

Learning to de-escalate: The effects of regret in escalation of commitment ☆

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Abstract

The current research investigates whether and how individuals are able to learn from one escalation situation to another, hypothesizing that post-escalation regret will reduce subsequent escalation. In Experiment 1, individuals participated in an escalation task after escalating their commitments in a first escalation situation. In Experiment 2, participants' regret was manipulated by asking them to imagine engaging in an escalation situation. The experiments expand our theoretical and practical understanding of how to prevent escalation of commitment by demonstrating that escalation-specific regret—either experienced from an earlier escalation or primed through imagining an escalation scenario—reduced subsequent escalation in a different context. The discussion focuses on the theoretical and practical impact of regret and emotions in general in escalation of commitment.

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Research on escalation of commitment has repeatedly demonstrated that after investing time, energy, money, or any important resource, many individuals feel a need to justify and retrospectively rationalize their poor decisions. They become psychologically committed to and reinvest in their initially-chosen (failing) course of action (Arkes & Blumer, 1985; Brockner & Rubin, 1985; Staw, 1976; Teger, 1980). Surprisingly, failures and negative feedback often do

not reduce these commitments, nor do they lead to alternative action plans (Staw & Fox, 1977; Teger, 1980). Instead, many individuals stubbornly stay their original course, driven by the hope and belief that things will improve. Indeed, escalation of commitment has been implicated in diverse settings, from multi-million dollar organizational decisions (Hietala, Kaplan, & Robinson, 2003; Ross & Staw, 1986, 1993) to performance appraisals (Bazerman, Beekun, & Schoorman, 1982; Schoorman, 1988), from the amount of time basketball players have on court (Staw & Hoang, 1995) to the Vietnam War (Staw, 1976). Despite numerous examinations of what causes escalation and how it can be prevented (Brockner, 1992; Ross & Staw, 1986; Staw & Ross, 1987), instances of escalation of commitment continue to abound among individuals, organizations, and society (e.g., Hietala et al., 2003; Holstege, 2007; Murnighan, 2002).

In hopes of finding additional means of improving decision making and decreasing escalation of commit-

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ment, the current paper considers whether individuals are able to learn from one escalation episode to the next. Specifically, it considers individuals' post-escalation affective reactions, examining whether feelings of regret may reduce subsequent escalation. Since regret can be a powerful motivating force that prompts individuals to change their behavior (Gilovich & Medvec, 1995; Zeelenberg & Beattie, 1997; Zeelenberg, Inman, & Pieters, 2001; Zeelenberg & Pieters, 1999), post-escalation regret may provide a useful means of learning to de-escalate.

Escalation of commitment

In escalation of commitment, decision-makers allocate an original pool of resources (money, time, or intangibles such as self-identities) to further a particular goal, after which they receive negative feedback, suggesting that, at best, the goal has not been obtained. Individuals often respond to this ambiguous future by increasing their commitment and investing more (Brockner, 1992; Ross & Staw, 1986; Rubin & Brockner, 1975; Staw & Ross, 1989; Teger, 1980). They invest "too much to quit" and become "entrapped" (Teger, 1980). Unfortunately, these reinvestments are irrational responses to sunk costs, violating the notion that individuals should be prospectively rather than retrospectively rational (Fox & Staw, 1979; Staw, 1981; Staw & Ross, 1978).

Researchers have examined numerous determinants of escalation, including project, organizational/contextual, social, and psychological factors (see Brockner, 1992; Brockner & Rubin, 1985; Ross & Staw, 1986, 1993; Staw & Ross, 1987, 1989 for thorough reviews). Project variables include objective features of a project that affect the perceived utility of a course of action, such as whether a specific budget is set (Heath, 1995), as well as whether feedback is negative (McCarthy, Schoorman, & Cooper, 1993; Staw & Ross, 1978), repeated (Hantula & DeNicolis Bragger, 1999; McCain, 1986; Staw & Fox, 1977; Teger, 1980), ambiguous or clear (Bowen, 1987; Garland, Sandefur, & Rogers, 1990; Hantula & DeNicolis Bragger, 1999; Staw & Fox, 1977), and exogenous or endogenous (Staw & Ross, 1978). In general, escalation can occur across multiple rounds of negative feedback and is more likely to occur when negative feedback is ambiguous (suggesting that turning the project around is still possible) or when individuals have not defined a budget beforehand.

Organizational and contextual factors can also fuel escalation. For instance, when organizations make complex initial investments that prompt smaller expenditures (e.g., hiring planners when the focal decision is building a plant), the investments become increasingly

institutionalized within the organization (Zucker, 1983), resulting in a greater likelihood of escalation. Similarly, power struggles within an organization (Sala-nick & Pfeffer, 1977) and with external institutions (e.g., vested governmental parties, Zucker, 1983) may result in political forces pushing for or against the initial investments.

Additionally, social factors such as requiring individuals to justify their choices (Bobocel & Meyer, 1994; Fox & Staw, 1979), competing with others (Brockner & Rubin, 1985; Ku, 2004; Ku, Malhotra, & Murnighan, 2005; Rubin, Brockner, Small-Weil, & Nathanson, 1980; Teger, 1980), and cultural norms that favor "sticking to one's guns" (Staw & Ross, 1980) can also increase escalation of commitment.

Finally, numerous psychological determinants have been shown to affect escalation. For instance, loss frames (Arkes & Blumer, 1985; Bazerman, 1984; Whyte, 1986), overconfidence (McCarthy et al., 1993), as well as individual differences such as high self-monitoring, low duty, and high achievement striving (Brockner & Rubin, 1985; Caldwell & O'Reilly, 1982; Moon, 2001) have been found to increase escalation. Additionally, sunk costs are physiologically arousing, which can impair clear and rational decision making (Ku, 2004; Ku et al., 2005). Unfortunately, individuals who are less able to anticipate this alluring and arousing nature of sunk costs are more likely to escalate their commitments (Ku, 2007).

Despite this array of psychological determinants, the most empirically-supported and examined psychological explanation for escalation focuses on individuals' need to justify their initial investments (e.g., Arkes & Blumer, 1985; Bazerman, Guiliano, & Appelman, 1984; Brockner, 1992; Teger, 1980 for thorough reviews). In escalation situations, psychological discomfort results when individuals receive negative feedback about a previously-chosen alternative, and additional investments are a readily available means to rationalize and justify losses—by escalating their commitments, individuals can vindicate their choices. Thus, individuals who are personally responsible for an initial, negative decision escalate more than those who are not initially responsible (Davis & Bobko, 1986; McCarthy et al., 1993; Schoorman, 1988; Staw, Barsade, & Koput, 1997). Further evidence that justification is a critical mechanism of escalation is found in the fact that people tend to request more retrospectively- rather than prospectively-oriented information (Conlon & Parks, 1987). Additionally, individuals with domain-relevant expertise are more likely to escalate than novices since experts are more personally invested in their initial decisions (Fox, Schmida, & Yinon, 1996). Finally, Bobocel and Meyer (1994) found that justification, private or public, is a necessary antecedent of escalation. In sum, escalation of commitment is a complex decision-making bias, resulting from a host

of project, organizational/contextual, social, and psychological factors.

By focusing on these various determinants of escalation, a variety of solutions have been proposed to improve decision making and decrease escalation of commitment. For instance, managers and policy-makers are advised to set and publicly commit to clear goals and limits (Heath, 1995; Simonson & Staw, 1992), to increase monitoring (Kirby & Davis, 1998), to regularly evaluate project performance (Keil & Robey, 1999), and to de-institutionalize the project (Ross & Staw, 1993). Since justification is such a key problem in escalation, researchers have also proposed interventions that focus on decoupling the initial decision from subsequent reinvestments (Ross & Staw, 1993; Staw, 1976; Staw et al., 1997), decreasing the need for self-justification through affirming on other important values (Sivanathan, Molden, Galinsky, & Ku, submitted for publication), and focusing on the decision process rather than the outcome (Keil & Robey, 1999; Simonson & Staw, 1992). Finally, de-escalation may best be achieved by using multiple interventions simultaneously (Royer & Ku, 2007).

Although some escalation interventions have shown success (e.g., Heath, 1995; Royer & Ku, 2007), escalation of commitment is a particularly pernicious and tenacious decision-making bias. For instance, Murnighan (2002) reports on executive students who escalated in an auction despite witnessing fellow classmates escalate their commitments *in the same exercise just moments before*. Thus, learning to de-escalate may be an uphill battle.

Learning to de-escalate

To further broaden our understanding of escalation and how to prevent it, the current research looks beyond the usual realm of project, organizational/contextual, social, and justification determinants and related solutions. Instead, the current research considers more broadly whether and how individuals can learn from one escalation situation to the next.

Unfortunately, research has repeatedly demonstrated that individuals have great difficulty transferring knowledge from one setting to the next (Bransford, Franks, & Vye, 1989; Gentner & Markman, 1997; Reeves & Weisberg, 1994): individuals often fail to access stored knowledge, and even when they do, they often access irrelevant information (Bransford et al., 1989; Gentner & Markman, 1997; Reeves & Weisberg, 1994). Thus, instead of attending to structural similarities in problems, individuals tend to focus on surface similarities, resulting in an inability to transfer relevant knowledge effectively across domains. As noted by Thompson, Gentner, and Loewenstein (2000, p. 62), there is “a

striking dissociation between what is most accessible in memory and what is most useful in reasoning: We often fail to recall what is ultimately most valuable for solving new problems”. Although the ability to learn seems alarmingly limited, individuals who are able to abstract general schemas or principles, by drawing analogies between situations for instance, can effectively transfer knowledge from one setting to another (Gentner, Loewenstein, & Thompson, 2003; Gentner & Namy, 2006; Loewenstein, Thompson, & Gentner, 1999; Thompson et al., 2000). Thus, if individuals are able to form a deep understanding of one escalation situation and recall these lessons appropriately, they may be able to reduce their subsequent escalation.

In addition to such a cognitive form of learning, learning can also emerge from a more affective basis. For instance, in classical conditioning, individuals can learn to associate emotions with particular objects and events when they are paired together sufficiently often (Pavlov, 1927; Watson & Rayner, 1920). The most famous example of such classical conditioning is the woeful story of Little Albert who learned to fear a white rat after experimenters repeatedly made loud, frightening bangs when the rat was present (Watson & Rayner, 1920). Additionally, according to Thorndike's (1911) original law of effect, actions that are accompanied by pleasurable or satisfying consequences become associated with the situation and are more likely to be repeated when the situation is encountered again. However, if the responses are followed by painful and aversive consequences, the associations become weaker and the actions diminish. Thus, individuals learn to repeat actions that are pleasant and discontinue and avoid behaviors that are aversive (Dand, 1946; Thorndike, 1927, 1933). In escalation situations, if individuals experience aversive feelings after escalating, they may learn to de-escalate their commitments.

Together, then, learning may occur via a cognitive or affective route. To examine whether and how individuals learn from one escalation situation to another, the current research focuses on how regret may be particularly powerful in promoting learning since it can create learning via both cognitive and affective means.

Post-escalation regret

A host of studies has investigated the effects of positive and negative affect on decision making (Forgas, 1989; Isen & Means, 1983; Mellers, Schwartz, & Cooke, 1998; Schwarz, 2000), with recent work focusing on more specific emotions since similarly-valenced emotions (e.g., anger vs. fear vs. sadness) can have dramatically different effects on judgments and choices (DeSteno, Petty, Wegener, & Rucker, 2000; Lerner & Keltner, 2000, 2001; Raghunathan & Pham, 1999; Tie-

dens & Linton, 2001). The fact that many emotions—such as arousal (Ku, 2004; Ku et al., 2005), general unhappiness or dissatisfaction (Ku et al., 2005), disappointment, and regret (Ku et al., 2005)—may run through individuals' minds after escalation makes understanding the effects of post-escalation emotions very important.

Of these, and other, emotions, regret may be particularly pertinent in escalation situations. Research indicates that individuals experience regret if, after having chosen a course of action, they feel that they would have been better off choosing a different course (Bell, 1982; Landman, 1987, 1993; Loomes & Sugden, 1982; Zeelenberg, 1999; Zeelenberg & Pieters, 2004; Zeelenberg, van Dijk, Manstead, & van der Pligt, 2000). Thus, individuals may experience regret if they realize that they should have stopped investing in a failing course of action. Indeed, regret is characterized by thinking that one could have done something about the outcome since it was self-produced (van Dijk & Zeelenberg, 2002). In contrast, for instance, disappointment is seen as more unexpected and resulting from a desire for a more pleasurable outcome that is beyond anyone's control (van Dijk & Zeelenberg, 2002). Since responsibility is such a critical factor in escalation (Staw, 1976), disappointment should be less relevant in escalation situations. In addition, research has shown that regret is different from general unhappiness (Zeelenberg, van Dijk, & Manstead, 1998), and has a direct impact on behavior, above and beyond general dissatisfaction and separate from disappointment (Zeelenberg & Pieters, 2004). The current research therefore focuses on the role of post-escalation regret on learning to de-escalate.

The experience of regret can be functional, leading individuals to learn to alter their behavior in similar future situations (Gilovich & Medvec, 1995; Zeelenberg & Beattie, 1997; Zeelenberg et al., 2001; Zeelenberg & Pieters, 1999). Since the experience of regret is aversive, it should create in individuals a desire to avoid the unpleasant behavior (Thorndike, 1911; Watson & Rayner, 1920). Regret's unpleasantness also often prompts "what if", "if only" counterfactual thinking, which can allow individuals to deliberate the wisdom of their prior deeds, to learn from their mistakes ("What could I have done differently? How could I have prevented that?"), and to adopt more appropriate actions (Galinsky, Seiden, Kim, & Medvec, 2002; Kahneman & Miller, 1986; Landman, 1993; Ritov, 1996; Roese, 1994, 1997; van Dijk & Zeelenberg, 2005; Zeelenberg, 1999). For instance, Roese (1994) manipulated counterfactual thinking and found that participants who considered how they might have done better on an anagram task improved their performance on a subsequent anagram task. Finally, regretful experiences are also often salient and memorable (Zeelenberg, 1999), resulting in a greater likelihood that individuals will recall the lessons learned.

Together then, regret can generate learning through affective and cognitive means. For instance, Zeelenberg and Beattie (1997) found that offerers in ultimatum games demonstrated greater decreases in their subsequent offers when provided with information that the recipient would have been willing to accept 10 guilders less rather than 2 guilders less, and that differences in regret mediated these findings. Similarly, negotiators who felt regret after making a first offer were less likely to do so again (Galinsky et al., 2002).

In the context of escalation of commitment, if escalating produces regretful feelings, individuals should learn to de-escalate. Two experiments addressed this issue: in Experiment 1, individuals participated in an escalation task after escalating their commitments in a first escalation situation. In Experiment 2, participants' regret was manipulated by asking them to imagine engaging in an escalation situation.

Experiment 1

Experiment 1 considered whether learning is possible from one escalation situation to another and examined how post-escalation regret may negatively predict subsequent escalation. Participants first engaged in an escalation task modified from Rubin and Brockner (1975), in which they could earn money by working on an anagram task. Working too long resulted in financial losses and indicated escalation. Participants then returned a week later to engage in a modified version of Shubik's (1971) dollar auction, which Teger (1980) has used to study escalation. In this paradigm, individuals bid on a dollar bill, with the highest bidder winning the dollar and paying what he or she bid. However, in an unusual twist, the second highest bidder also pays what he or she bid, but receives nothing. This unique auction establishes an escalation dilemma in which the second highest bidder is motivated to continue bidding to prevent a definite loss, often resulting in the winner paying more than \$1 for the dollar bill.

Method

Participants

Native English speakers were recruited for the study since the anagram task required proficiency in English. Participants were 60 undergraduates (16 men and 44 women) and were tested in groups of two to six. They were paid \$10 for participating in each session and were told that they had a chance of receiving a performance bonus for Week 1's anagram task (see the payoff matrix in Table 1); they were also led to believe that they would be paid a performance-based auction bonus in Week 2. All participants in the second session were actually given an additional \$2, regardless of their performance.

Table 1
Payment schedule for anagram task in Experiment 1

Minutes	Initial stake (what you get if you do not correctly unscramble at least 8 of the 10 words)	Jackpot (what you get if you correctly unscramble at least 8 of the 10 words)
Less than 3	\$3.00	\$8.00
3 or more but less than 4	\$2.70	\$5.75
4 or more but less than 5	\$2.40	\$3.50
5 or more but less than 6	\$2.10	\$2.10
6 or more but less than 7	\$1.80	\$1.60
7 or more but less than 8	\$1.50	\$1.20
8 or more but less than 9	\$1.20	\$1.00
9 or more but less than 10	\$0.90	\$0.75
10 or more but less than 11	\$0.60	\$0.50
11 or more but less than 12	\$0.30	\$0.25
12 or more	\$0.00	\$0.00

Note: Participants were provided \$3.00 as the initial stake. If they correctly solved at least eight of the ten anagrams, they were paid from the right most column. Otherwise, they were paid from the middle column. An examination of the payoffs shows that participants should quit before the 6th minute. Continued effort beyond the 6th minute results in smaller earnings even if participants unscrambled eight or more words.

Twenty participants¹ who did not return for the second session could not be included in the analyses. Two participants ran out of time when placing bids and were excluded from the analyses, resulting in a final *N* of 38 (9 men and 29 women).

Procedure

Anagram task. Participants were told that they would take part in an anagram task to unscramble ten words (two 5-letter, two 6-letter, two 7-letter, one 8-letter, one 9-letter, and two 10-letter words). Participants were told that their goal was to earn as much money as possible. They were informed that \$3.00 (the “initial stake,” which was given to them in an envelope) was theirs to keep, but they also had the opportunity to earn up to \$8.00 (the “jackpot”), depending on their performance as specified in a payoff matrix (see Table 1). The table revealed that participants had to correctly solve at least eight of the ten words in under 3 min to earn \$8.00, a highly unlikely event since the task included several very difficult anagrams. Given the payoff contingencies, participants should have quit before the 6th minute if they could not unscramble at least eight of the words by then. Continued effort into the 6th minute resulted in smaller earnings even if participants unscrambled eight or more words. Thus, efforts into the 6th minute were a clear indication of escalation of commitment.

Participants were next told that three envelopes of hints would be available. Using a hint would add 45 s to their total time. Participants were also told that they would have to look at the hints in the order specified and note when the hint was used.

When participants had read the instructions, the experimenter returned with a timer, the anagram task,

and the three envelopes of hints. The first page of the anagram task was an example that explained how to unscramble the letters “AMHT” to form the word “MATH”. The second page contained two easy 5-letter anagrams, and the final page contained the remaining eight anagrams. After ensuring that participants had no questions about the payoff matrix and knew how to use the timer (and emphasizing the need to be honest in using it), the experimenter left, returning either exactly 13 min later or whenever participants indicated they wished to stop.

After the task, participants completed a filler task to provide them time to rationalize their decisions on how long they had chosen to spend on the task (Walster & Festinger, 1962). Next, they filled out a short questionnaire that included a self-report measure of regret². Finally, participants were thanked, paid \$10, and asked to return a week later for a related study that would pay them another \$10.

Auction bidding task. When participants returned a week later, they sat at isolated computers to participate in the auction. Although participants bid against a programmed opponent, they were led to believe that they were bidding against another participant. The auctions ostensibly included two people who bid for a prize of points that would be converted into cash. Participants were told that the highest bidder would win the prize and pay what was bid; the loser also paid what he or she bid but won nothing. Each bidder received points to use for bidding; their goal was to win the prize but pay as little as possible as remaining points were converted into cash. The bidding began at 40 points and

¹ Technical difficulties with the automated participant recruiting system prevented reminders from being sent to participants, resulting in the high attrition rate.

² Participants also forecasted their behavior in and emotions to the auction task at the end of first session. This forecasting portion of the research design was used to examine other hypotheses not included in the current manuscript.

proceeded in 40-point increments with no jump bidding (i.e., they could not bid 120 after a bid of 40). Finally, bidders were told that they had 4 s to make each bid.

Participants then saw a mock auction, in which a fictional “Bidder 1” had to make the first bid. Participants proceeded through the mock auction at their own pace and pop-up balloons highlighted key auction features. They then viewed the mock auction again in “real time.”

Participants were told that they would be bidding on a prize of 356 points, with every four points worth \$0.10 (an \$8.90 prize). They were given an endowment of 800 points, but had no information on the other bidder's points. The ground rules and goals of the task were repeated. Finally, participants were asked if they wanted to make the first bid of 40 points. After responding, they were informed that they had been randomly chosen to make the first bid.

The auction ended when the computer/confederate bid 800 points, when participants ran out of time, or when they chose to stop bidding. The computer announced the final outcome—participants always lost the auction and were informed that they would have to pay their last bid.

Dependent measures. Participants reported their post-anagram regret by indicating on a 7-point scale (from 1 “not at all” to 7 “very much so”) the amount of regret they felt about the amount of time spent on the task. After the auction, participants indicated how much they regretted their bid decisions. Participants' performance in the anagram task and their maximum bid in the auction were also recorded.

Results and discussion

Effects of post-anagram regret on subsequent auction escalation

Experiment 1 was designed to examine whether individuals learn to de-escalate after escalating in one situation and how post-escalation regret may prompt learning. Overall, 32 out of 38 participants (84%) escalated their commitments in the anagram task, spending more than 5.99 min on the anagrams. Interestingly, anagram escalators experienced no more regret ($M = 3.81$, $SD = 1.94$) than non-escalators ($M = 3.67$, $SD = 1.75$; $t(36) = -.17$, $p = .43$, 1-tailed, $d = .07$). Thus, if regret induces learning, the equivalent post-escalation regret between escalators and non-escalators suggests that escalators may continue escalating.

However, the data show that learning can occur after escalation. In particular, to most accurately examine the potential effects of post-escalation regret on subsequent escalation, I only considered anagram escalators' regret in predicting auction escalation. Results indicated that the more anagram escalators experienced regret, the less they tended to bid in the auction a week later ($r = -.31$,

$p = .08$) and the less they actually bid past the auction prize value ($r = -.41$, $p < .02$).

To further illustrate the learning demonstrated, it is also useful to compare anagram escalators' maximum bids to those of other participants from separate manuscripts who only engaged in one escalation situation, the auction bidding task, without first completing the anagram task (Ku, 2004, 2007). This cross-manuscript comparison indicated that anagram escalators ($M = 408$, $SD = 243$) bid significantly less than individuals who had no previous anagram escalation experience ($M = 611$, $SD = 220$; $t(45) = -2.75$, $p < .005$, 1-tailed, $d = .86$; Ku, 2004 and $M = 529$, $SD = 222$; $t(47) = -1.72$, $p < .05$, 1-tailed, $d = .51$; Ku, 2007). Additionally, whereas participants from these other manuscripts bid significantly more than 356 points, demonstrating clear escalation of commitment, anagram escalators' maximum bids were not significantly greater than the 356-point prize ($t(31) = 1.20$, $p = .12$, 1-tailed, $d = 0.30$).

Thus, Experiment 1 demonstrated that individuals can learn to de-escalate from one escalation situation to the next and that post-escalation regret reduced subsequent escalation, with more regret predicting less escalation.

Regret for participants who did and did not escalate in the auction

Finally, an examination of all participants' post-auction regret indicated that auction escalators (i.e., individuals who bid more than 356 points) had more regret about their decisions ($M = 4.79$, $SD = 2.02$) than non-escalators ($M = 3.14$, $SD = 1.46$; $t(34.17) = 2.90$, $p = .003$, 1-tailed, $d = .90$). Together, the data suggest that a second escalation experience left individuals with considerable regret about their decisions.

Despite the tenacity of escalation (e.g., Murnighan, 2002; Royer & Ku, 2007) and the difficulties of learning (Bransford et al., 1989; Gentner & Markman, 1997; Reeves & Weisberg, 1994), Experiment 1 demonstrated that individuals can transfer learnings from one escalation setting to another. Additionally, consistent with prior research (Gilovich & Medvec, 1995; Zeelenberg & Beattie, 1997; Zeelenberg & Pieters, 1999), Experiment 1 demonstrated that escalators' regret predicted escalation a week later—the more regret participants felt, the less they escalated in a different context, decreasing their bids and whether they bid past the auction prize value. Indeed, anagram escalators bid significantly less than other auction participants from other studies who had never experienced the anagram task (Ku, 2004, 2007), learning not to escalate their commitments beyond the prize's worth. Thus, by considering how psychological processes other than self-justification play out during and after escalation, the current experiment demonstrated that post-escalation regret can result in learning to de-escalate.

Finally, consistent with Ku et al.'s (2005) findings that escalation does not necessarily bring about unhappiness and regret, anagram escalators and non-escalators experienced similar amounts of post-anagram regret. Intriguingly, however, *auction* escalators reported significantly more regret than non-escalators, suggesting the possibility that two experiences of escalation might enhance learning even more (although this remains to be verified by future research).

Experiment 2

Experiment 1 demonstrated that individuals can learn to de-escalate their commitments after experiencing post-escalation regret. A potential limitation of Experiment 1, however, is that anagram escalators self-selected themselves into the situation. To remedy this problem, Experiment 2 manipulated regret, seeking to replicate the finding that post-escalation regret inhibits subsequent escalation.

Experiment 2 was also designed to further our understanding of the type of regret that will decrease escalation, considering whether regret must be context-specific. In particular, prior regret research has demonstrated that individuals who regret their actions will alter their behavior when they encounter a *similar* situation. For instance, Galinsky et al.'s (2002) negotiators were less likely to make a first offer after experiencing regret about similar actions in an earlier negotiation. Since regret alters behavior because regretful experiences are painful and evoke cognitive and behavioral reparations (Landman, 1993; Zeelenberg, 1999), it seems likely that the learning effects of regret are context-specific: regretting fast driving may not alter one's negotiation tactics.

Thus, using the same auction task from Experiment 1, Experiment 2 included an escalation-related regret condition, an escalation-unrelated regret condition, and a no-regret control condition. Consistent with Experiment 1, Experiment 2 predicted that individuals would be less likely to escalate their commitments after experiencing escalation-related regret than escalation-unrelated regret or no regret.

Method

Participants

Participants were 62 undergraduates (22 men and 40 women) who were compensated \$10 for participating. As in Experiment 1, participants were led to believe that they would be paid an auction bonus depending on their performance, but were given an additional \$2 regardless of their performance. Participants were tested in groups of two to six. One participant ran out of time when placing bids and was

excluded from the analyses, resulting in a final N of 61 (21 men and 40 women).

Procedure

Participants were randomly assigned to imagine feeling regret in an escalation-related or escalation-unrelated situation. Participants in the no-regret control condition were collected at a later date.

Regret manipulation. Since hiring and promotion decisions often have escalation characteristics (Schoorman, 1988), in the escalation-related situation, participants were asked to imagine that they were a manager at Baxter company where they had hired a new employee, Tom. Although Tom had seemed like a good candidate to hire, he had failed to perform and was unable to complete work correctly and quickly without help. Participants were asked to imagine that although they had wondered if they should lay off Tom, they had decided to personally provide Tom with additional training and help. However, despite additional training, Tom made little progress and was still unable to do his job effectively and efficiently. Participants were then instructed, "Consider how you regret your decisions. Please try to experience this feeling of regret and describe how much you regret your decision to hire and continue training Tom and how you regret that Tom is still unable to do his job properly" and were given space to write about their regret.

In the non-escalation situation (modified from Hetts, Boninger, Armor, Gleicher, & Nathanson, 2000), participants were asked to imagine that they had parked their car on campus and walked to class for a quiz. On the way to class, however, they had a strange feeling that they might have left the car door unlocked, and rushed back to the car only to discover that it was locked all along. However, because of the additional time they took, they were late for their quiz. Participants were instructed, "Consider how you regret your decisions. Please try to experience this feeling of regret and describe how you regret your decision to go back and check your car and how you regret being late for the quiz" and were given space to write about their regret.

Finally, participants in the no-regret control condition completed the auction task without any prior regret manipulations.

After the regret manipulation, participants completed Experiment 1's auction task. The dependent measure was participants' maximum bids. Participants were then thoroughly debriefed, thanked, and paid.

Results and discussion

Participants' maximum bids were submitted to a one-way analysis of variance (ANOVA), revealing a marginally significant effect ($F(2, 58) = 2.62, p = .08, \eta_p^2 = .08$;

see Fig. 1). However, as recommended by Rosenthal and Rosnow (1991), specific *a priori* contrasts showed that, consistent with hypotheses and findings from Experiment 1, participants who imagined escalation-related regret ($M = 315$, $SD = 248$) bid significantly less than those who imagined escalation-unrelated regret ($M = 497$, $SD = 258$) or those in the no-regret control condition ($M = 479$, $SD = 259$; $t(58) = -2.27$, $p = .014$, 1-tailed, $d = .66$). Moreover, there was no difference in maximum bids for participants in the escalation-unrelated regret and no-regret control conditions ($t(58) = .22$, $p = .41$, 1-tailed, $d = .07$).

Additionally, when these mean bids were compared to the prize value of 356 points, participants in the escalation-related regret condition did not bid past the prize value ($t(15) = -.66$, $p = .26$, 1-tailed, $d = .23$). However, participants in both the escalation-unrelated regret and no-regret control conditions bid more than the prize was worth ($t(13) = 2.05$, $p = .03$, 1-tailed, $d = .77$ and $t(30) = 2.64$, $p = .007$, 1-tailed, $d = .67$, respectively).

Thus, corroborating findings from Experiment 1, participants who pictured themselves escalating their commitments in a hiring situation learned from their imagined escalation mistake and did not escalate their commitments in the auction task, bidding no more than the prize was worth. However, control participants and those who imagined experiencing non-escalation regret, regret that was not specific to an escalation situation, failed to learn, bidding more than those who imagined escalation-related regret and past the prize's value. Thus, imagining the experience and feeling of regret in one escalation situation can be a powerful means of preventing future escalation.

General discussion

The current experiments have explored whether and how individuals are able to learn from one escalation setting to another, focusing on how post-escalation regret plays a role in this learning. Experiment 1 demon-

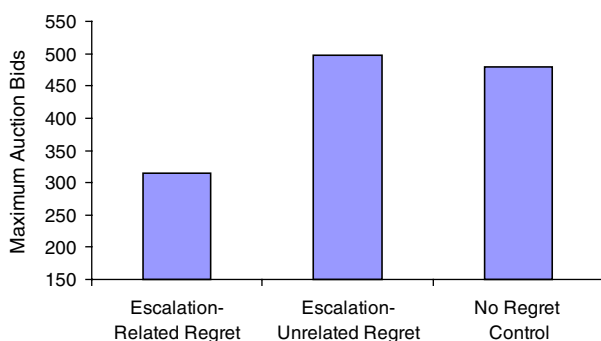


Fig. 1. The effect of regret on escalation of commitment in Experiment 2's auction bidding task.

strated that learning did occur, with post-escalation regret negatively predicting subsequent escalation in a different context—the more regret escalators felt in one task (anagrams), the less likely they were to participate and escalate their commitments in another situation (auctions). This lack of escalation stood in stark contrast to individuals who had not experienced the anagram task (Ku, 2004, 2007) and who bid significantly more than anagram escalators and more than the prize's value. The effects of post-escalation regret on learning to de-escalate were replicated in Experiment 2, which manipulated escalation-related regret. Those who imagined escalation-related regret did not bid past the prize's value whereas those who did not imagine regret and those who imagined escalation-unrelated regret did overbid and escalate their commitments. To consider the robustness of the effects, a meta-analysis demonstrated that regret in one escalation situation decreased participation (Mean weighted $r = -.31$, $z = -2.97$, $p = .003$) in a new context. Thus, data from the two experiments show a consistent pattern—post-escalation regret, whether actual or imagined, did indeed result in learning to de-escalate in a different setting.

Learning to de-escalate via post-escalation regret

Despite numerous efforts to provide managers and policy makers with interventions to prevent escalation of commitment (e.g., Heath, 1995; Simonson & Staw, 1992; Sivanathan et al., submitted for publication; Staw, 1976), escalation continues to plague and cost individuals (Murnighan, 2002), organizations (Hietala et al., 2003), and society (Holstege, 2007). Indeed, escalation is a particularly pernicious and tenacious decision-making bias: even after witnessing fellow classmates overpay in a dollar auction, students continued to escalate their commitments when the exercise was immediately rerun (Murnighan, 2002).

Instead of focusing on the usual project, organizational/contextual, social, and justification mechanisms typically examined in escalation, the current experiments considered the notion of escalation interventions more generally, examining whether and how individuals learn from one escalation situation to another. Although knowledge transfer is difficult to achieve (Bransford et al., 1989; Gentner & Markman, 1997; Reeves & Weisberg, 1994), individuals who engage in deep thinking to understand the underlying structure of a situation (Gentner et al., 2003; Gentner & Namy, 2006; Loewenstein et al., 1999; Thompson et al., 2000) and those who experience aversive feelings (Thorndike, 1911; Watson & Rayner, 1920) can learn to avoid those situations. By understanding that regret can generate such cognitively- and affectively-based learning, the current experiments demonstrated that post-escalation regret can allow individuals to learn to de-escalate.

Experiment 1 demonstrated that the actual experience of regret in an escalation situation decreased escalation in a second setting. Thus, getting individuals to experience post-escalation regret may be a useful decision-making intervention. Although such specific advice is promising, even more intriguing was the finding that after two escalation experiences in Experiment 1, escalators had more regret than non-escalators. Participants who experienced two escalation situations seemed to take heed of the common saying “Fool me once, shame on you. Fool me twice, shame on me”. Thus, it is possible that double escalation experiences may provide plentiful regret from which escalators can learn not to escalate. Indeed, future research should more carefully consider the effectiveness of such double-escalation on learning.

In addition to demonstrating that actual post-escalation regret decreased subsequent escalation, Experiment 2 pointed to yet another means by which regret can be used to tackle escalation problems. Instead of actually escalating and then experiencing regret (a potentially dangerous and costly proposition), Experiment 2 demonstrated that it is possible to arm managers and policy makers with a simpler de-escalation strategy: by *imagining* escalation-related regret shortly before a critical business decision, individuals may be able to prevent financially-unwise decision making. Such an intervention is particularly intriguing since individuals were unable to learn to de-escalate by witnessing their classmates’ escalation (Murnighan, 2002). Thus, although people often learn by observation (Bandura, 1977), individuals’ predictions that they are safe from the entrapping nature of sunk costs and escalation (Ku, 2004, 2007) may make observational learning difficult: Murnighan’s (2002) students might have believed that they, unlike their less savvy classmates, were immune to sunk costs. Imagining escalation-related regret may, however, overcome such an egocentric forecasting bias, forcing individuals to simulate in their minds and heart the experience of escalation.

Although the current findings provide several simple and powerful means that can help to limit escalation, future research could fruitfully address the underlying mechanisms that contribute to regret’s effects on learning. For instance, future research might consider whether the aversive negative affective experience of regret (i.e., an affective mechanism), the thoughts regret may engender (i.e., a cognitive mechanism), or both are needed to lead to de-escalation. Experiment 2’s findings suggest that the effects of regret are not simply based on affect. Since participants in both the escalation-related and escalation-unrelated conditions were induced to imagine regret, the sheer aversive feeling of regret is likely an insufficient explanation. Instead, escalation-related regret may have prompted a deeper consideration of the situation, potentially resulting in

counterfactual pondering or analogical reasoning. Whereas counterfactuals (Roese, 1994, 1997) might have allowed individuals to contemplate what they should have done instead of escalating, analogical reasoning (Gentner et al., 1997) might have created a structural (rather than a superficial, surface) understanding of the situation, allowing individuals to better identify an escalation situation when they next encountered one.

In future research, it will also be important to investigate whether regret has long lasting effects. Participants in Experiment 1 faced one escalation situation in Week 1 and a second dilemma a week later, i.e., the time between the two experiences was relatively short. Future research should determine if learning can transfer across longer time spans. For instance, if regret functions (at least partially) as a result of its aversive affective feelings, cognitive dissonance (Festinger, 1957) and the psychological immune system (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998) may repair the hurt of irrationality, decreasing the transferability of learning.

Additionally, future research should consider the complexity of post-escalation regret in the short and long terms (Ku, 2004). Specifically, individuals regret actions in the short-term but regret *inactions* in the long-term (Gilovich & Medvec, 1994, 1995). If cognitive dissonance and the psychological immune system decrease the pain of post-escalation regret, individuals will be left with little short-term regret. Since individuals regret inactions in the long-term, escalators may also experience little long-term regret as they may believe that they (unlike non-escalators) committed to a course of action, doing everything in their power to turn things around. Thus, escalation may ironically result in little short- and long-term regret. Despite such a gloomy outlook, the ability to learn from imagined escalation-related regret still makes regret a useful tool against escalation of commitment.

Finally, the effects of post-escalation regret become evermore complex when we consider individuals’ actions vs. inactions in escalation situations. For instance, Zeelenberg, van den Bos, van Dijk, and Pieters (2002) have suggested an inaction effect, where individuals experience more regret for inactions than actions when prior outcomes are negative (a characteristic feature of escalation situations). The inaction effect would suggest greater subsequent escalation. In contrast, other work by Zeelenberg and colleagues (e.g., Zeelenberg, Nijstad, van Putten, & van Dijk, 2006) has demonstrated an inaction inertia effect. In this body of research, inaction actually results in less subsequent action, with mixed findings on the role of regret. Thus, whereas the inaction effect would imply more subsequent escalation, the inaction inertia effect would suggest less escalation. All that is clear is that much remains to be untangled in the escalation and regret web.

A revised view of escalation: The role of affect

More generally, the current experiments increase our theoretical understanding of the emotional processes involved in and after escalation of commitment. In particular, recent research has begun to examine how emotions are involved in escalation (e.g. Ku, 2004; Ku et al., 2005). Although escalation of commitment has often been examined in an affectless vacuum where individuals make calm, collected investment decisions (Staw, 1976; Staw & Ross, 1987, 1989), such an image underspecifies the role of emotions in escalation (Ku et al., 2005). Indeed, the very presence of sunk costs is physiologically arousing (Ku et al., 2005), and many escalation situations (e.g., auctions and mergers and acquisitions) inherently involve competition, stakes, audiences, and time pressure, all factors that increase arousal and further impair decision making (Ku, 2004; Ku et al., 2005).

Consistent with the theoretical trend of considering more specific emotions over general affect (DeSteno et al., 2000; Ku et al., 2005; Lerner & Keltner, 2000, 2001; Raghunathan & Pham, 1999; Tiedens & Linton, 2001), the current experiments moved beyond a consideration of arousal in escalation to examine how the specific emotion of regret is present and plays a role in escalation. Regret is particularly pertinent in escalation situations since individuals experience regret when, after having chosen a particular action, they feel that they could have done better by choosing something else. Given the success of post-escalation regret in decreasing subsequent escalation, future research should consider whether and how other emotions play a role in escalation. For instance, the role of pride or hubris may be a factor in escalation (Hietala et al., 2003), with prideful individuals refusing to back down from poor investment choices. Similarly, since many interpersonal or social escalation situations are fraught with competition (Ku, 2004; Ku et al., 2005), social emotions such as schadenfreude (i.e., taking pleasure in others' downfalls, Smith, Turner, & Garonzik, 1996) may also fuel escalation. Indeed, such an examination may shed light on intergroup conflict. Thus, by considering the role of affect in escalation, be it arousal, regret, or some other emotion, we gain a better understanding of the escalation phenomenon.

Finally, it is important to highlight that the examination of emotions in escalation should add to rather than detract from our understanding of the motivational and cognitive forces at play in escalation. For instance, although justification remains the key instigator of escalation (Brockner, 1992), a wider examination of the emotional processes involved in escalation should allow us to better understand and prevent irrational decision making. Similarly, although regret is a powerful emotion, its emergence and ability to bring about change are based in counterfactual *thinking*. Interestingly, coun-

terfactual thinking can also create negative affect (Roese, 1997)—as individuals consider a foregone positive scenario, they may feel even more regret. Thus, emotions and cognitions are intimately and intricately intertwined, requiring researchers to pay close and careful attention to both.

Conclusion

The current research considered whether and how individuals are able to learn from one escalation situation to another, demonstrating that escalation-related regret (either experienced or imagined) can be used to de-escalate commitments. More generally, the research demonstrates that creative and fruitful means for understanding and preventing escalation of commitment can be found by looking outside the usual suspects of project, organizational, social, and justification determinants. By considering the role of regret in escalation, the experiments have contributed theoretically to the escalation literature and have provided a practical means for de-escalation.

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