaviorist tradition explains human behavior through reinforcements and punishments (Skinner, 1938). From this view, people obtain knowledge through personal experience. More recently, social learning theorists (Bandura & Walters, 1963; Bandura, 1986) have postulated that the acquisition of knowledge can occur through the observation of others.

In this study participants were assumed to use their existing knowledge to make their initial decisions. Subsequent performance feedback and observations of competitors' actions and performance were then available as sources of additional knowledge for making decisions the next time. The important question is whether the participants consider this additional knowledge as useful. The perceived usefulness of the new knowledge would affect whether they persist in their previous task strategies.

Table 2
Results of Multiple Regression Analyses

Variables	Price Model	Advertising Model	Commissions Model
Performance	.1138**	.1023*	.4081***
Gender	-.1444	-.6027***	-.2794
Self-esteem	-.0223*	.0084	-.0242*
Self-efficacy	.0355	.0295	.0480
Need for cognition	-.0029	-.0090	.0218
Locus of control	-.0421	-.0632	.1384
Need for cognition X Locus of control	.0004	.0003	-.0012
Intercept	4.6085**	2.1714	-2.0451
N	168	151	168
R^2	.0814	.1218	.3683
Adjusted R^2	.0412	.0788	.3406
F	2.025*	2.833**	13.325***

* $p < .05$; ** $p < .01$; *** $p < .001$.

Negative regression coefficients indicate lower relative persistence.

When comparing the means of decisions in year 2 by winners (the 1st place to the 4th place) and losers (the 5th place to the 8th place) in each market, SAS COMPARE procedure showed significant differences in pricing between the winners and the losers ($p < .0027$), and in commissions between the winners and losers ($p < .0001$), but found no significant difference in advertising between the winners and losers ($p < .4063$). Therefore, in this simulation game the participants were unlikely to observe a causal linkage between the advertising expenditure and the performance. Besides, when asked to assign weights to the three decisions, the participants considered advertising as the least important problem.³ It can be concluded that the participants did not regard the additional knowledge on advertising decisions as useful as the additional knowledge on pricing and commissions decisions. Thus, the situational factor of additional knowledge can be controlled for by stratification. Accordingly, the findings of the current study can be summarized, as shown in Table 3.

Table 3
Influential factors for persistence in task strategy

When useful additional knowledge is available:

1. Performance feedback
2. Self-esteem

When useful additional knowledge is not available:

1. Gender
 2. Performance feedback
-

Thus, hypothesis 1 about gender was supported when useful additional knowledge for problem solving was unavailable, whereas hypothesis 2 about self-esteem was supported when useful additional knowledge was available.

5.2 Gender.

Even without meaningful additional knowledge, males made larger changes than did females. When additional knowledge was unambiguously meaningful, however, the effect of gender was not significant.

5.3 Self-esteem.

The results showed that self-esteem was a significantly influential factor only when the additional knowledge was meaningful. As suggested by Hypothesis 2, participants high in self-esteem were less likely to persist in previous task strategies.

5.4 Self-efficacy.

The finding of no significant effects of self-efficacy on persistence in all decisions was surprising. Based on Bandura's argument (1986) that positive mastery experiences increase self-efficacy, we hypothesized that high self-efficacy individuals exhibit higher persistence in previous task strategies. However, Bandura (1977) also hypothesized that perceived self-efficacy determines whether action will be initiated. From this point of view, high self-efficacy individuals may have a higher sense of control over situations; thus, they may be more daring with regard to change so as to exhibit lower persistence. Overall, then, self-efficacy may involve two opposing kinds of response and so have no easily analyzed significant effect on persistence.

5.5 Performance Feedback.

Although performance feedback was treated as a control variable in the present study, the effects of performance feedback on decisional persistence should be examined closely due to its theoretically strong implications. As implied by control theory (Campion and Lord, 1982) and reinforcement theory (Skinner, 1938), performance feedback should be a strong situational factor that is positively related to task-strategy persistence. This has been confirmed

in the present study, and in turn, showed to some extent the validity of this study.

5.6 Moderated relationships between LC and NC.

No interaction effect between LC and NC was found in this study. In contrast, Huang (1994) did find a significant interaction effect between LC and NC on whether people want to change or not to change their task strategies. Therefore, LC and NC interaction seems to be more useful in predicting whether people want to change, rather than the extent of change in their task strategies.

5.7 Moderated relationships with self-esteem.

Although existing literature often refers to self-esteem as a factor that affects individuals' responses to low performance (Jones, 1973; McFarlin, Baumeister & Blascovich, 1984; McFarlin, 1985), the present study did not propose an interaction effect on task-strategy persistence between self-esteem and performance. As expected by this lack of hypothesis, a significant interaction effect of self-esteem and performance was not found in the present study.⁴ It may be that although people in general regard task strategies as being important for solving problems, they may not feel that they need to insist on using the same task strategies. Therefore, while task strategies are decisively important for performance (Chesney & Locke, 1991), the persistence in task strategies (i.e., decisional persistence) is not.

Notes

1. Most researchers in the field of escalating commitment (Rubin & Brockner, 1975; Staw, 1976; Fox & Staw, 1979; Ross & Staw, 1986; Whyte, 1986; Ross & Staw, 1993) were interested in the risk-seeking situation. They studied the decision behavior of those people in a sunk cost situation. Although they may have proposed other explanations (e.g., the self-justification explanation proposed by Staw), their findings are consistent with what the prospect theory suggests.
2. Note that the persistence scores in this study were after logarithmic transformation. Logarithmic transformation helped to achieve adequate multiple regression diagnostics but could examine only those participants who changed their decisions after year 2. Participants who did not change their decisions from year 2 to year 3 were excluded from analysis because logarithm of zero is undefined. Among the 196 participants, 25 participants did not change their pricing decision, 42 did not change their advertising decision, and 25 did not change their level of sales commissions. One attempt to include these observations into the data set for observations. This attempt proved inappropriate because, after including those observations, normality of the error terms was severely violated (SAS UNIVARIATE procedure showed $p < .0001$).
3. The means of importance weights participants assigned to pricing, advertising, and commission were 36.91 points, 25.86 points, and 37.23 points, respectively. SAS COMPARE showed that the advertising weights were

significantly lower than the other two weights (both $p < .0001$).

4. Considering the six main variables as the set A and the possible fifteen interactions as the set B, the general F tests for an addition of the set B to the set A in three regression models showed no significant increment in explaining the variance of decisional persistence. Specifically, $F(15, 140) = .7178$ for the pricing model, $F(15, 129) = .7863$ for the advertising model, $F(15, 146) = .7551$ for the commission model.

Note that the inclusion of an interaction between need for cognition and locus of control in the present study should be considered appropriate because the hypothesis was proposed before data collection.

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