The goal is attainable: the effects of goal gradient and sub-goals on escalation of commitment in a new product evaluation

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Abstract

Purpose – The purpose of this study is to investigate whether, in the context of making a go/no-go decision regarding a failing new product, the use of a stopping rule and/or a new decision-maker would reduce the escalation of commitment (EOC).

Design/methodology/approach – This study uses a classroom experiment design and uses logistic regression and a chi-square test to analyze its data.

Findings – The findings show that both responsible and non-responsible participants are more likely to perceive the negative performance of a new product as less negative and believe that the goal for the product can be reached when there is a stopping rule and proximal negative feedback indicates a level of performance below but very close to it than when there is no stopping rule. Therefore, they are more likely to continue the failing new product, whether they are responsible for the product or not. However, non-responsible decision-makers are more likely than their responsible counterparts to discontinue the failing new product in the absence of a stopping rule.

Research limitations/implications – This paper extends the theory of EOC by showing that the use of a stopping rule and/or a new decision-maker may not reduce EOC.

Practical implications – This paper provides useful guidelines for managers on how to reduce EOC.

Originality/value – The originality and value of this paper are found in the investigation of a situation in which the use of a stopping rule and/or a new decision-maker may not reduce the EOC.

Keywords New product development, Escalation of commitment, Goal gradient effect, Sub-goals

Paper type Research paper

1. Introduction

New products are the lifeblood of firms (Liang, Kale, & Cherian, 2014; Sarangee, Schmidt, & Calantone, 2019). Unfortunately, new product development (NPD) is very risky, and the failure rate is over 40% (Meer, Landy, & Sharma, 2015; Srinivasan, Pauwels, Silva-Risso, & Hanssens, 2009). Although new products have failed for many reasons such as flaws in the products and poor marketing research, escalation of commitment (EOC), which is defined as persisting in a course of action in the face of negative feedback (Staw, 1997; Staw & Ross,

1987), has been found to play a major role in the failure of new products (Boulding, Morgan, & Staelin, 1997; Liang et al., 2014; Sarangee, Woolley, Schmidt, & Long, 2014; Sarangee et al., 2019; Schmidt & Calantone, 2002; Weeth et al., 2020). In today's hypercompetitive markets, EOC may be highly disastrous for firms (Biyalogorsky, Boulding, & Staelin, 2006) because continuing failing new products "wastes valuable time and resources" that would otherwise be allocated to other promising projects (Eliëns, Eling, Gelper, & Langerak, 2018, p. 890). Scholars argue that it is possible to effectively reduce the disastrous effects of EOC by creating a stopping rule (e.g. a minimum (or maximum) performance level below (above), which a project should be discontinued, related to performance points such as sales or market share (investment)) (Boulding et al., 1997; Simonson & Staw, 1992) or separating the decision-makers who make the initial and subsequent decisions (Boulding et al., 1997; Staw, Barsade, & Koput, 1997).

However, implementing a stopping rule may create a sub-goal for decision-makers. As a result, they will face multiple goals: ultimate goals such as sales or market share and a sub-goal determined by the stopping rule. Decision-makers struggle to attain multiple goals and are more likely to focus on only the one goal that is most attainable, i.e. the sub-goal (Ordóñez, Schweitzer, Galinsky, & Bazerman, 2009; Shah, Friedman, & Kruglanski, 2002), especially when the ultimate goal is very difficult to achieve. Moreover, the goal gradient effect (Boehne & Paese, 2000; Conlon & Garland, 1993; Garland & Conlon, 1998; He & Mittal, 2007; Hull, 1932, 1934; Keil, Truex, & Mixon, 1995; Park & Keil, 2019) provides evidence that people increase their efforts when a goal is proximal. Therefore, decision-makers are more likely to focus on a stopping rule, which creates a goal that is easier to reach than the ultimate goal, and thus, persist in their course of action. Scholars have hitherto ignored the possibility that creating a stopping rule might actually motivate decision-makers to continue a failing product when the negative feedback indicates a level of performance below but close to the stopping rule.

Based on goal and sub-goal theory and taking into account the goal gradient effect, this paper investigates how decision-makers evaluate a failing new product when they are given an additional stopping rule and when the negative feedback indicates a level of performance close to it. Moreover, this paper also studies non-responsible decision-makers' go/no-go decisions when the negative feedback indicates a level of performance close to the stopping rule (vs when there is no stopping rule). Although risks in NPD are inevitable because firms conduct business in an uncertain world (Boulding et al., 1997), a fuller understanding of issues surrounding escalation can help managers to enhance the quality of stop/go decisions and reduce the likelihood of bad decisions being made.

This paper sheds light on EOC by investigating a situation in which the stopping rule mitigates the perception of negative feedback and facilitates escalation decisions. It also contributes to the literature by investigating the effect of sub-goals on EOC, a relationship that has received insufficient attention in the literature. Although the goal gradient effect has been studied extensively by scholars in both psychology and the area of NPD, its effect on a sub-goal has not been investigated in relation to EOC. My findings reveal that the goal gradient effect is not limited to the ultimate goal but can be applied to a sub-goal also. Although the sub-goal effect has been studied widely, most scholars have paid attention predominantly to the positive effects of a sub-goal on performance. This research suggests that a sub-goal can also have a negative effect on performance by mitigating decision-makers' perceptions of negative feedback. As a result, the sub-goal increases their confidence that the goal is attainable, leading them to persist in a failing product.

The remainder of this article is organized as follows. I first review the literature on goals, sub-goals and the goal gradient effect. Next, I develop hypotheses and describe a lab

experiment designed to test them. Finally, the paper concludes with a discussion of theoretical and managerial implications.

2. Theoretical background

2.1 Goal and sub-goal

Human activities are goal-driven (Amir & Ariely, 2008; Kruglanski, Shah, Fishbach, Friedman, Chun, & Sleeth-Keppler, 2002). People are guided and motivated by personal or organizational goals (Kernan & Lord, 1989). However, some goals are difficult or must be pursued over a long period of time (Gal & Mcshane, 2012); therefore, people typically break down a long-term, difficult and challenging goal into short-term, smaller and more manageable sub-goals (Brown & Lahey, 2015; Vancouver, Weinhardt, & Schmidt, 2010). As a result, sub-goals are widely adopted in people's everyday lives (Jin, Xu, & Zhang, 2015) and by organizations (Huang, Jin, & Zhang, 2017).

Scholars have demonstrated that sub-goals have a positive effect on performance (Brown & Lahey, 2015; Huang et al., 2017; Jin et al., 2015; Gal & Mcshane, 2012). People may have numerous ongoing goals simultaneously, but they can focus on only one at a time (Vancouver et al., 2010) because goal pursuit relies on limited psychological (e.g. attention, Kruglanski et al. (2002)) and physical resources (e.g. time and energy, Vancouver et al. (2010)). Multiple goals may also interfere with each other as they lead individuals to reprioritize their goals and pull attentional and motivational resources away from their focal goals (Shah et al., 2002). Therefore, individuals may have difficulty pursuing multiple goals at the same time. When individuals pursue multiple goals simultaneously, they are more likely to focus on only one goal and ignore others, normally pursuing goals that are attainable or proximal (Huang et al., 2017; Ordóñez et al., 2009; Shah et al., 2002; Soman & Shi, 2003). Because people may view it as more attainable and manageable (Soman & Shi, 2003), the sub-goal can become the most salient focus point, especially when the ultimate goal is very challenging or distant. On the other hand, focusing on sub-goals may result in neglect of the ultimate goal (Gal &Mcshane, 2012). Therefore, people will shift their attention away from the ultimate goal and to the sub-goal instead (Gal &Mcshane, 2012), making the sub-goal the source of motivation (Huang et al., 2017).

2.2 The goal gradient effect

The goal-gradient hypothesis, originally proposed by Hull (1932), states that organisms increase their efforts when a goal is proximal. Hull (1932 p. 42) found that rats "in traversing a maze will move at a progressively more rapid pace as the goal is approached." Hull (1934) later found that rats in a straight alley ran progressively faster as they moved from the starting box to the food. The goal gradient effect has been confirmed to exist with animals, especially in studies of rats, as demonstrated through the use of a variety of measures such as time, speed and strength of pull (Anderson, 1933; Elder et al., 1970; Hull, 1932, 1934). As the effect has important theoretical and practical implications for motivation and goal pursuit (Kivetz, Urminsky, & Zheng, 2006), it has been studied in humans by scholars in psychology (Cryder et al., 2013; Jensen, King, & Carcioppolo, 2013) and consumer behavior (Brown & Lahey, 2015; Kivetz et al., 2006; Lukas, 2018). They also confirmed that people increase their effort as they near their goals. Because of the goal gradient effect, people view proximal goals as more achievable than distant goals, which results in greater motivation to pursue the former (Huang et al., 2017).

The goal gradient effect has been applied to the phenomenon of EOC. Many scholars have found that decision-makers' desire to continue a project becomes stronger as the project draws nearer to completion (Boehne & Paese, 2000; Conlon & Garland, 1993; Garland & Conlon, 1998;

He & Mittal, 2007; Humphrey, Moon, Conlon, & Hofmann, 2004; Keil et al., 1995; Ting, 2011; Park & Keil, 2019). Known as the completion effect, this phenomenon occurs whether decision-makers are responsible for the project or not (Conlon & Garland, 1993).

3. Hypotheses development

In the early stages of NPD, companies usually have set goals such as sales, market share and/or profit margin goals that they want to reach. NPD is a very risky process that is highly subject to the problem of EOC (Schmidt & Calantone, 2002). Scholars argue that to reduce EOC, companies should implement a stopping rule (Boulding et al., 1997; Simonson & Staw, 1992). When the negative feedback indicates performance at a level lower than the stopping rule point (e.g. when the market share is lower than the minimum target), the new product should be stopped. When the feedback indicates performance is higher than the stopping rule point but still lower than the ultimate goal, the new product may be continued. However, when the company sets a stopping rule, it creates multiple goals for decision-makers. The stopping rule, which normally sets targets lower than the ultimate goal, may be viewed as a sub-goal. As the existence of multiple goals fosters confusion and ambiguity, drains attentional and motivational resources and leads decision-makers to focus on only one goal anyway (Shah et al., 2002), decision-makers are more likely to focus on stopping rules, which are more attainable, and ignore the ultimate goals, which are more difficult to attain (Huang et al., 2017; Gal & Mcshane, 2012; Ordóñez et al., 2009). Therefore, moderate or even intense negative feedback may be considered as less negative when viewed with reference to the stopping rule rather than the ultimate goal. As a result, decision-makers are more likely to increase their commitment to the products. When the negative feedback indicates a level of performance close to the stopping rule, the goal gradient hypothesis provides evidence that decision-makers are more likely to continue the product because they are almost there. The goal gradient effect can also be applied to the sub-goal, and people have a strong desire to attain the sub-goal when they are near it (Amir & Ariely, 2008; Brown & Lahey, 2015). Therefore, decision-makers are more likely to continue a failing new product when the negative feedback indicates a level of performance close to the stopping rule. In contrast, when there is no stopping rule, decision-makers must pay all attention to the ultimate goal. As a result, moderate or intense negative feedback will be viewed as indicating the goal is challenging and hard to reach. In such a situation, decision-makers may be more likely to discontinue the new product. Therefore, I hypothesize:

H1. Decision-makers will be more likely to continue the failing new product when there is a stopping rule and the feedback is close to it than when there is no stopping rule.

The other factor affecting escalation is whether or not decision-makers are responsible for the project. Numerous studies have demonstrated that decision-makers who are responsible for projects are more likely than those who are not responsible for projects to continue a failing course of action in the hope of turning the situation around (Boulding et al., 1997; Simonson & Staw, 1992; Sleesman, Conlon, McNamara, & Miles, 2012; Staw, 1976; Zorn, DeGhetto, Ketchen, & Combs, 2020). Decision-makers who are responsible for the project are more likely to justify their current position and less likely to admit that their initial decisions were incorrect (Sleesman et al., 2012; Staw & Ross, 1987). They are more defensive and more likely to emphasize the positive aspects of their decisions and to minimize the negative aspects (Taylor & Brown, 1988). Therefore, they are more likely to persist in the failing new product whether there is a stopping rule (to which the feedback is close) or there is no stopping rule. However, decision-makers who are not responsible for making go/no-go decisions are less likely to persist in a failing product. Although scholars have found that

using new decision-makers at the time of a go/no-go decision can reduce EOC (Boulding et al., 1997), Conlon and Garland (1993) found that the project completion effect occurs whether decision-makers are responsible for the project or not. Therefore, it is hypothesized that:

H2. Non-responsible decision-makers will be more likely to stop a failing new product project when there is no stopping rule than when there is a stopping rule and the feedback is close to it.

H3. Non-responsible decision-makers will be more likely than responsible decision-makers to stop a failing new product project when there is no stopping rule.

4. Study 1a
4.1 Overview
The current study is based on a 2 × 2 between-subject factorial design (with two levels of responsibility, yes or no and two levels of stopping rules, yes or no). In total, 128 students from weekend and regular master of business administration (MBA) programs at a South-Eastern public university in the USA participated in the study. The weekend MBA students were working professionals who were pursuing an MBA degree during the weekend, and the regular MBA students were full-time. About 61% of participants were male. On average, they reported being 28 years of age and having 8.6 years of working experience. The stimuli were distributed to participants in the class, and they were asked to work on the survey in a self-paced manner.

4.2 Stimuli
The stimuli were adapted from those used by Boulding et al. (1997) and Biyalogorsky et al. (2006). Subjects were asked to work on the quality valve company (QVC) case. The QVC makes emission valves for the automobile industry. The cases briefly described the history of the company, the primary competitor (the Great Lakes Valve Company), and the market. Participants in the responsible condition were designated as the product manager and had to make a go/no-go decision for a new product launch. After personally/directly managing the product for two years, they were responsible for making a continued investment decision. Alternately, participants in the non-responsible condition were asked to make a continued investment decision two years after the new product had been approved, launched and managed by someone else. In the scenarios with a stopping rule, students were told that the market share of the new product must be at least 25%, while in the scenario without a stopping rule, participants did not receive this mandate. All other information was identical for the two groups.

The case consists of two sections (Appendix). In Section 1, after reading the brief introductory information regarding the case and the QVC, participants read the project summary, including information on investment, the market and competition, key assumptions (there were four uncertainties, namely, the market growth rate, the QVC's initial market share, the loss of market share and the effect of the Great Lakes Company's new product on the QVC's market share) and financial forecasts.

In the second section, participants were told that two years had passed since the QVC had launched the project, and they were asked to assess (reassess) it. Next, they were given the project summary and financial forecast, depending on the scenario they were placed in. They were told that the QVC had not been able to capture as much of the market share as it had planned and had achieved about 25.25% of the market share after one year. After two

years, the market share had decreased slightly to about 23.75% (vs the hurdle rate of 25%) due to price cutting by a few small players. Finally, participants were asked to determine whether the project should be continued and were asked to answer other related questions. The task took about 30 min if participants completed both sections.

4.3 Manipulation check

Ten questions used in Biyalogorsky et al. (2006) were adapted to measure the extent to which participants felt committed, accountable and responsible for the launch of the new product (α = 0.909). These questions were answered on a nine-point scale (1 = strongly disagree, 9 = strongly agree). The one-way analysis of variance (ANOVA) indicated that participants in the responsible condition (M = 6.51) felt more committed, accountable and responsible for the launch of the new product than those in the non-responsible condition (M = 4.89, F (1, 121) = 54.308, $p < 0.01$).

Two indexes were used to measure the manipulation of a sub-goal (vs no sub-goal). The first measure asked participants to rate whether the performance of the product was very bad or much lower than the company's objective. This was used to check the participants' perceptions of negative performance. The second measure asked participants to rate whether the objective of the company was attainable and whether the discrepancy between the performance and the objective was reducible. These questions were used to measure participants' perception of goal attainability. All the questions were based on a nine-point Likert scale (1 = strongly disagree; 10 = strongly agree). If the manipulation of the sub-goal were a factor, participants would perceive the goal as less negative and more attainable.

The ANOVA with a mean of negative performance perception (α = 0.846) as a dependent variable and responsibility and a stopping rule as dummy variables revealed significant main effects of responsibility (F (1, 119) = 14.087, $p < 0.01$) and a stopping rule (F (1, 119) = 12.958, $p < 0.01$; Table 1). Participants facing a stopping rule (M = 4.17) were more likely than those not facing a stopping rule (M = 5.03) to view the performance of the project as less negative. Among the non-responsible participants, those facing a stopping rule (M = 4.64) were more likely to perceive the performance of the new product as less negative than those not facing a stopping rule (M = 5.44; F (1, 61) = 4.965, $p < 0.05$).

The mean of perception of goal attainability (α = 0.888) was subjected to an ANOVA. Significant main effects of responsibility (F (1, 119) = 7.008, $p < 0.01$) and a stopping rule (F (1, 119) = 7.341, $p < 0.01$; Table 1) emerged. The participants facing a stopping rule (M = 5.79) were more likely than those not facing a stopping rule (M = 4.06) to believe that the objective of the new product could be reached. Among the non-responsible participants, those facing a stopping rule (M = 5.57) were more likely to believe that the objectives for the new product could be reached than were those not facing a stopping rule (M = 4.53; F (1, 61) = 5.430, $p < 0.05$). Therefore, the presence of a

Perceptions	Responsible		Non-responsible	
	SR	NSR	SR	NSR
Negative feedback perception	3.74(0.93)	4.60(1.24)	4.64(1.48)	5.44(1.38)
Perception of goal attainability	6.02(1.25)	5.56(1.26)	5.57(1.58)	4.53(1.96)
N	30	30	32	31

Notes: SR: stopping rule; NSR: no stopping rule Standard deviations are in parentheses

Table 1.
Means and standard
deviation of
perception of
negative feedback
and perception of
goal attainability

sub-goal caused participants to perceive feedback as less negative and view the goal as more attainable.

4.4 Results

In the first section of the survey, 60 of 65 participants in the responsible condition chose to launch the project. Therefore, the surveys of those who chose not to launch the project were eliminated for further analysis. Moreover, the non-responsible participants were not asked to answer any questions in the first section.

A Chi-square test was used to test participants' go/no-go decisions in the second section. Participants facing a stopping rule (72.6%) were more likely than those not facing a stopping rule (50.8%; χ^2 (1) = 6.167, $p < 0.05$; Figure 1) to continue the project. *H1* was supported. There was no significant difference in terms of making a go/no-go decision between responsible participants facing a stopping rule (76.7%) and those not facing a stopping rule (66.7%; χ^2 (1) = 0.739, $p > 0.1$). This finding is consistent with my hypothesis. In the non-responsible condition, participants facing a stopping rule (68.8%) were more likely than those not facing a stopping rule (35.5%; χ^2 (1) = 6.986, $p < 0.01$) to continue the project. *H2* was, thus, supported. When there was a stopping rule, there was no significant difference between the responsible participants (76.7%) and the non-responsible participants (68.8%; χ^2 (1) = 0.488, $p > 0.1$). When there was no stopping rule, non-responsible participants (35.5%) were less likely than responsible participants (68.8%) to continue the project (χ^2 (1) = 5.931, $p < 0.05$). *H3* was supported.

4.5 Discussion

The findings suggest that the presence of a stopping rule and the completion effect can cause decision-makers to perceive feedback as less negative. It also encourages the belief that the goal is attainable, and as a result, decision-makers are more likely to continue a failing new product. Moreover, the presence of a stopping rule has a significant moderating impact on the go/no-go decisions of non-responsible decision-makers. They are more likely to continue a failing new product when there is a stopping rule compared to when there is no stopping rule. However, the presence of a stopping rule has no impact on the go/no-go decisions of responsible decision-makers although it makes them perceive the negative feedback as less negative. Therefore, the main drivers of EOC are decision-makers' perceptions that the negative feedback is not very negative and their belief that the sub-goal is attainable.

Figure 1.
Percentage of decision-makers who chose to continue the project (moderate condition)
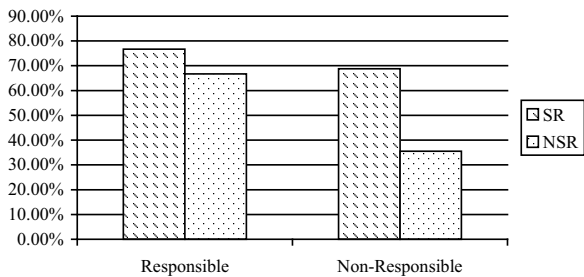
Notes: SR: Stopping Rule, NSR: No Stopping Rule

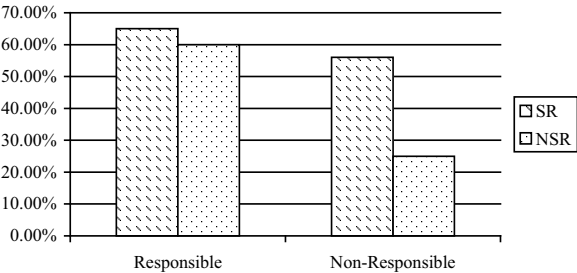## 5. Study 1b
5.1 Design, stimuli and subjects
Scholars have found that goal difficulty has a curvilinear relationship with people's motivation to reduce the discrepancy between a goal and feedback (Kernan & Lord, 1989; Lee, Keil, & Kasi, 2012; Lee, Keil, & Wong, 2015). Specifically, moderate negative feedback is more likely than extreme or minor negative feedback to increase motivation and effort. Kernan and Lord (1989) found that as the negative feedback increases from a low to a moderate level, participants with explicit goals escalate their commitment significantly, but they de-escalate it when the negative feedback is intense. Lee et al. (2012) found that a very difficult goal can reduce the EOC to software projects. Lee et al. (2015) found that goal difficulty has an inverted U-shaped relationship with EOC. Therefore, Study 1A may have a limitation. It may be moderate negative feedback rather than sub-goal and goal proximity that drives EOC. Therefore, this study, Study 1B, was designed to address this limitation by using both moderate and severe negative feedback. The stimuli were the same as those used in Study 1A, with a few exceptions (Appendix). First, participants were told that the market share must be at least 10%; otherwise, the project should be terminated. Second, in the project summary in Section 2, participants read that the QVC had an 11% market share and that during the second year, matters had worsened and market share had decreased to 9.5%. Financial forecasts were changed accordingly. Finally, participants were asked to determine whether to continue the project and were asked to answer other related questions.

In total, 129 students from the weekend MBA program and the regular MBA program at a South-Eastern public university in the USA participated in the study during their class time. About 65% of the participants were men. On average, they reported being 27 years of age and having 5.2 years of working experience. The students were assigned to one of four conditions (responsibility x stopping rule) randomly. In the first section of the survey, 58 of 66 participants in the responsible condition chose to launch the project. Therefore, the surveys of those who chose not to launch the project were eliminated from further analysis. The data from this study were pooled with the data from Study 1A for the purpose of investigating whether goal difficulty had an impact on the EOC (working experience had no significant effect on the escalation decision). Thus, this study was based on a goal difficulty (moderate vs severe) x responsibility (yes vs no) x stopping rule (yes vs no) between-subject factorial design.

5.2 Manipulation check
Because responsibility and the presence of a stopping rule can influence people's perception of negative feedback, only the data from the participants in the non-responsible decision-makers and no-stopping rule scenarios were used to check the manipulation of market performance. Participants were asked to answer whether the performance was very negative, very bad and lower than the company's expectation on a nine-point Likert scale (1 = strongly disagree, 9 = strongly agree). A one-way ANOVA with the mean of feedback perception index ($\alpha = 0.804$) as a dependent variable and market share as an independent variable revealed that participants believed the performance in the severe condition ($M = 6.36$) was worse and more negative than that in the moderate condition ($M = 5.44$; F (1, 61) = 7.672, $p < 0.01$). Moreover, a one-way ANOVA with the mean of responsibility index ($\alpha = 0.927$) as a dependent variable and responsibility as a dummy variable showed that people in the responsible condition ($M = 6.37$) felt more committed, accountable and responsible for the launch of the new product than those in the non-responsible condition ($M = 4.98$, F (1, 242) = 55.270, $p < 0.01$).

5.3 Results and discussion

A Chi-square test was used to test participants' go/no-go decisions in the second section. Participants facing a stopping rule (60%) were marginally more likely than those not facing a stopping rule to continue the new product (42.9%; χ^2 (1) = 2.759, $p < 0.1$). *H1* was supported. For responsible participants, there was no significant difference between those facing a stop rule (65%) and those not facing one (60%; χ^2 (1) = 0.118, $p > 0.1$; Figure 2). In the non-responsible condition, participants facing a stopping rule (56%) were more likely to continue the project than those not facing a stopping rule (25%; χ^2 (1) = 4.871, $p < 0.05$). *H2* was supported. For participants facing a stopping rule, there was no significant difference between those who were responsible for the project (65%) and those who were not (56%; χ^2 (1) = 0.375, $p > 0.1$). For participants not facing a stopping rule, those who were responsible for the project (60%) were more likely to continue the project than those who were not (25%; χ^2 (1) = 6.125, $p < 0.05$). *H3* was also supported.

I also conducted a binary logistic regression with the go/no-go decision as a dependent variable and goal difficulty, responsibility and a stopping rule as dummy variables (Table 2). The model (−2 Log-likelihood = 274.760, Cox and Snell R^2 = 0.095, Nagelkerke R^2 = 0.127) revealed significant effects of responsibility (β = 0.923, χ^2 (1) = 9.952, $p < 0.01$) and a stopping rule (β = 0.903, χ^2 (1) = 9.581, $p < 0.01$); however, goal difficulty was not significant (β = −0.449, χ^2 (1) = 2.390, $p > 0.1$). Thus, the goal difficulty was found to not be the driver of EOC.

Figure 2.
Percentage of decision-makers who chose to continue the project (severe condition)

Notes: SR: Stopping Rule, NSR: No Stopping Rule

Variables	β	S.E.	Wald	df	Model summary
Goal difficulty	−0.449	0.290	2.390	1	
Responsibility	0.923	0.293	9.952***	1	
Stopping rule	0.903	0.292	9.581***	1	
Constant	0.071	0.481	0.022	1	
−2 Log likelihood					274.76
Cox and Snell R^2					0.095
Nagelkerke R^2					0.127

Table 2.
Results of binary logistic regression

Notes: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

6. General discussion

6.1 Theoretical implications

NPD is very risky and is highly subject to the problem of EOC (Schmidt & Calantone, 2002; Weeth et al., 2020). Scholars argue that the presence of a stopping rule or the use of new decision-makers at the time of the go/no-go decision can reduce the likelihood of EOC effectively (Boulding et al., 1997; Simonson & Staw, 1992). However, creating a stopping rule results in multiple goals for decision-makers. As goal pursuit is based on limited psychological resources (Kruglanski et al., 2002) and physical resources (Vancouver et al., 2010), decision-makers will shift their attention away from the ultimate goal and pay more attention to the sub-goal indicated by the stopping rule, which is more attainable (Gal & Mcshane, 2012). As a result, the presence of a stopping rule can mitigate the perception of negative feedback and lead decision-makers to believe that the sub-goal is attainable. Consequently, they are more likely to continue a failing project. These hypotheses are supported in this study. Both responsible and non-responsible decision-makers are more likely to perceive the performance of the new product as less negative when they face a stopping rule and when the negative feedback points to a level of performance near it. Therefore, both responsible and non-responsible decision-makers are more likely to continue a failing new product. However, when there is no stopping rule, non-responsible decision-makers are less likely than their responsible counterparts to continue a failing new product because they do not have to justify their decisions.

Consistent with the literature, the findings of this study suggest that responsible decision-makers are more likely than non-responsible ones to commit to a failing project (when there is no stopping rule). My finding is consistent with the result of Conlon and Garland (1993) that the completion effect occurs whether decision-makers are responsible for the project or not. Sleesman et al. (2012) meta-analysis and other studies reported in the literature concluded that self-justification was a powerful driver of EOC. However, this study suggests that decision-makers are more likely to persist in a project if they perceive the feedback (vs goals) as less negative and believe that the goal is attainable. Thus, responsibility may not have a direct impact on EOC. The underlying mechanism driving the EOC may be decision-makers' beliefs that the sub-goal is attainable. My results are in line with the conclusion that decision-makers will escalate their commitment if they believe they can make the new projects successful (Lee, Keil, & Wong, 2020; Liang, 2019) or have an optimistic view of the projects (Huang, Souitaris, & Barsade, 2019; Sleesman, 2019). Responsible decision-makers are more likely to emphasize the positive aspects of their decisions and to minimize the negative aspects (Taylor & Brown, 1988), and they are likely to have a strong belief that they can turn the situation around. Moreover, Biyalogorsky et al. (2006) found that it was not responsibility but rather the improper maintaining of initial positive beliefs in the face of new negative information that drove EOC. Despite these findings, my study indicates that non-responsible decision-makers who have no prior beliefs about a project also persist in the project when the negative feedback indicates a level of performance close to the stopping rule. Therefore, it may not be prior beliefs about the project but the belief that the goal can be reached at the time of decision that drives the EOC.

Many scholars (Boulding et al., 1997; Staw et al., 1997) argue that separating decision-makers who make the initial and subsequent decisions can reduce the likelihood of EOC effectively. However, my study demonstrates that using new decision-makers at the time of go/no-go decisions may not reduce EOC when the

negative feedback indicates a level of performance close to the stopping rule. These results are consistent with earlier research finding that non-responsible decision-makers (Gunia, Sivanathan, & Galinsky, 2009) and groups in which members have lower responsibility (Whyte, 1993) are likely to escalate a failing project under certain conditions.

Although scholars have demonstrated that sub-goals have a positive effect on performance (Jin et al., 2015; Gal & Mcshane, 2012;), my findings indicate that a sub-goal may have a detrimental effect on EOC because it can alleviate the perception of negative feedback and make goals appear more attainable. Although scholars have not investigated the effect of sub-goals on EOC, sub-goals may be widely used in NPDs and other projects. Both scholars and managers should be aware of the detrimental effect of sub-goals.

6.2 Managerial implications

Simonson and Staw (1992) concluded that the reducing of self-justification tendencies is very effective in reducing escalation. The findings of this study and those of Biyalogorsky et al. (2006) suggest that responsibility may not be the direct driver of EOC; therefore, reducing self-justification may not have effects as powerful as those Simonson & Staw (1992) suggest. First, organizations should encourage decision-makers to shift their attention back to the ultimate goal and evaluate the possibility of reaching it, which is more important than that of attaining a sub-goal. Furthermore, to reduce their perception of goal attainability, organizations should provide decision-makers more accurate information suggesting that their decision may not produce the desired results. Second, organizations should encourage decision-makers to take a neutral perspective after they receive negative feedback (Wieber, Thürmer, & Gollwitzer, 2015) or help them to understand the potential biases in their decision-making process (Weeth et al., 2020).

My findings demonstrate that implementing a stopping rule may not reduce EOC under certain conditions. Although Sarangee et al. (2014) found no teams reported using stopping rules to reduce EOC, they still argued that firms should cancel projects that do not meet clearly defined success or failure criteria at the beginning of the project. Moreover, some scholars (Boulding et al., 1997; Simonson and Staw, 1992) found that a stopping rule is an effective way to reduce EOC. Therefore, organizations should use stopping rules to reduce escalation behaviors, but they must be aware of situations in which the (stopping) rule might not work. Second, organizations should consider using non-responsible decision-makers at the time of go/no-go decisions. Although non-responsible decision-makers are susceptible to the goal-gradient effect, they are less subject to the problem of self-justification. Moreover, unlike responsible decision-makers, who may develop a strong psychological ownership (Pierce, Kostova, & Dirks, 2001; Wang, Law, Zhang, Li, & Liang, 2019) or emotional attachment (Park, MacInnis, Priester, Eisingerich, & Iacobucci, 2010), non-responsible decision-makers are more likely to adopt a neutral perspective and are less vulnerable to the effect of EOC (Buchholtz et al., 1999). Third, organizations should employ non-responsible decision-makers with more NPD experience, as experience may reduce the tendency toward EOC (Zorn et al., 2020). Fourth, organizations should train non-responsible decision-makers properly so that they will commit to any stopping rules. Last but not least, the go/no-go decision of a failing new product should not be made without consideration of other products. Such a decision can affect the reallocation of resources and impact the performance of other projects,

and potentially even of the whole company (Shah, 2015). Companies should present decision-makers, especially non-responsible decision-makers, with a holistic view, making them aware of other alternate project options/choices, which can reduce the tendency toward EOC (Sleesman, 2019). However, because humans are not normative information processing machines, EOC may be mitigated, but never totally eliminated (Boulding et al., 1997).

6.3 Limitations and future research

This study has a few limitations. First, it is based on a lab experiment, which might have been quite different in some aspects from a real-life escalation decision. Second, although this study finds that decision-makers will persist in a failing course of action when the negative feedback indicates a level of performance very close to the stopping rule, it does not investigate how close is "close." Future research should investigate the effect of the degree of closeness on EOC. Third, this study is based on responses from weekend and regular MBA students. Although Sleesman et al. (2012) found that participant type (undergraduate students, graduate students or working professionals) had no effect on escalation, future studies should investigate the impact of sub-goal and goal gradient effects on working professionals.

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Appendix
Comparison between the moderate and severe feedback scenarios
Section 1
Investment

- The RXT 1 project will require the purchase of a valve producing machine that will cost $2,500,000. This machine must be purchased before the launch of the project.
- The machine is expected to have a 10-year useful life but will be virtually worthless at the end of 10 years.

Key assumptions
Figure A1. Market growth rate: The market growth rate is forecasted, on average, to be 3% per annum (p.a.).

Figure A2. The QVC's initial market share: the QVC may achieve a 40% market share by the end of the first year.

Financial forecast
Figure A3. The 500 net present value (NPV) values generated a distribution of possible NPV outcomes as shown below.

Simulation results
Expected (Mean) result: $1,117,408.
Maximum result: $4,373,696.
Minimum result: −$1,267,021.

Section 2
Moderate feedback
Project summary. After the first year, RXT 1 had ∼25.25% market share. RXT 1's market share decreased slightly, to ∼23.75%, during the second year.
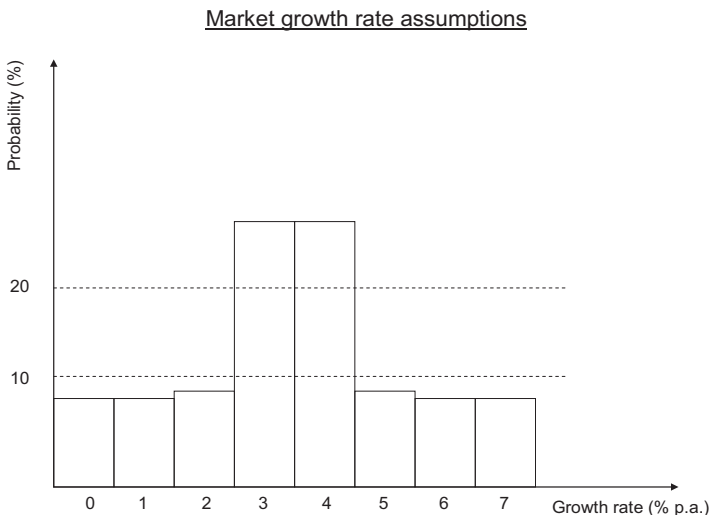

Market growth rate assumptions

Figure A1.
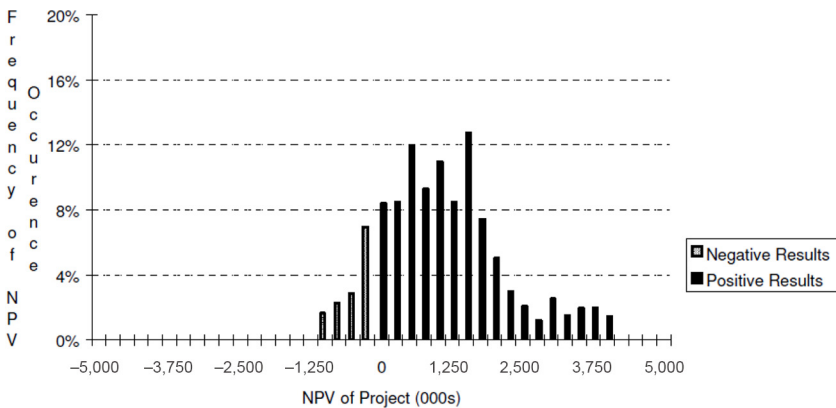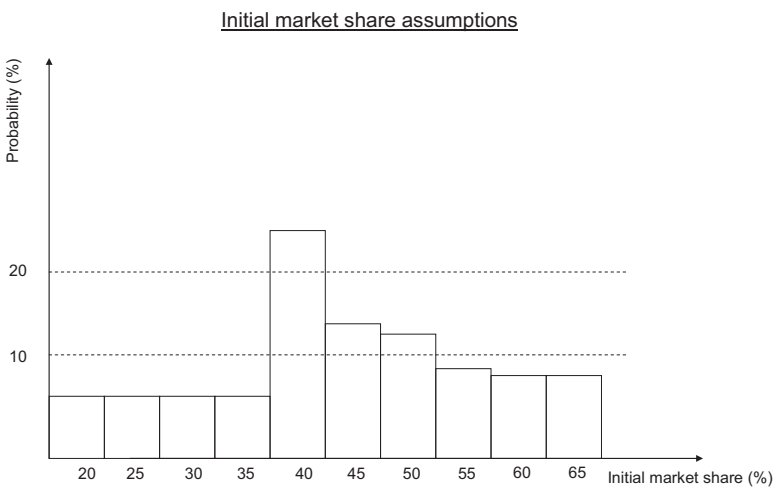
Initial market share assumptions

Figure A2.

Figure A3.

Option 1 – stay in the market
  Expected (Mean) result: $257,183.
  Maximum result: $3,050,443.
  Minimum result: -$1,643,159.
Option 2 – cash out now
  Expected result: $669,466.

Severe feedback

Project summary. After the first year, RXT 1 had ~11% market share. RXT 1's market share decreased slightly, to ~9.5%, during the second year.

Option 1 – stay in the market
  Expected (Mean) result: $150,746.
  Maximum result: $2,011,358.
  Minimum result: −$2,335,729.
Option 2 – cash out now
  Expected result: $669,466.

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