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This study investigates the effect of culture on the evaluation of new products. We contrast decision-making outcomes between East Asians and Westerners. East Asians tend to view the future as dynamic, nonlinear, and changeable and do not emphasize immediate gain and loss. In contrast, Westerners believe that the future is static, linear, and predictable and pay more attention to the past and present. We hypothesize that given a poor performance forecast, East Asians are more likely than their Western counterparts to continue a new product whereas Westerners are more likely to halt development. However, providing future market demand information moderates the cultural biases in new product development (NPD) decisions. Participants are more likely to continue a new product when informed that the future market demand would be good and tend to stop a new product when informed that the future market demand would be bad.

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New products are the lifeblood of any company. Without the introduction of new products, companies will have a hard time keeping customers satisfied and the competition at bay. On average, approximately 50% of firms' annual sales and profits come from products launched within the most recent 5 years (Page 1993). However, many new products fail, and the failure rate has been estimated at 40 percent (cf. Edgett, Shipley, and Forbes 1992; Page 1993).

The failure of new products has been attributed to a host of reasons, the main one being escalation of commitment, defined as the continuation on the part of the development team in a failing course of action (Staw 1997; Staw and Ross 1987; Barton, Duchon, and Dunegan 1989). Although escalation of commitment has been studied extensively in the U.S., the impact of culture on commitment escalation remains unexplored. People from diverse cultures display different values, assumptions, and meanings upon which their actions and decisions are based (Moscovici, 1984; Shweder, 1995). For instance, Greer and Stephens (2001) found that Mexican subjects were more likely than their U.S. counterparts to escalate commitment to a failing course of action and were more confident in their escalatory decisions. Nakata and Sivakumar (1996) argue that cultural factors such as individualism, power distance, masculinity, uncertainty avoidance, and Confucian dynamics may influence the new product development process. Tse et al. (1988) observe that culture has a significant impact on the decision making of executives from China, Hong Kong, and Canada.

Understanding the decision-making processes of Asians and Europeans toward new product development has become increasingly critical for U.S. businesses and policy makers. Atkinson and Andes (2009) from the Information Technology and Innovation Foundation observe that the United States now lags behind other countries in innovation-based competitiveness. Using sixteen indicators reflective of competitive innovation the researchers examined 40 countries and concluded that U.S. ranks sixth, behind Singapore, Sweden,

Luxemburg, Denmark, and South Korea. Of all countries studied, China made the most progress in innovativeness over the previous decade.

To achieve success in today's competitive environment, firms increasingly must develop new products for global markets. This involves leveraging and coordinating broad creative capabilities and resources, which often are diffused across geographical and cultural boundaries (de Brentani and Kleinschmidt 2004). McDonough Kahn, and Barczak (2001) report that 52 percent of companies in their study had used or were using global teams to develop new products and one of every five NPD teams in respondent firms were global. Although multicultural teams are more creative and develop more and better alternatives to a problem than teams with less cultural diversity, such teams also have to deal with relatively greater behavioral and project management challenges (e.g., conflict resolution, creating cohesiveness and trust building).

This paper is based on the premise that cultural differences between East Asians and Westerners will reflect in new product development (NPD) outcomes. East Asians (e.g., Chinese, Japanese, and Koreans) employ holistic, long-term, and nonlinear thinking whereas Westerners employ analytical, short-term, and linear thinking (Ji, Nisbett, and Su 2001; Ji, Peng and Nisbett 2000; Kühnen, Hannover and Schubert 2001). East Asians believe that the future is dynamic and changeable and pay less attention to the current situation. In contrast, Westerners believe that the future will not change and that it is predictable, leading them to pay more attention to the current situation. We therefore posit that given information on current poor performance, East Asians are more likely than their Western counterparts to continue new product development whereas Westerners will be more inclined to terminate such projects. Product characteristics and forecasts of future performance should moderate the hypothesized relationships.

Theoretical Background

Escalation of Commitment

Social psychologists and economists have investigated the the phenomenon of escalating commitment wherein organizational decision makers intensify their commitment to a failing course of action (Brockner 1992; Brockner et al. 1986; Staw 1976, 1981; Staw and Ross 1987). Decision makers continue to invest resources by way of time, money, and self-identities into an ineffective policy, product, service, or strategy (Brockner et al. 1986). Escalation of commitment is not limited to business decisions and financial investments. The phenomenon manifests in other contexts such as interpersonal relations (Rusbult 1980), waiting situations (Rubin 1981), gambling (McGlothlin 1956), and policy decisions (Janis 1982).

Past research has uncovered various factors that exacerbate or mitigate escalation of commitment, including self-justification (Staw 1976, 1981; Staw, Barsade, and Koput 1995), sunk costs (Arke and Blumber 1985), organizational level influences (Pfeffer and Salancik, 1974; Staw and Ross 1986), decision visibility (Brockner, Rubin, and Lang, 1981), problem framing (Whyte 1993), project completion effect (Conlon and Garland 1993), self-efficacy (Whyte, Saks, and Hooks 1997), principal-agent theory (Kirby and Davis 1998), illusion of control (Staw 1997), and emotional consequences (Wong and Kwong 2008; Wong, Yik, and Kwong 2006). Of all explanations, self-justification seems most dominant and widely supported (Brockner 1992). The self-justification viewpoint suggests that decision makers allocate additional resources to a previous course of action in the hope of turning the situation around because they do not want to admit – to themselves and to others – that their past decisions were incorrect (Staw 1976; Tegar 1980).

Decision makers appear more likely to increase their commitment to a cause when their personal responsibility for possible negative consequences is high (Staw 1976). Escalation of commitment has also been observed in groups where the personal responsibility

for group members is low and where groups generally do not make fewer errors than individuals (Bazerman, Giuliano, and Appelman 1984; Whyte 1993). Schoorman and Holahan (1996) contend that while responsibility and negative decision consequences are not prerequisites of commitment enhancement, they contribute to the escalation of commitment.

Over the last fifteen years, marketing scholars have found that escalation of commitment is common in new product decisions. Boulding, Morgan, and Staelin (1997) report the observed strong tendency for executives to pursue continued commitment to failing new products. Schmidt and Calantone (1998) add that managers are more likely to continue a failing course of action when the product is more innovative. In their 2002 study, the authors also found that managers who initiate a project are more likely to continue a losing project compared to those managers who assume leadership after the project is started. Surprisingly, giving managers better information does not reduce the escalation of commitment. Escalation of commitment is more common during the NPD process than after the product is commercialized. Moon (2001) concludes that sunk costs and project completion effect have an interaction effect on escalation of commitment, while Wong, Yik, and Kwong (2006) suggest that emotional factors have a significant impact on escalation of commitment; people seek to escape from the unpleasant emotions associated with escalation situations. Biyalogorsky, Boulding and Staelin (2006) argue that it is not self justification but improper use of initial positive beliefs in light of negative new information that drives escalation behaviors.

Although commitment to a losing course of action cannot totally be eliminated, numerous methods can be used to effectively reduce the escalation of commitment (e.g., setting a stop rule, introducing a new decision maker, monitoring decision makers, and using teams instead of individuals). Boulding, Morgan, and Staelin (1997) found that setting a stop rule and introducing a new decision maker at the time of a stop/no stop decision are very effective in slowing down commitment escalation. Using teams instead of individuals can also

reduce the likelihood of escalation (Schmidt, Montoya-Weiss, and Massey 2001). Simonson and Staw (1992) found that evaluating decision makers on the basis of their decision process rather than outcome, making negative outcomes less threatening, and setting minimum target levels can reduce the escalation of commitment. However, evaluating decision makers on the basis of their decision process rather than outcome requires more time and effort and is difficult to implement (Schmidt and Calantone 2002). Kirby and Davis (1998) found that monitoring decision makers reduces their tendency to escalate commitment to a failing decision.

Analytic and Holistic Thinking

Scholars across a variety of disciplines have observed differences in thinking patterns among people in East Asian cultures (e.g., China, Korea, and Japan) and those in Western cultures (e.g., the United States, Great Britain). East Asians have a holistic mode of thinking, characterized as “an orientation to the context or field as a whole, including attention to the relationship between a focal object and field, and a preference for explaining and predicting events on the basis of such relationships” (Nisbett et al. 2001, p. 293). In contrast, Westerners have an analytic mode of thinking, defined as “detachment of the object from its context, a tendency to focus on attributes of the object in order to assign it to categories, and a preference for using rules about the categories to explain and predict the object’s behavior” (Nisbett et al. 2001, p. 293).

East Asians do not accept that a phenomenon can be understood devoid of context (Phillips 1976). People (the self and others) are viewed as an integral part of the setting, situation, or context in which they are embedded (Markus and Kitayama 1991; Nisbett et al. 2001). Compared to their Western counterparts, East Asians are more likely to base their attitudes, preferences, judgments, behaviors, thinking, and knowledge on the context surrounding the focus of their deliberation (Choi et al. 1999; Hall and Hall 1990; Lee,

Hallahan, and Herzog 1996). For East Asians, it is important that we pay attention to the interrelationships in the whole system. Everything is related to everything else to some extent, like “the ropes in a net” (Munro 1985). Therefore, East Asians deem it necessary to use a broad range of factors, especially contextual factors, to explain any phenomenon (Ji, Nisbett, and Su 2001; Krishan, Zhou, and Zhang 2008; Nisbett et al. 2001). Development of events, for East Asians, is not static, but dynamic, changeable, and nonlinear (Ji, Nisbett, and Su 2001; Peng and Nisbett 1999). Change, the only constant, is the main theme of both the *I Ching* (Ritsema and Karcher 1994) and *Tao Te Jing* (Lao Tsu 2000 version). Thanks to this orientation, East Asians have a long-term outlook and a generally high tenacity in the pursuit of a goal (Hofstede, 1997; Hofstede and Bond 1988) There exists the firm belief that the future will change as the situation changes or as a result of their hard work.

In contrast, Westerners’ assessment of self and others is based on inherent dispositions and attributes. Westerners describe themselves through internal dispositions, with few references to the surrounding context (Cousins 1989). Not surprisingly, Westerners tend to see the world as a collection of discrete objects (Nisbett et al. 2001). Unlike their Eastern counterparts, who attribute an effect to an array of causes, Westerners believe that every cause leads to an effect and that every effect is the result of a single cause. Based on this thinking, an event can be considered as the outcomes (i.e., effect) of a preceding event or the source (i.e., cause) of a subsequent event. Westerners rely on a relatively narrower range of factors to explain phenomena, preferring to build simple and explicit causal models (Ji, Nisbett, and Su 2001). Furthermore, Westerners maintain that everything that currently exists has always existed. Following this logic, nothing can become anything other than what it always was. Yet change means that a thing will never be what it once was. Change is not something customarily thought about by Westerners, whose characteristic thinking assumes a linear

development of events. Westerners essentially have a static perspective that demands more attention to the past and present (Hofstede, 1997; Hofstede and Bond 1998).

Hypotheses Development

Of the hordes of products introduced in the market each year, few are really new in the sense that no other product like it has been available before. There is a continuum of newness--at one extreme are incremental improvements, while at the other extreme are radical innovations. Incremental improvements include products that are not new to the market, although they may be new to the company. Examples include line extensions and product improvements. In contrast, radical innovations involve technological discontinuities that offer new, unique, or superior solutions to consumers and create new markets (Schmidt and Calantone 1998; 2002).

Compared to incremental products, radical innovations redefine the market or technological standards, create significant barriers to entry, and have the potential for higher returns (Schmidt and Calantone 2002). Such products can help a company build and maintain its competitive advantage. However, it is much harder to forecast sales of products involving radical innovations than those based on incremental improvements (Urban, Weinberg, and Hauser 1996). Our subsequent discussion will focus on two extremes of newness, low innovation and high innovation.

Since Westerners tend to believe that the development of events follows a linear path, when making a stop-go decision for a low innovative (LI) product, Westerners are more likely to believe that the future of such a product is clear and stable and will not change given a poor forecast performance. Therefore, they are more likely to terminate such a project. However, when making a stop-go decision for a high innovative (HI) product, Westerners more often believe that it would be successful in the future because such a product offers significant technological and market benefits and it is hard to forecast its sales. Schmidt and Calantone

(1998; 2002) have shown that Westerners are more likely to believe a new product will be successful if it is more innovative. This leads to the following hypothesis:

H1: Westerners will be more likely to continue a new product when it is high innovative than when it is low innovative.

On the other hand, East Asians believe that the development of events will not follow a linear path and do not emphasize immediate gain and loss. Thus, when making a stop-go decision for a new product, they are more likely to believe the situation will change regardless of whether the product in question is LI or HI as they believe that situations always change. Therefore, East Asians are more likely to stick with and less likely to stop a new product project. It can be argued that East Asians may base their decisions on low or high innovativeness given their likelihood to perceive the difference between these two contexts. However, the current discussion proposes that East Asians will not limit their attention to the smaller context constituted by the difference between LI and HI and will instead direct their attention to the larger context. The impact of the difference between LI and HI may thus be overwhelmed by East Asians' attention to the larger context. This leads to the following hypothesis:

H2: East Asians will make the same stop-go decisions for low versus high innovative products.

Since Westerners are more likely to believe that a new product will be successful if it is more innovative, they are more likely to continue a project when the new product involved is a HI than when it is a LI. In contrast, East Asians are more likely to believe that the current situation of a new product may change in the future regardless of whether it is a LI or HI. Thus, the following hypotheses are proposed:

H3a: East Asians will be more likely than their Western counterparts to continue a new product when it is low innovative.

H3b: East Asians and Westerners will make the same stop-go decisions when a new product is high innovative.

H3c: The effect of cultural differences on stop-go decisions is weaker when a new product is high innovative than when it is low innovative.

Since Westerners have a static perspective (Hofstede and Bond 1998), they pay more attention to immediate gains and losses (Li 1999). Consequently, they are more likely to evaluate forecast performance against the hurdle rates set by management and base their judgments and decisions on the realities. In contrast, East Asians do not emphasize immediate gain and loss (Li 1999) because they believe that the development of events is dynamic, nonlinear, and changeable (Ji, Nisbett, and Su 2001; Peng and Nisbett 1999). Therefore, they are less likely than their Western counterparts to pay their attention to the poor forecast performance. Moreover, East Asians tend to apply a broader range of factors, especially contextual factors, to explain a given behavior (Ji, Nisbett, and Su 2001; Krishan, Zhou, and Zhang 2008). East Asians are more likely than their Western counterparts to base their judgments and decisions on more factors, especially contextual factors (Choi et al. 1999; Hall and Hall, 1990; Lee, Hallahan, and Herzog 1996). This leads to the following hypotheses:

H4a: Westerners will be more likely than East Asians to use performance forecasts to support stop-go decisions.

H4b: East Asians will be more likely than Westerners to use factors other than performance forecasts to support stop-go decisions.

H4c: East Asians will apply more factors than their Western counterparts to support stop-go decisions.

Study 1

Participants

Studies have shown that Americans tend to think analytically while Chinese people tend to think holistically; furthermore, Americans tend to employ a linear mode of thinking whereas Chinese people employ a nonlinear mode of thinking. Forty-eight Chinese students in the weekend MBA program at a southwestern university in China participated in the current study. These participants were also asked to distribute the surveys to their colleagues. In the end, 101 surveys (male: 47.5%; average working experience: 6.2 years) were collected. In addition, 50 Americans in a weekend-accelerated MBA program at a southeastern American university were invited to participate in the study and were asked to distribute the surveys to their colleagues as well. This resulted in 102 surveys (male: 60.7%; average working experience: 12.7 years) being collected.

Design, Stimuli, and Procedure

The study was based on a 2 culture (China vs. U.S.) x 2 product innovativeness (high vs. low) between-subject factorial design. The stimuli used by Schmidt and Calantone (1998; 2002) were adapted for use in the current study. Participants were asked to act as product development managers at the fictitious Exxel Electronics Corporation. They were also informed that they had just taken over the project from their predecessor, who had initiated it. This measure was included to reduce the participants' sense of personal responsibility for the product. Therefore, explanations such as self-justification, face-saving, project completion effect, and possible emotional factors would be controlled. Moreover, studies have shown that responsibility is not the necessary condition to induce escalation of commitment (Schmidt and Calantone 1998, 2002; Schoorman and Holahan 1996). After reading the background information about the project's stages and gates, participants were asked to read the product information. They were informed that the sunk cost was \$0.5 million and the cost to continue would be \$3.175 million. The forecasted market share was 26%, lower than company's requirement (30%). They were also told that top management has mandated that the "hurdle

rate” for new sensor products be 10%, meaning that the new products must yield an actual internal rate of return (IRR) of at least 10%. Participants were then asked to make a go-stop decision at gate 1 (see Figure 1) and justify their decisions briefly. Finally, after answering some manipulation check questions and miscellaneous questions, participants were thanked and dismissed. The stimuli were drafted in English and translated into Chinese. Parallel translation was used to ensure the accuracy of the translation. Chinese participants read the Chinese version.

Dependent Variables

Two dependent variables were used in the study. The first was participants’ stop-go decisions. Unlike the studies of Schmidt and Calantone (1998; 2002) which relied heavily on Likert-scale measurements, the current study was based on participants’ actual decisions as individuals from distinctive cultures may have different standards in responding to Likert-type scales (Heine et al. 2002). Moreover, intention is not always a good indicator of behavior (Chandon, Morwitz, and Reinartz 2005).

The second variable was forecasted information versus other information, which was used to justify participants’ decisions. Forecasted information includes sunk costs, annual sales, and hurdle rates set by the management. Other information includes all other factors.

Two Chinese judges who were blind as to the purpose of the study classified the responses of Chinese participants into two groups: realities versus other factors. The inter-judge reliability was 98%. Two American judges who were blind to the purpose of the study classified responses of American participants into the same two groups. The inter-judge reliability was 99%.

Manipulation Check

Participants were asked to answer “whether the new product is revolutionary” on a 7-point Likert scale (1=strongly disagree, 7=strongly agree) to measure the manipulation of

degree of innovativeness. The ANOVA showed that both American and Chinese participants thought that a high innovative product is more revolutionary than a low innovative one. Four seven-point Likert scale items (1 = unlikely, 7 = likely; see Appendix 1) used by (Ji, Nisbett, and Su 2001) were used to check differences in thought processes between Chinese and Americans. I ran a one-way ANOVA for each item respectively. The results showed that Chinese participants were much more likely than their Western counterparts to believe that the future is nonlinear, dynamic, and changeable ($M_{C1} = 6.67$, $M_{C2} = 5.75$, $M_{C3} = 6.31$, $M_{C4} = 6.14$; $M_{A1} = 4.56$, $M_{A2} = 4.06$, $M_{A3} = 5.65$, $M_{A4} = 6.38$; all $ps < .01$; *Levene's Tests* $> .1$).

Results

A binary logistic regression with the stop-go decision as a dependent variable and culture, innovativeness, gender, years of professional working experience, and NPD experience (yes vs. no) as dependent variables revealed a significant effect only for culture ($Wald(1) = 4.583$, $p < .05$) and innovativeness ($Wald(1) = 4.655$, $p < .05$). All other factors were not significant ($ps > .1$). American participants were marginally more likely to continue a project when the new product was HI (69.2%) than when the new product was LI (52%; $\chi^2(1) = 3.175$, $p < .08$). Therefore, H1 was marginally supported. For Chinese participants, no significant difference existed between the HI (84%) and the LI (72.5%; $\chi^2(1) = 1.943$, $p > .1$). Thus, H2 was supported. For the low innovative product (LI), Chinese participants (72.5%) were more likely than Americans (52%; $\chi^2(1) = 4.543$, $p < .05$) to continue the project, thereby supporting H3a. However, for the HI product, Chinese participants (84%) were only marginally more likely than Americans (69.2%) to continue the project ($\chi^2(1) = 3.090$, $p < .08$). These results do not support H3b. H3c, which predicted that cultural difference would be weaker in the HI situation, was supported.

An ANOVA with the number of forecasted factors (see Table 1 for means and standard deviations) as the dependent variable and culture and innovativeness as independent

variables was conducted. Only the main effect of culture emerged ($M_{\text{Chinese}} = 1.04$, $M_{\text{American}} = 1.43$; $F(1, 199) = 11.460$, $p < .01$). Thus, H4a was supported. American participants were more likely than their Chinese counterparts to use forecasted factors to support their decisions. An ANOVA with the number of other factors as the dependent variable and culture and innovativeness as independent variables was conducted. Again, only the main effect of culture emerged ($M_{\text{Chinese}} = 1.62$, $M_{\text{American}} = 0.73$; $F(1, 199) = 54.794$, $p < .01$), thereby supporting H4b. Chinese participants were more likely than their American counterparts to use other factors to support their decisions. An ANOVA with the total number of factors as a dependent variable and culture and innovativeness as independent variables was conducted. Only the main effect of culture emerged ($M_{\text{Chinese}} = 2.66$, $M_{\text{American}} = 2.16$; $F(1, 199) = 14.567$, $p < .01$). These results support H4c which predicts that East Asians will apply more factors to support stop-go decisions than their Western counterparts.

Discussion

These results indicate that Westerners are more likely to continue a new product when it is higher innovative than when it is lower innovative. However, East Asians' decisions are consistent across these two kinds of new product. East Asians are more likely than their Western counterparts to continue a new product regardless of whether it is higher or lower innovative. Since the final outcome is unknown at the time of decision (Schmidt and Calantone 2002), East Asians are more likely than Westerners to escalate a failing project whereas Westerners are more likely than East Asians to kill a good project too early. Moreover, East Asians use more factors—especially contextual factors—than Westerners. In contrast, Westerners pay more attention to forecast performance.

Study 2

Study 1 showed that Westerners are more likely to stop a new product while East Asians tend to continue a new product; this is because Westerners are too pessimistic while

East Asians are too optimistic about the future of new products. However, both are fatal mistakes in NPD, and such mistakes must be minimized (Bonabeau, Bodick, and Armstrong 2008). Since East Asians' and Westerners' stop-go decisions are based on their perceptions of future performance, correcting their perception may change their initial tendency. Therefore, this study will investigate whether East Asians' and Westerners' evaluation of new products can be moderated given the forecast of market situation in the future. Specifically, this study examines whether Westerners are more likely to continue a new product when they are informed that the future performance of the market will be better than when they are not informed as well as whether East Asians are more likely to stop a new product when they are informed that the future performance of the market will be worse than when they are not informed.

Participants

The method used in Study 1 for identifying participants and collecting data is also used in this study. A total of 179 surveys were collected from American participants (male: 60.3%; average working experience: 11.3 years) while 185 surveys were collected from Chinese participants (male: 62.2%; average working experience: 6.4 years).

Design, Stimuli, and Procedure

The study was based on a 3 future conditions (good, bad, vs. no information) x 2 cultures (China vs. U.S.) x 2 product innovativeness (higher vs. lower) between-subject factorial design. Stimuli and procedures were similar to those used in Study 1. In order to change participants' initial perception toward the future, participants in the "good" condition were informed that the forecast was negatively influenced by the economic downturn and the demand for the sensor would be good if the economy is normal. Participants in the "bad" condition were informed that the demand for the sensor has been decreasing for the past decade due to the shrinking auto market and will continue to decrease in the future. I used

global “good” and “bad” conditions to minimize the possible effect of mental accounting associated with numerical values because participants may have applied different standards toward “good” or “bad” future situations. Participants in the “no information” condition answered the same survey used in Study 1, in which no future information was provided.

Manipulation Checks

I ran one-way ANOVAs for four items respectively to check whether Americans and Chinese differ in ways of thinking. The results showed that Chinese are much more likely than their Western counterparts to believe that the future is nonlinear, dynamic, and changeable ($M_{C1} = 6.86, M_{C2} = 5.90, M_{C3} = 6.41, M_{C4} = 5.98; M_{A1} = 4.75, M_{A2} = 3.91, M_{A3} = 5.53, M_{A4} = 4.36$; all $ps < .01$; *Levene's Tests* $> .1$).

For the manipulation of future performance, the three way ANOVA revealed significant main effects of culture ($F(1, 352) = 8.836, p < .01$), product ($F(1, 352) = 6.592, p < .05$), and manipulation ($F(2, 352) = 44.189, p < .01$). Post Hoc contrast showed that for lower innovation products, Chinese believed that the product would have a better future when the future forecast is good (vs. no such information, $M_{\text{good}} = 5.62, M_{\text{no info}} = 4.67, p < .05$); however, they believed that the future of the product would be worse when such information was given (vs. no such information, $M_{\text{bad}} = 3.74, M_{\text{no info}} = 4.67, p < .05$). For the higher innovative product, there was no significant difference for Chinese when informed that the future would be good and when no future information was given ($M_{\text{good}} = 5.72, M_{\text{no info}} = 5.10, p > .1$); however, when informed that the future performance would be bad, Chinese gave much lower rating than when no future information is given ($M_{\text{bad}} = 3.87, M_{\text{no info}} = 5.10, p < .01$). For the lower innovative product, Americans gave marginally higher rating toward the future of product when informed the future would be good than when no future information was given ($M_{\text{good}} = 4.90, M_{\text{no info}} = 4.13, p < .09$); when informed that the future would be bad, Americans gave much lower rating (vs. no information, ($M_{\text{bad}} = 3.14, M_{\text{no info}} = 4.13, p < .05$).

For the higher innovative product, there was no significant difference for Americans when informed that the future would be good and when no future information was given ($M_{\text{good}} = 5.19$, $M_{\text{no info}} = 4.90$, $p > .1$); however, when informed that the future performance would be bad, Chinese gave much lower rating than when no future information is given ($M_{\text{bad}} = 3.76$, $M_{\text{no info}} = 5.10$, $p < .01$).

One way ANOVA showed that Chinese rated the higher innovative product ($M = 5.55$) as more revolutionary than the lower one ($M = 3.19$, $F(1, 183) = 152.534$, $p < .01$); moreover, Americans also gave the higher rating to higher innovative product ($M = 5.03$) than to the lower one ($M = 2.49$, $F(1, 177) = 206.753$, $p < .01$).

Results

For low innovative product, Chinese participants were marginally more likely to continue the new product when they were informed that the future performance would be better (93.8%) than they were not (76.7%; $\chi^2(1) = 3.642$, $p < .06$). Moreover, they were more likely to stop the new product when they were informed that the future performance would be worse (41.9%) than when they were not (76.7%; $\chi^2(1) = 7.603$, $p < .01$).

For the high innovative product, no significant difference emerged for Chinese regardless of whether they were informed that the future performance would be better (87.5%) or not (75.9%; $\chi^2(1) = 1.394$, $p > .1$). However, the Chinese participants were marginally more likely to stop the new product when they were informed that the future performance would be worse (51.6%) than when they were not (79.3%; $\chi^2(1) = 3.794$, $p < .06$).

For the low innovative product, Americans were marginally more likely to continue the new product when they were informed that the future performance would be better (79.3%) than when they were not (56.7%; $\chi^2(1) = 3.463$, $p < .07$). However, they were much more likely to stop the new product when they were informed that the future performance would be worse (21.4%) than when they were not (56.7%; $\chi^2(1) = 7.515$, $p < .01$).

For the high innovative product, no significant difference emerged for Americans when they were informed that the future performance would be better (81.3%) than they were not (74.2%; $\chi^2(1) = 0.454, p > .1$). However, they were much more likely to stop the new product when they were informed that the future performance would be worse (41.4%) than when they were not (74.2%; $\chi^2(1) = 6.638, p < .01$).

Moreover, providing the future performance generally makes cultural differences in stop-go decisions disappear ($ps > .1$). Participants made the same decision in good or bad conditions. The only exception was in the situation of a bad future performance for the low innovative product, when Chinese (42%) were marginally more likely to continue the new product than their Western counterparts (21%; $\chi^2(1) = 2.834, p < .1$).

Discussion

Generally speaking, providing information regarding the market demand in the future can partially moderate cultural biases in evaluations of new products (either killing a new product too early or escalating a failing new product). Specifically, participants indicated that they were more likely to continue a new product when informed that the future market demand would be good and tended to discontinue a new product when informed that the future market demand would be bad. However, providing information regarding the good market demand in the future has a weak or even not significant effect on decisions while providing information regarding the bad marketing demand in the future has a strong effect on decisions. Moreover, providing information regarding the market demand in the future can also moderate the differences in stop-go decisions caused by degree of product innovativeness.

General Discussion

For the past three decades, organizational and social psychologists, as well as economists, have studied escalation of commitment extensively (Staw 1976; Staw and Ross 1987; Brockner 1992; Brockner et al. 1986). However, few scholars have studied escalation

of commitment across distinctive cultures. This study investigates the effect of culture on evaluation of new products. The results suggest that East Asians are more likely than their Western counterparts to continue a new product while Westerners are more likely to stop it, given the poor performance forecast. Cultural differences in evaluations of new product are based on different modes of thinking. East Asians tend to believe that future is dynamic, nonlinear, and changeable while Westerners believe that the future is static and linear and will not change. Therefore, East Asians are more likely than Westerners to escalate a project while Westerners are more likely than East Asians to kill a project. However, cultural difference in stop-go decisions is weak when new products are more innovative. Both East Asians and Westerners have a high tendency to continue new products when new products are higher innovative even though the forecast performance is poor. The results also show that providing the future marketing demand may moderate the cultural biases. Specially, given the good (bad) future demand, both East Asians and Westerners are more likely to continue (stop) new products (vs. no future demand is provided); the tendency to continue new products given that future demand would be good is weak.

This study contributes much to the existing literature by first investigating the evaluations of new products between decision makers from Western cultures and those from Eastern cultures. The findings indicate that people from distinctive cultures have different modes of thinking and may use different rules to evaluate new products. Scholars have found that some methods (e.g., establishing a stop rule and introducing a new decision maker at the time of stop-go decision) can effectively reduce the escalation of commitment. The findings from the current research shed light in the existing literature by demonstrating that providing information on the future performance may also correct mistakes in evaluating new products (escalate a failing product or kill a promising product too early).

Although scholars have found that numerous factors (e.g., self-justification) can explain the escalation of commitment, the current study's findings show that holistic and nonlinear thinking are also important factors that may lead to escalation of commitment, especially for Eastern decision makers who do not have to justify themselves or save face. Although Boulding, Morgan, and Staelin (1997) have argued that setting a stop rule and introducing a new decision maker at the time of the stop-go decision are very effective strategies for Westerners, the findings herein suggest that such strategies may not be effective for East Asians—even for those who do not initiate the new products. Providing future performance can reduce East Asians' high tendency for escalation.

The findings also shed light on literature by using actual decisions while most articles on escalation of commitment relied on participants' intention to continue or stop an ineffective course of action. However, the intention may not be a good indicator of actual behavior because people always say one thing but do something else. Therefore, my findings are more reliable.

Managerial Implications

New product development involves a variety of risks. Many new products fail. Escalation of commitment is an important and common reason for the failure of new products (Boulding, Morgan, and Staelin 1997; Schmidt and Calantone 1998, 2002). The second type of error occurs when decision makers terminate a promising project too early due to a lack of evidence that it can succeed (Bonabeau, Bodick, and Armstrong 2008). This type of error is not rare. Many companies have killed promising products too early. For example, Xerox terminated a project that went on to drive the success of Documentum and 3Com. However, scholars have paid too much attention on the escalation of commitment and have ignored the possibility that new products (or projects) with poor performance forecasts may be successful, which is also a common occurrence. Indeed, before the Walkman could enter the market,

forecasts showed that cassette players without a recorder were useless and would ultimately fail. However, Sony stuck to the project and made the Walkman a very successful product. The current study's findings suggest that East Asians seem more likely to escalate failing projects while Westerners seem more likely to kill promising ones. Obviously, both tendencies are to be avoided (Bonabeau, Bodick, and Armstrong 2008).

For the past several decades, most firms have used stages and gates to evaluate new product ideas. However, such a model may be too static because it only provides the forecast of current situations and ignores the situations in the future. Current markets are highly competitive, and market environments are more complicated, volatile, and dynamic. Although the stage-gate model can effectively reduce the escalation of failing projects, it may also kill good projects too early. Terminating failing projects can stop the drain on resources, but killing good projects can also cause companies to lose opportunities to grow their business. Therefore, firms would do well to modify the strategy in order to satisfy the requirements of the increasingly complicated and volatile market environments. Forecasting the future performance would be a good method to alleviate errors in NPD even though the future involves a lot of uncertainties. Managers should also avoid a dangerous view that sees the future as either certain or completely unpredictable (Courtney, Kirkland, and Viguerie 1997).

Moreover, instead of killing new products immediately, companies should investigate why a performance forecast is not good. In fact, many new products that have failed—whether they failed after commercialization or were terminated too early—did so not because of technical shortcomings, but because companies did not survey their customers regularly (Ogawa and Piller 2006). Understanding customers' needs is crucial to the success of new products. For example, Apple was not the first company to introduce the MP3 player, but it was the first to make it successful. Why did Apple succeed when all others failed? Apple understood that, although consumers did not want to carry all of their CDs with them, they

also did not want to carry a bulky MP3 player. Therefore, Apple designed a small MP3 player that could hold up to 1,000 songs. Without the full understanding of customers' needs, Apple could never have made a previously failing project so successful.

Traditionally, many companies base their decisions on findings from focus groups (Adams, Day, and Dougherty 2002; Mahajan and Wind 1992), but focus groups tend not to be reliable because a small group of customers cannot represent the larger population. The focus group problem may also be why poor projects often pass through while good ones are stopped. Companies would do well to base their decisions on larger samples, even though surveying more customers costs more. Moreover, some projects may have been stopped because surveyed customers underestimated the benefits of new products that were truly good. Surveyed customers are often given only verbal descriptions of concepts or drawings of a product (Ogawa and Piller 2006). An alternative way to reduce the failure rate is to integrate customers into the NPD process (Ogawa and Piller 2006). For example, Threadless, a young Chicago-based fashion company with neither sophisticated market research nor forecasting capabilities, asks customers to design, evaluate, and purchase T-shirts and other clothing items.

Understanding consumers' needs alone is not sufficient for success. Many new products have failed despite the fact that they offered significant benefits over older generations of products because these new products required significant behavior changes. The bigger the behavior change, the bigger the resistance from consumers is likely to be (Gourville 2006). The simplest strategy for dealing with consumer resistance is management persistence and long-term commitment (Gourville 2006; Tellis and Golder 1996). Tellis and Golder (1996; p. 6) argued that "actually, successful products are the fruit of small, incremental innovations in design, manufacturing, and marketing" over a long period of time. Examples include but are not limited to P&G (Pampers); Sony, JVC, and Matsushita (video

recorders); and RCA (color TVs). Each of these companies spent at least ten years persisting in and committing to the projects. However, such long-term commitment requires a great deal of resources. Some companies, especially small and medium companies, may not have sufficiently deep pockets for such persistence. Other strategies for dealing with consumer resistance include making the benefits of the new product very attractive, eliminating incumbent products, or making products more behaviorally compatible (Gourville 2006).

Limitations and Future Directions

Like most studies on escalation of commitment, the current study also has some limitations. First, this study investigated only the effect of culture during the NPD process. Future studies should compare these differences before and after the new products are commercialized. Although self-justification is the main determinant of escalation of commitment, this study suggests that nonlinear thinking may also explain the escalation of commitment. Given that this study was based on a scenario in which decision makers did not initiate the project, future studies should investigate which factor—self-justification or nonlinear thinking—matters more for those who initiate and are highly responsible for the project. Moreover, future studies should also explore what factors would increase the tendency to continue new products.

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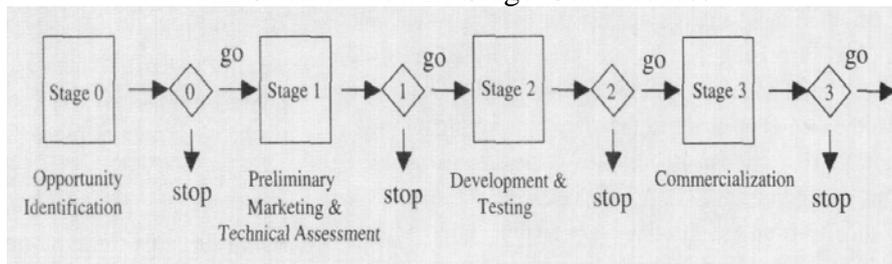
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Table 1
Number of Forecasted and Other Factors

	Chinese		American	
	LI	HI	LI	HI
Forecasted Factors	1.10(0.75)	0.98(0.84)	1.48(0.86)	1.38(0.84)
Other Factors	1.57(0.85)	1.68(0.96)	0.66(0.77)	0.79(0.87)
Total	2.67(0.97)	2.66(1.08)	2.14(0.73)	2.17(0.96)
n	51	50	50	52

Note: Standard deviations are in parentheses.

Figure 1
An Overview of the Stage-Gate Process



Total sunk costs	\$0.5 mil.
Cost to continue	\$3.175mil.
Annual sales	\$24.5mil.
Annual profits	\$2.2mil.
Marketing share	26%

Figure 2

Study 1 Results: Percentage of Participants Who Continue the New Product

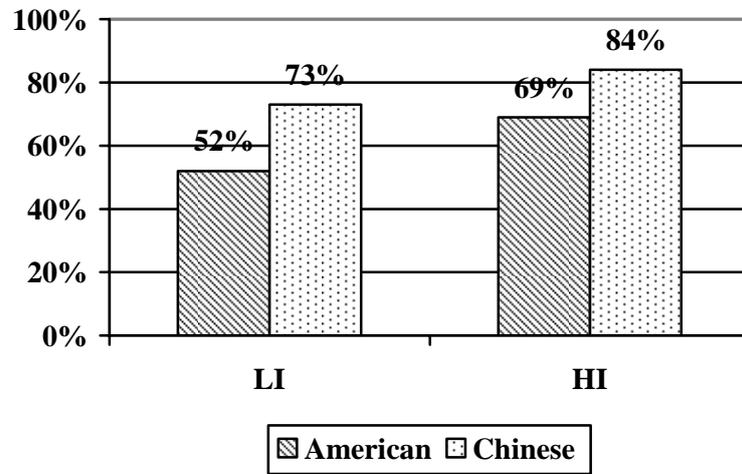
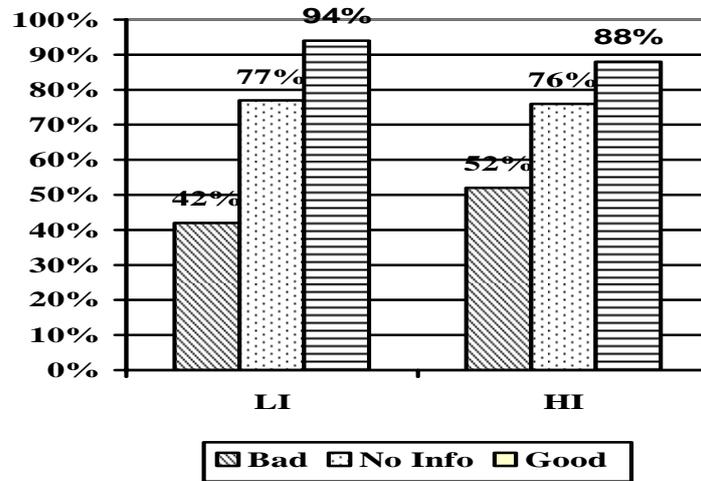
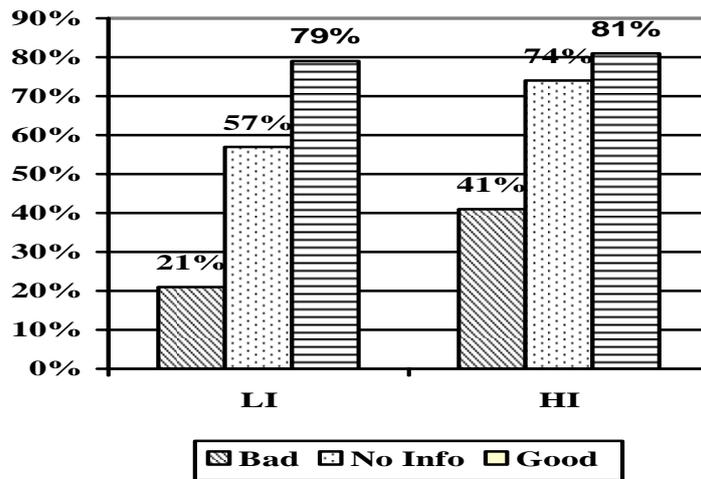


Figure 3

Study 2 Results: Percentage of Participants Who Continue the New Product (Chinese)



Study 2 Results: Percentage of Participants Who Continue the New Product (American)



Appendix 1

Linear versus Nonlinear Thinking Measures

1. Lucia and Jeff are both seniors at the same university. They have been dating each other for two years. How likely is it that they will break up after graduation?
2. Two kids are fighting at kindergarten. How likely is it that they will become lovers some day?
3. Richard grew up in a poor family but he managed to go to college. How likely is it that he will become rich one day?
4. Vincent has been the chess champion for 3 years in high school. How likely is it that he will lose in the next game against his strongest opponent?