

# The Role of Anticipated Regret in Escalation of Commitment

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This research tests the general proposition that people are motivated to reduce future regret under escalation situations. This is supported by the findings that (a) escalation of commitment is stronger when the possibility of future regret about withdrawal is high than when this possibility is low (Studies 1a and 1b) and (b) escalation of commitment increases as the net anticipated regret about withdrawal increases (Studies 2a and 2b). Furthermore, the regret effects in the 4 studies were above and beyond the personal responsibility effects on escalation. This research indicates that people in escalation situations are simultaneously influenced by the emotions they expect to experience in the future (e.g., anticipated regret) and by events that have happened in the past (e.g., responsibility for the initiating previous decision).

**Keywords:** escalation of commitment, regret theory, anticipated regret, emotion, decision making

Decision makers often face the dilemma of whether to continue a failing course of action. There is ample evidence that under those situations (i.e., escalation situations) individuals often “throw good money after bad” (Garland, 1990), such that they tend to become locked into losing courses of action (see Brockner, 1992; Staw, 1997, for reviews). Since the seminal works by Staw (1976), there has been ample research studying this so-called escalation of commitment phenomenon from a perspective that assumes people primarily look retrospectively. That is, past research has been primarily devoted to understanding how people’s decisions are shaped by factors that happened in the past, such as the initial responsibility for the decision (Conlon & Parks, 1987; Staw, 1976), sunk costs (Arkes & Blumer, 1985; Garland, 1990), mental budgets (Heath, 1995), and financial budgets (Tan & Yates, 2002).

Despite the considerable contributions of this focus on past events, some scholars have suggested that studying the retrospective side of escalation of commitment per se seems to be inadequate and incomplete. For example, Conlon and Garland (1993, see also Garland & Conlon, 1998) showed that escalation of commitment is higher when decision makers expect that the cur-

rent project will soon be completed than when they expect it will take a long time to complete. Other research has found that people take future return estimates and outcome expectancy into consideration when making escalation decisions (Tan & Yates, 1995; Wong, 2005). This body of research indicates that under escalation situations “decision makers actually look forward (prospectively) and look back (retrospectively)” (Moon, 2001a, p. 110). That is, in addition to considering retrospective factors (i.e., factors that occurred before escalation decisions), people should also consider prospective factors (i.e., factors that will occur after escalation decisions) when they decide whether to continue a losing course of action. Thus, we believe that additional insights into escalation of commitment can be gained from understanding its prospective factors.

Yet, thus far, except in the works on project completion (Conlon & Garland, 1993; Moon, 2001a) and future outcomes (Tan & Yates, 1995; Wong, 2005), researchers know little about how people’s motives to look forward under escalation situations influence their decisions. To advance this forward-looking component of escalation research, we attempted to understand escalation of commitment from a regret perspective. Specifically, we examined how anticipated regret (i.e., regret that one anticipates experiencing in the future) influences escalation tendencies. Drawing from regret theory (Bell, 1982; Loomes & Sugden, 1982; Zeelenberg, 1999), we proposed that people seek to minimize future regret when making decisions under escalation situations. We designed four studies to test this general proposition. We first give a brief introduction to regret theory. We then consider how people may take anticipated regret into account when making decisions under escalation situations. The results from the four studies are reported to test the specific hypotheses derived from regret theory.

## Regret Theory

Zeelenberg (1999) defined regret as an emotion that “we experience when realizing or imagining that our present situation would have been better, had we decided differently” (p. 94). One may feel regret after investing in Stock A and finding out that investing in Stock B would have resulted in a much larger profit (Kahneman &

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Preparation of this article was supported by RGC Earmarked Research Grant (CUHK4462/04H) awarded to Jessica Y. Y. Kwong and Kin Fai Ellick Wong and RGC Direct Allocation Grant (DAG04/05. BM43) awarded to Kin Fai Ellick Wong.

We thank Virginia Unkefer for her helpful comments on an earlier version of this article. We are grateful to Alex Fan and Carmen K. Ng for their assistance in various aspects of this research. The two authors contributed equally to this research. The order of the authorship was arbitrarily determined.

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Miller, 1986). A customer may feel regret after deciding not to buy a product but later finding out that the price of that product has increased (Arkes, Kung, & Hutzel, 2002). These examples illustrate that people often compare the outcome of a chosen course of action with the outcome of the unchosen course of action. Apart from this regret that is experienced in retrospect of a decision (Gilovich & Medvec, 1995), people may also take a forward-looking approach and imagine the regret they will probably feel if they make a particular decision (Simonson, 1992; Zeelenberg, Beattie, van der Pligt, & de Vries, 1996). This type of regret is referred to as anticipated regret (see Zeelenberg, 1999 for a review).

One key idea of regret theory (Bell, 1982; Loomes & Sugden, 1982) is that most people are regret averse such that they seek to avoid choosing options that will induce regret. Simonson (1992) found that asking consumers to anticipate the regret they would feel after making a wrong decision decreases their likelihood of choosing a product that has a high possibility of creating regret (e.g., a lesser known and cheaper brand) over a product that has a low possibility of creating regret (e.g., a well-known and more expensive brand). Richard, van der Pligt, and de Vries (1996) showed that asking respondents to anticipate their regret after engaging in unsafe sex reduced their reported risky sexual behavior within a 5-month period. The results of these studies indicate that commitment (avoidance) to an option increases as the salience of the possible regret about that option decreases (increases), suggesting that anticipated regret plays an important role in decision processes.

Applying the regret reduction principle to a two-option situation, one expects that people are likely to choose the option that they anticipate will have a lower possibility of regret. That is, they compare the anticipated regret about choosing Option A (e.g., if they choose Option A, but the outcome of Option B turns out to be better) with the anticipated regret about choosing Option B (e.g., if they choose Option B, but the outcome of Option A turns out to be better). If people want to minimize the possibility of future regret, their tendency to choose Option A should increase as the anticipated regret about choosing Option B increases and/or as the anticipated regret about choosing Option A decreases. In other words, Option A is more likely to be chosen as the net anticipated regret about choosing Option B increases, such that the net anticipated regret about choosing Option B equals the regret about choosing Option B minus the regret about choosing Option A.

### Anticipated Regret and Escalation of Commitment

Brockner (1992) and Staw and Ross (1987) suggested that there are three defining characteristics in a typical escalation situation. First, a large amount of resources (e.g., money, time, or effort) has already been invested (i.e., sunk costs). Second, this original course of action is not successful (i.e., negative feedback). Finally, this situation allows the decision maker either to continue with further investment as an attempt to recover the previous costs or to withdraw entirely from the course of action (i.e., a two-option situation). Escalation of commitment is typically manifested as the tendency to invest further in the losing course of action (Brockner, 1992; Staw, 1976, 1997; Staw & Ross, 1987), particularly when one is personally responsible for the initiation of the failing investment (Conlon & Parks, 1987; Staw, 1976).

How might anticipated regret influence decision making under escalation situations? Regret theory suggests that decision makers

would compare the anticipated regret about persistence with the anticipated regret about withdrawal. With the regret-reducing assumption, the tendency to continue the losing course of action increases as the difference in anticipated regret between withdrawal and persistence increases. That is, escalation of commitment is more likely when the anticipated regret about persistence decreases and/or when the anticipated regret about withdrawal increases. Thus, escalation of commitment would be more likely when the net anticipated regret about withdrawal increases.<sup>1</sup>

Note that the effect of anticipated regret is expected to be not only independent of but also above and beyond the effects of retrospective antecedents such as personal responsibility for initiating the project. Chronologically, personal responsibility for the initial decision has to do with events that already happened before the current escalation decision (i.e., at a retrospective locus), whereas anticipated regret for the current escalation decision has to do with what may emerge in the future after making such a decision (i.e., at a prospective locus). Anticipated regret, therefore, is relevant to all decision makers regardless of their prior responsibility for the failing decision. As such, anticipated regret should influence escalation of commitment independent of the prior personal responsibility.<sup>2</sup> In addition, the predicted effects of anticipated regret should be above and beyond the classic responsibility effects (e.g., Brockner, 1992; Conlon & Parks, 1987; Staw, 1976). We propose the following hypotheses:

*Hypothesis 1a:* People exhibit stronger escalation of commitment when they are personally responsible for the initial decision than when they are not responsible for it.

*Hypothesis 1b:* Above and beyond the responsibility effect of Hypothesis 1a, there is a positive relationship between the net anticipated regret about withdrawal and escalation of commitment. That is, escalation of commitment is positively

<sup>1</sup> There have been a large number of studies showing that people have more regrets about actions than about inactions (Gilovich & Medvec, 1995; Kahneman & Tversky, 1982). The action-inaction distinction, however, is not quite clear in escalation situations. On the one hand, people need to increase effort and give extra resources to continue the prior course of action, whereas they need to do nothing to withdraw from it. In this sense, choosing to continue could be classified as an action and choosing to withdraw could be classified as an inaction. On the other hand, choosing to continue does not change the prior course of action, whereas choosing to withdraw implies changes from the prior course of action. In this sense, choosing to continue seems to be an inaction and choosing to withdraw seems to be an action (Zeelenberg, van den Bos, van Dijk, & Pieters, 2002). Such ambiguity suggests that relating escalation of commitment and anticipated regret through an action-inaction distinction may not be appropriate.

<sup>2</sup> It should be noted that there has been a debate about whether personal responsibility is a necessary condition for experiencing regret (Connolly, Ordóñez, & Coughlan, 1997; Zeelenberg, van Dijk, & Manstead, 1998). This debate, however, is not relevant to the argument that anticipated regret is independent of responsibility. This is because the core concern of this debate is about the relation between experienced regret and responsibility, whereas anticipated regret is of primary concern in the present research. In escalation situations, people can have anticipated regret when they are going to decide whether to continue the decision made by another person, though only those who are responsible for the failing decision would actually have experienced regret.

related to anticipated regret about withdrawal and is negatively related to anticipated regret about persistence.

We conducted four studies to test these hypotheses. In Studies 1a and 1b, we evaluated our predictions by manipulating anticipated regret, whereas in Studies 2a and 2b, we did so by directly measuring regret. Four separate samples of undergraduate students and professional teachers read a scenario describing an escalation situation and then were asked to indicate their willingness to continue the losing course of action. To increase the internal validity of the present research, we used scenarios that describe (a) waiting for a bus, a situation with which most undergraduate participants would be familiar, and (b) a proposal application dilemma (Wong, 2005) with which most professional teachers would be familiar.

## Study 1

### Study 1a: Method

**Participants, design, and procedure.** One hundred twenty-three undergraduates participated in Study 1a. Participants were randomly assigned to one of the four conditions as a result of crossing two between-participant factors: personal responsibility (responsible vs. nonresponsible) and regret possibility about withdrawal (high vs. low). They completed the questionnaires in a large lecture theater. They were instructed to read the scenario as if it were actually real.

On the basis of previous escalation studies (Conlon & Parks, 1987; Staw, 1976), we manipulated responsibility by telling participants in the personally responsible condition that they were responsible for the initiation of the prior decision and telling those in the personally nonresponsible condition that another person was responsible for the prior decision. On the basis of previous regret research (Zeelenberg, 1999; Zeelenberg & Beattie, 1997; Zeelenberg et al., 1996), we manipulated regret possibility by telling participants in the high-regret possibility condition that they would know the results from choosing to persist after they chose to withdraw and telling those in the low-regret possibility condition that they would not know the results of choosing to persist if they chose to withdraw. Zeelenberg and colleagues have reasoned that the possibility of regret is a matter of whether one will know the outcome of the unchosen option (see Zeelenberg, 1999; Zeelenberg et al., 1996). In situations in which a decision maker would never know the outcome of the unchosen option, regret possibility is said to be low. This is because the decision maker

cannot compare *what is* with *what would have been*. In this case one would not run the risk of experiencing post-decisional regret. Hence, if one expects no feedback on what would have been there is no need to anticipate future regret. (Zeelenberg, 1999, p. 97).<sup>3</sup>

**Decision task and measures.** The decision scenario described an escalation situation in a context of waiting for a bus (see Appendix A) in which a target person who was waiting for a bus believed that the bus would come soon whereas his or her friend disagreed. They then bet on when the bus would come. The scenario met the three defining features of an escalation situation (i.e., sunk costs, negative feedback, and a two-option situation; see Brockner, 1992; Staw, 1981) in that there was (a) negative feedback such that the outcome was not consistent with the decision

makers' prior belief (i.e., the bus did not come soon), (b) a sunk cost of HK\$100 (about U.S.\$12.85) in the target person's prior bet, and (c) a two-option situation such that the decision maker could either continue with a second bet as an attempt to recover the prior loss of HK\$100 and run the risk of a further loss of HK\$50 or accept the loss of HK\$100 and not risk any further loss.

After reading the scenario, participants were asked to indicate their willingness to continue the bet by giving a probability rating ranging between 0 (*absolutely no*) and 100 (*absolutely yes*). This willingness rating served as the index of escalation tendency (Conlon & Garland, 1993; Garland, 1990; Moon, 2001a, 2001b).

### Study 1a: Results

The mean escalation ratings as a function of personal responsibility and regret possibility are shown in the upper panel of Table 1. All effects that were statistically significant in this article had a  $p < .05$ . All the significant effects reported have  $\eta_p^2$ s from .08 to .88. According to Cohen (1988), these effects correspond to medium ( $\eta_p^2 > .06$ ) to large ( $\eta_p^2 > .14$ ) effect sizes, suggesting that these are not trivial effects, and they should not be neglected in contexts with similar factors.

A 2 (responsibility: responsible vs. nonresponsible)  $\times$  2 (regret possibility about withdrawal: high vs. low) analysis of variance revealed that the main effect of responsibility was significant,  $F(1, 119) = 19.66$ ,  $\eta_p^2 = .14$ , indicating that escalation of commitment was stronger under the personally responsible condition (75.44) than under the personally nonresponsible condition (53.98). This finding replicates the standard responsibility effects found in escalation of commitment settings (i.e., Hypothesis 1a). The main effect of regret possibility was also significant,  $F(1, 119) = 11.61$ ,  $\eta_p^2 = .09$ , indicating that escalation of commitment was stronger when the possibility of regret about withdrawal was high (72.90) than when the possibility of regret about withdrawal was low (56.48). A regression analysis with the escalation ratings as the dependent variable revealed that after we controlled for the effect of responsibility, regret possibility added a significant portion to the accounted variance,  $\Delta R^2 = .08$ ,  $F(1, 119) = 11.67$ . This supports Hypothesis 1b, indicating that the effect of regret possibility,  $\beta = .29$ ,  $t(120) = 3.42$ , was above and beyond the effect of personal responsibility.

### Study 1b: Method

**Participants and design.** Participants were 120 bilingual (Chinese-English) professional teachers working in primary schools (52%) or secondary schools (48%), recruited through a professional teachers' association in Hong Kong. One of the major duties of teachers in Hong Kong is applying for funding from the

<sup>3</sup> Note that in situations in which people will not know the outcome of the unchosen option, people may anticipate feeling regret through a counterfactual outcome (i.e., thoughts of "what might have been"; Roese, 1997, p. 133). Yet, regrets associated with counterfactual outcomes are less painful than regrets associated with actual outcomes (Van Dijk & Zeelenberg, 2005). Thus, the anticipated regret in situations in which people will not know the outcome of the unchosen option has been recognized as less strong than the anticipated regret in situations where people will know the outcome of the unchosen option (Zeelenberg & Beattie, 1997; Zeelenberg et al., 1996).



Table 1  
Results of Study 1: Mean Aggression Ratings

Regret possibility	Personal responsibility			
	Responsible		Nonresponsible	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Study 1a				
High	84.97	25.41	61.23	24.78
Low	66.23	31.51	46.74	25.82
Study 1b				
High	78.33	25.13	58.37	27.73
Low	60.40	29.51	38.47	23.39

Quality Education Fund (QEF). The QEF funds a wide range of projects that promote quality education. It is an annual competitive grant open to anyone. In 1999 and 2000, there were 2,916 proposals submitted from secondary schools, of which 1,438 received funding.

All respondents voluntarily participated in this study. They were randomly assigned to one of the four conditions as a result of two between-participants factors: personal responsibility (responsible vs. nonresponsible) and regret possibility about withdrawal (high vs. low).

**Decision task and procedure.** Each respondent completed a set of questionnaires that consisted of two parts. Part 1 was a decision task from Wong (2005), which described a QEF project proposal submission situation in which (a) previously, time and effort had been devoted to a survey and data collection in order to prepare for a proposal of organizing a jazz-dancing program, (b) recently, the teacher learned the bad news that the government had announced that jazz-dancing programs were much less likely to get funded for some reason, and (c) the teacher needed to indicate his or her willingness to continue writing up the proposal for submission. Four versions were constructed according to the Personal Responsibility  $\times$  Regret Possibility factorial design (see Appendix B for details).

In Part 2, participants responded to two statements for manipulation checks on a 7-point scale, with 1 representing *strongly disagree* and 7 representing *strongly agree*. The first statement was the following: "In the scenario, I was responsible for preparing this jazz-dancing program last year." This checked the manipulation of personal responsibility. Respondents in the personally responsible condition gave significantly higher ratings (6.48) than did those in the personally nonresponsible condition (2.70),  $F(1, 118) = 670.39$ ,  $\eta_p^2 = .85$ . The second statement was as follows: "In the scenario, I will know whether my estimate of my proposal rating will be higher than, at, or lower than the new standard." This checked the manipulation of regret possibility. Respondents in the high-regret possibility condition gave significantly higher ratings (6.15) than did those in the low-regret possibility condition (2.40),  $F(1, 118) = 552.82$ ,  $\eta_p^2 = .82$ . These findings indicate that our manipulations were successful.

### Study 1b: Results

The mean escalation ratings are shown in the lower panel of Table 1. A 2 (responsibility: responsible vs. nonresponsible)  $\times$  2 (regret possibility: high vs. low) analysis of variance revealed that

the main effect of responsibility was significant,  $F(1, 116) = 18.69$ ,  $\eta_p^2 = .14$ , indicating that escalation of commitment was stronger under the personally responsible condition (69.37) than under the personally nonresponsible condition (48.17). This finding again replicates the standard responsibility effects on escalation of commitment (i.e., Hypothesis 1a). The main effect of regret possibility was also significant,  $F(1, 116) = 15.24$ ,  $\eta_p^2 = .12$ , indicating that escalation of commitment was stronger when the possibility of regret about withdrawal was high (68.35) than when the possibility of regret about withdrawal was low (49.43). A regression analysis with the escalation ratings as the dependent variable revealed that after we controlled for the effect of responsibility, regret possibility added a significant portion to the accounted variance,  $\Delta R^2 = .10$ ,  $F(1, 116) = 15.36$ . This supports Hypothesis 1b, indicating that the significant effect of regret possibility,  $\beta = .32$ ,  $t(117) = 3.92$ , was above and beyond the effect of personal responsibility.

### Discussion

Results of Studies 1a and 1b support Hypothesis 1b, suggesting that people are more inclined to continue a losing course of action when the possibility of regret about withdrawal is high than when it is low. Under conditions in which the outcome of persistence will be revealed even if the withdrawal option is chosen, there is a possibility that decision makers will learn that a better outcome would have resulted had they chosen to persist. Conversely, in conditions in which the outcome of persistence will not be revealed if the withdrawal option is chosen, decision makers are not able to compare the outcomes of the two options. These findings indicate that people tend to choose the option that precludes postdecisional comparisons of outcomes. This supports the central proposition that people are regret averse under escalation situations.

### Study 2

One limitation of Study 1 was that no measures of anticipated regret were included. This limitation was because the manipulation of regret possibility imposes a constraint on the measures of anticipated regret. That is, anticipated regret about withdrawal (i.e., choosing to withdraw and then knowing that the outcome of choosing to persist would be better) is logically irrelevant in the low-regret possibility condition, in which one will never know the outcome of persistence. Therefore, we added measures of anticipated regret in Study 2 to examine directly the relation between anticipated regret and escalation of commitment in situations in which the outcome from choosing to persist would always be known.

### Study 2a: Method

**Participants, design, and procedure.** Two hundred six undergraduates participated in Study 2a. None of them had participated in Study 1a. Data from 2 participants with incomplete information were excluded. Participants were randomly assigned to one of the two personal responsibility conditions (responsible vs. nonresponsible). Participants in the personally responsible condition were told that they were responsible for the initiation of the prior decision, whereas participants in the personally nonresponsible

condition were told that another person was responsible for the initiation of the prior decision. The procedure of administration followed that of Study 1a.

**Decision task and measure.** The decision task was modified from that used in Study 1a (see Appendix C). The regret measures included two items. The first item asked participants to indicate their levels of regret if they continued Peter's bet but then the bus did not come in the next 15 min and hence they lost an additional \$100 to Peter. Another item asked their levels of regret if they rejected Peter's bet but then the bus came within the next 15 min and hence they missed the chance to gain \$100. On the basis of Connolly, Ordóñez, and Coughlan (1997) and Zeelenberg, van Dijk, and Manstead (1998), regret was measured on 11-point scales with the endpoints labeled *no regret* (−5) and *very much regret* (+5). The net anticipated regret about withdrawal was equal to the anticipated regret about withdrawal minus the anticipated regret about persistence. Finally, as in Study 1a, escalation of commitment was indicated by the participant's ratings on the willingness to continue the bet, which ranged from *absolutely not willing* (0) to *absolutely willing* (100). Half of the participants gave the regret ratings before the willingness rating, and the other half completed the ratings in the opposite order. The order of rating did not interact with any variables of interest in this study and hence is not further discussed.

### Study 2a: Results

Means, standard deviations, and zero-order correlations of the variables of interest are presented in the upper panel of Table 2. Results of hierarchical regression analyses testing the unique contribution of anticipated regret to escalation of commitment are presented in Table 3.

Escalation of commitment was significantly and positively correlated with net anticipated regret about withdrawal,  $r = .38$ , and anticipated regret about withdrawal,  $r = .20$ . Escalation of commitment was significantly and negatively correlated with anticipated regret about persistence,  $r = -.25$ . We then performed

hierarchical regression analyses (see Table 3) to examine Hypothesis 1b. In the regression analyses, we added age and gender as control variables because (a) escalation of commitment has been characterized as a kind of risk-taking behavior (Brockner, 1992; Wong, 2005) and (b) there are well-documented age and gender effects on risk-taking behaviors (Slovic, 1966; Vroom & Pahl, 1971).

After we controlled for the effects of age and gender, responsibility added a significant portion to the accounted variance in Model 2,  $\Delta R^2 = .11$ ,  $\beta = .27$ ,  $t(202) = 4.11$ . This replicated the responsibility effects on escalation (Conlon & Parks, 1987; Staw, 1976), supporting Hypothesis 1a. Model 3 shows that net anticipated regret added a significant portion to the accounted variance,  $\Delta R^2 = .11$ . This indicates a significant positive relationship between escalation of commitment and net anticipated regret about withdrawal,  $\beta = .35$ ,  $t(201) = 5.49$ , above and beyond that of personal responsibility. We conducted another series of hierarchical regression analyses to examine the specific effects associated with each regret component (see Edwards, 1995). The two measures of anticipated regret jointly added a significant portion of accounted variance in Model 4,  $\Delta R^2 = .12$ . Anticipated regret about withdrawal was significantly and positively related to escalation of commitment,  $\beta = .25$ ,  $t(200) = 3.79$ , whereas anticipated regret about persistence was significantly and negatively related to escalation of commitment,  $\beta = -.34$ ,  $t(200) = -5.15$ . These findings support Hypothesis 1b.

### Study 2b: Method

**Participants and design.** Participants were 120 professional teachers working in primary schools (52%) or secondary schools (48%) recruited through a professional teachers' association in Hong Kong. None of them had participated in Study 1b. They were randomly assigned to one of the two conditions of personal responsibility: responsible versus nonresponsible.

**Decision task, procedure, and measures.** The decision task and procedure were the same as those in Study 1b, except that (a)

Table 2  
Means, Standard Deviations, and Zero-Order Correlations, Studies 2a and 2b

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
Study 2a ( <i>n</i> = 206)									
1. Escalation of commitment (willingness to continue the bet, 0 to 100)	46.54	31.69	—						
2. Net anticipated regret about withdrawal (−10 to +10)	−0.98	3.39	.38**	—					
3. Anticipated regret about withdrawal (−10 to +10)	1.46	2.71	.20**	.64**	—				
4. Anticipated regret about persistence (−10 to +10)	0.47	2.91	−.25**	−.57**	.27**	—			
5. Personal responsibility (0 = nonresponsible, 1 = responsible)	0.50	0.50	.29**	.05	.10	.14*	—		
6. Age (years)	19.46	0.68	.11	.06	.09	.02	−.07	—	
7. Gender (0 = female, 1 = male)	0.32	0.47	.22**	.23**	−.19**	.08	.12	.03	—
Study 2b ( <i>n</i> = 120)									
1. Escalation of commitment (willingness to continue the bet, 0 to 100)	50.39	32.42	—						
2. Net anticipated regret about withdrawal (−10 to +10)	−0.79	4.43	.37**	—					
3. Anticipated regret about withdrawal (−10 to +10)	1.28	2.91	.30**	.73**	—				
4. Anticipated regret about persistence (−10 to +10)	0.49	3.02	−.23**	−.70**	−.01	—			
5. Personal responsibility (0 = nonresponsible, 1 = responsible)	0.50	0.50	.38**	.02	.08	.10	—		
6. Age (years)	34.08	9.66	.13	.22*	−.16	.16	.03	—	
7. Gender (0 = female, 1 = male)	0.27	0.44	.20**	.22*	−.11	.20*	.04	.04	—

\*  $p < .05$ . \*\*  $p < .01$ .

Table 3  
Results (in Standardized Betas) of Hierarchical Multiple Regression of Study 2

Variable	Study 2a				Study 2b			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Control variables								
Age	.10	.12	.14*	.15*	.13	.12	.05	.05
Gender (0 = female, 1 = male)	.21*	.18**	.10	.09	.19*	.18*	.11	.11
Effects of net anticipated regret								
Responsibility (0 = nonresponsible, 1 = responsible)		.27**	.27**	.28**		.37**	.37**	.37**
Net anticipated regret about withdrawal			.35**				.33**	
Effects of net regret components								
Anticipated regret about withdrawal				.25**				.23**
Anticipated regret about persistence				-.34**				-.23**
$\Delta R^2$		.07	.11	.12		.14	.10	.10
$\Delta F$		16.86**	30.09**	16.25**		19.99**	16.40**	8.15**
Overall model $R^2$	.06	.13	.25	.25	.06	.19	.30	.30
Adjusted $R^2$	.05	.12	.23	.24	.04	.17	.27	.26
Overall model $F$	6.16*	10.05**	16.16**	13.45**	3.45*	9.34**	12.04**	9.55**

Note. Dependent variable = willingness rating.

\*  $p < .05$ . \*\*  $p < .01$ .

only the outcome-visible version was included, and (b) half of the participants gave regret ratings before giving the willingness ratings, whereas the other half did so in the opposite order. We measured anticipated regret using the items in Study 2a.

### Study 2b: Results

The lower panel of Table 2 reveals that escalation of commitment was significantly and positively correlated with anticipated regret about withdrawal,  $r = .37$ , and with anticipated regret about withdrawal,  $r = .30$ . In addition, escalation of commitment was significantly and negatively correlated with net anticipated regret about persistence,  $r = -.23$ . We then performed hierarchical regression analyses (see Table 3) in a way identical to the analyses in Study 2a.

After we controlled for the effects of age and gender, responsibility added a significant portion to the accounted variance in Model 6,  $\Delta R^2 = .14$ ,  $\beta = .37$ ,  $t(116) = 4.47$ . This again replicated the classic responsibility effects on escalation (Conlon & Parks, 1987; Staw, 1976), supporting Hypothesis 1a. Model 7 shows that escalation of commitment was positively related to net anticipated regret about withdrawal,  $\Delta R^2 = .10$ ,  $\beta = .33$ ,  $t(115) = 4.05$ . Model 8, with a more refined analysis, shows that escalation tendency was actually influenced by the two regret components in opposite directions,  $\Delta R^2 = .10$ . Anticipated regret about withdrawal had a positive impact,  $\beta = .23$ ,  $t(114) = 2.87$ , whereas anticipated regret about persistence had a negative impact,  $\beta = -.23$ ,  $t(114) = -2.91$ , on escalation tendency. These findings again supported Hypothesis 1b.

### Discussion

With direct regret measures, the results of Studies 2a and 2b show that people take anticipated regret into account when making decisions under escalation situations. They exhibit a stronger escalation tendency when they anticipate that the likelihood of experiencing regret about withdrawal will increase. These findings are consistent with the regret-reducing assumption of regret theory (Bell, 1982; Loomes & Sugden, 1982; Zeelenberg, 1999).

### General Discussion

#### Implications for Escalation of Commitment

This article examines the influences of anticipated regret on escalation of commitment. We began with the idea that understanding the retrospective factors of escalation of commitment, though useful, is not adequate. Another important but underresearched issue is the role of prospective factors influencing this phenomenon. We then proposed that anticipated regret affects escalation decisions such that decision makers choose to persist or withdraw when that particular action is associated with less anticipated regret. Finally, we provided evidence for this proposition from four studies. Studies 1a and 1b demonstrated that escalation of commitment was stronger when the possibility of experiencing future regret about withdrawal was high (e.g., when the outcome was visible) than when it was low (e.g., when it was invisible). Studies 2a and 2b found that escalation of commitment increased as the net anticipated regret about withdrawal increased.

The present research contributes to the escalation literature in two respects. First, it gives evidence that when decision makers choose to persist in a failing course of action, their decisions are not only shaped by retrospective factors such as who initiated the prior decision (i.e., events that happened in the past). They also simultaneously consider prospective factors such as their anticipation of regret for a particular option (i.e., future events yet to happen). Clearly, decision makers do not simply fall prey to what they may have decided for themselves in the past; they are equally capable of looking forward to what may lie ahead in due course (see also Conlon & Garland, 1993; Moon, 2001a; Tan & Yates, 1995).

Second, the present research adds to our understanding of the emotional dynamics underlying escalation of commitment. Specifically, escalation research has focused primarily on its cognitive determinants, such as self-justification (Staw, 1976, 1981; Staw, Barsade, & Koput, 1995), goal substitution (Conlon & Garland, 1993; Moon, 2001a), self-efficacy (Whyte, Saks, & Hook, 1997), and illusion of control (Staw, 1997). Yet, many scholars have advocated that a more complete understanding of managerial de-

cision making should consider the emotions of making decisions (Bazerman, Tenbrunsel, & Wade-Benzoni, 1998; Fineman, 2000; Walsh, 1995), pointing to the need for examining the emotional aspects of escalation. In responding to this call, Wong, Yik, and Kwong (2006) suggested that people are motivated to avoid negative emotions under escalation situations. Moon, Hollenbeck, Humphrey, and Maue (2003) found that escalation of commitment is positively related to trait anxiety and is negatively related to trait depression. As regret is one of the most commonly experienced negative emotions (Shimanoff, 1984), the present research moves this line of research one step further by specifying anticipated regret as one of the negative emotions that people attempt to avoid under escalation situations.

### *Practical Implications*

Escalation of commitment has been argued to be maladaptive to both individuals and organizations (Bazerman, 1994; Brockner, 1992; Staw, 1981). However, managers of organizations sometimes may want to increase employee commitment to a course of action under some circumstances (Schwenk, 1986). Accordingly, an important practical issue in escalation research is to develop techniques that can vary decision makers' levels of escalation of commitment to a particular course of action (e.g., Nathanson et al., 1982; Simonson & Staw, 1992). With respect to this issue, two managerial implications emerge from the present research.

First, the present research implies that one useful way to reduce decision makers' levels of escalation of commitment is to lead them to think about their future regret about persistence. Such an instructed thought procedure would reduce escalation of commitment through increasing anticipated regret. Research on social cognition has shown that imagining how a hypothetical outcome might be true increases one's subjective belief in the outcome's likelihood (Hirt & Markman, 1995; Koehler, 1991). For example, Ross, Lepper, Strack, and Steinmetz (1977) showed that participants who had been asked to explain hypothetical reasons for a patient's suicide were more likely to believe that the patient would commit suicide in the future. In addition, instructed thoughts have been shown to successfully increase people's sense of anticipated regret and hence to reduce the associated behaviors (Richard et al., 1996; Simonson, 1992).

Second, the present research identifies that escalation of commitment is dependent on the possibility of regret about withdrawal. Managers who want to reduce employees' commitment to a course of action, therefore, may consider reducing regret possibility about withdrawal by making the outcome from persistence invisible, or at least less salient. That is, managers may reduce the possibility that employees anticipate future regret by avoiding mentioning to employees that employees will know the outcome of persistence even if they do not choose this option. Conversely, managers who want to increase employees' commitment to a course of action may consider highlighting the possibility of their experiencing future regret by knowing the outcome of persistence. That is, managers may explicitly mention to employees that the outcome of persistence will be revealed no matter if they choose to persist or to withdraw.

Although escalation of commitment has long been an important topic in organizational behavior, the practical implications of the present research may extend to other applied settings that resemble typical escalation situations. For example, a mutual fund agent

may want current clients who have lost some of their prior investments to continue with the investment. The present research implies that the mutual fund agent should put more emphasis on factors that make regret about withdrawal salient (e.g., the possible outcome and the outcome visibility of continuing). This research also suggests that the emphasis on anticipated regret may be a useful tactic in negotiation contexts to persuade the other party to continue a prior course of action that currently seems not to be successful. These are interesting areas and topics for future research.

### *Limitations and Future Research*

As an initial step to understand the role of regret in escalation of commitment, we chose to follow the traditional scenario approach that has had a long history in escalation research (Arkes & Blumer, 1985; Conlon & Garland, 1993; Moon, 2001a, 2001b; Wong et al., 2006). This approach has some advantages that cannot be easily achieved by other more naturalistic approaches. In particular, it allowed us to draw relatively strong conclusions with respect to the causality between escalation of commitment and the studied variables. In actual work contexts, however, it is not feasible to manipulate the antecedents of escalation identified in the literature (such as personal responsibility, regret possibility, project completion, sunk costs, etc.). Given that our major purpose was to find antecedents that are new to the escalation literature, a controlled environment was deemed necessary.

The use of the scenario approach raises a concern about ecological validity, yet there are indications supporting the generalizability of the present findings to natural settings. First, as far as we know, findings from escalation studies conducted in real settings are consistent with those from scenario studies (e.g., Brody & Lowe, 1995; Staw et al., 1995; Staw & Hoang, 1995). This indicates that the scenario approach likely captures many essential features of real contexts. Second, to increase the validity of the experimental context, we included samples with different backgrounds (i.e., undergraduates and professional teachers) and used decision scenarios that were tailored for the samples (i.e., waiting for a bus and submitting a grant proposal). We believe these characteristics could at least minimize the limitations of our scenario designs.

Nonetheless, we acknowledge that despite the positive features discussed above, scenario-based studies may not be ideal because they prevent participants from experiencing real sunk costs and negative feedback. Therefore, we second the recommendations from Brockner (1992) and Staw (1997) that the next step in this line of research should be to replicate our findings in more naturalistic settings.

### *Conclusion*

We have asserted that decision makers consider not only retrospective factors but also prospective factors when they have to decide to persist or withdraw from a failing course of action. We have also proposed that anticipated regret captures one plausible prospective antecedent to escalation of commitment from an emotional perspective. In line with the regret-reducing assumption of regret theory, the present research suggests that people choose the option that reduces the possibility of future regret under escalation situations.



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## Appendix A

### Materials Used in Study 1a

The version used in the responsible/high-regret possibility condition was as follows, with the wording used in the low regret possibility condition in parentheses (1 Hong Kong dollar ~ 13 U.S. cents).

One day, you and two other friends, Peter and Ken, were on the way to take a bus. Unfortunately, you saw that the bus you wanted to take left the bus-stop right before you arrived. You missed the bus and needed to wait for the next bus. You remembered that the schedule of this bus was quite frequent and said, “This is a frequent bus. We won’t wait too long. The next bus will come in around 10 minutes.” Although Ken agreed with you, Peter expressed doubt. Peter said, “I remember that the schedule of this bus is very infrequent. Last time I spent 40 minutes waiting here for the next bus.” You and Peter engaged in a debate about how frequent this bus is.

Accordingly, you both agreed to have a bet. You agreed to wait 15 minutes at the bus-stop. You would then pay HK\$10 to Peter for every minute in this 15-minute period until the bus came. Thus, if the bus did not come within 15 minutes, you would lose HK\$150 in total to Peter. However, if the bus came within 15 minutes, he would pay HK\$150 to you, though he would not return any money he had gained in the previous minutes.

Ten minutes later, the bus had not yet come, and so you had paid HK\$100 to Peter. Now, Peter suggested that you could stop the bet but stay for five more minutes (and then leave the bus-stop to take the train). You would then (would not) learn if the bus came in the next 5 minutes. If you accepted Peter’s suggestion and terminated the bet, Peter would not pay HK\$150 to you and you would not have the risk of losing an additional HK\$50 to Peter. Alternatively, you could choose to continue the bet and wait 5 minutes more. Doing so, you would risk losing an additional HK\$50 to Peter although there was a chance that Peter would pay HK\$150 to you.

The version used in the personally nonresponsible condition was identical to the above one, except that (a) the first bet was between Ken and Peter, and Ken paid \$100 to Peter, and (b) Ken passed the second bet to the participant. Thus, participants were not responsible for the former loss of \$100, though there was negative feedback on their belief that the bus would come soon. After reading the scenario, participants were asked to indicate their willingness to continue the bet by giving a probability rating ranging between 0 (*absolutely no*) and 100 (*absolutely yes*).

## Appendix B

### Materials Used in Study 1b

The version used in the personally responsible/high-regret possibility condition was as follows, with the wording used in the personally nonresponsible condition in parentheses ( ) and the wording used in the low-regret possibility condition in brackets [ ]. (1 Hong Kong dollar ~ 13 U.S. cents).

Last year you (Frank, your colleague) had a plan to organize a jazz-dancing program in school and would apply for the Quality Education Fund (QEF), this year for its establishment. You (He) have (has) given many efforts in preparation, including information collection, co-ordination, an attitude survey within school, and meetings with colleagues and students, etc. This year you continue to follow-up the jazz-dancing program (Frank retired last year and this year you were assigned to follow-up the jazz-dancing program).

The Education Department would evaluate all QEF proposals on a 10-point scale, with 1 representing *poor*, 5 representing *average*, and 10 representing *excellent*. According to your past experience, you expected that this proposal would be rated 7, which was higher than the past threshold of accepting a QEF proposal on a jazz-dancing program, i.e., the threshold was 6. Your estimates have been very accurate.

Right before you began to write the proposal, the QEF officer gave two public announcements. First, it had funded too many jazz-dancing programs in the last two years, e.g., over 150 programs, and further funding to similar programs would be highly selective this year. Second, to let teachers understand the new standard [to avoid teachers over-interpreting the results of this particular year], they will [NOT] disclose to the public the minimum rating of accepting a jazz-dancing program proposal on the basis of the accepted proposal in this year. That is, you will [NOT] learn whether or not your estimate of your proposal rating will be higher than, at, or lower than the new standard.

The decision you need to make now is to either abandon the jazz-dancing proposal and write another proposal for another dancing program that is less selectively funded or continue writing the same proposal.

Respondents gave a rating ranging between 0 (*absolutely no*) and 100 (*absolutely yes*) to indicate the extent to which they would be willing to continue to write the current proposal. We used this willingness rating to indicate escalation of commitment.

(Appendixes continue)

## Appendix C

## Materials Used in Study 2a

The version used in the personally responsible condition was as follows.

One day, you and two other friends, Peter and Ken, were on the way to take a bus. Unfortunately, you saw that the bus you wanted to take left the bus-stop right before you arrived. You missed the bus and needed to wait for the next bus. You remembered that the schedule of this bus was quite frequent and said, "This is a frequent bus. We won't wait too long. The next bus will come within 10 minutes." Although Ken agreed with you, Peter expressed doubt. Peter said, "I remember that the schedule of this bus is very infrequent. Last time, I spent 40 minutes waiting here for the next bus." You and Peter engaged in a debate about how frequent this bus was.

Accordingly, you both agreed to have a bet. If the next bus arrived within 15 minutes, Peter would pay HK\$100 to you. However, if there was no bus arriving within 15 minutes, you would pay HK\$100 to Peter.

Fifteen minutes passed and no bus came. You lost HK\$100 to Peter.

Then, Peter proposed another bet. He suggested waiting for the bus 15 minutes longer. If it arrived within 15 minutes, he would return the HK\$100 back to you. However, if there was no bus arriving in the next 15 minutes, you would pay another HK\$100 to Peter.

The version used in the personally nonresponsible condition was identical to the above one, except that (a) the first bet was between Ken and Peter, and Ken paid HK\$100 to Peter, and (b) Ken passed the second bet to the participant. Thus, participants were not responsible for the former loss of HK\$100, though there was a negative feedback on their belief that the bus would come soon. Escalation of commitment was indicated by participants' ratings on the willingness to continue the bet, which ranged from 0 (*absolutely not willing*) to 100 (*absolutely willing*).

Received July 5, 2005

Revision received March 15, 2006

Accepted March 29, 2006 ■

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