Escalation Revisited: Investigating the Influence of Personality and Organizational Support on Escalation of Commitment

by

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Abstract

Escalation of commitment research has been narrow in its scope of influencing factors. A goal of this study was to remedy this gap by including factors at the individual, organizational, and decision context level that affect escalation. Furthermore, to my knowledge there is no other escalation research that has included both an economic and a human resources (HR) decision scenario. A significant contribution of this study was the results showing these two types of scenarios have different, and sometimes opposing, outcomes. In the economic context, sunk costs were positively related to escalation, but the relationship was inversed in the HR context. Additionally, facets of neuroticism and openness to experience were related to escalation in the economic context, but no such relationships were present in the HR context. Openness to experience moderated the relationship between organizational support and escalation. The results in the HR context have practical implications regarding how managers select, train, promote, and terminate employees. Furthermore, the differential outcomes in the economic and HR contexts provide a first step in expanding the theoretical implications of varying contexts and their influence on escalation.

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When predicting future events, individuals have a tendency to be overconfident when judging their own estimation accuracy (Dunning, Griffin, Milojkovic, & Ross, 1990; Pulford & Colman, 1996; Vallone, Griffin, Lin, & Ross, 1990) especially in difficult tasks (e.g., Lichtenstein & Fischhoff, 1977). One of the most illustrative examples of this overconfidence gone awry is *escalation of commitment*, in which a decision maker continues to invest money, time, energy, or a combination of these resources into an endeavor when chances of success are uncertain, unlikely, or both. Individuals may continue pursuing a course of action even in the face of substantial losses in a push to "turn the situation around" (p. 579) or to justify the rationality of the original decision (Staw, 1981).

Escalation of Commitment

The phenomenon of escalation of commitment is sometimes referred to as 'throwing good money after bad' or persisting in an investment decision beyond an economically rational point (Staw & Ross, 1987). Whereas escalation of commitment is the decision to persist in circumstances where losses have occurred, *escalation situations* are predicaments in which uncertainty exists about the outcomes of persistence or withdrawal. The key feature of an escalation situation is the uncertainty involved. As Brockner (1992) put it, "it is the uncertainty surrounding goal attainment that prompts decision makers to view their allocated resources simultaneously as either investments or expenses" (p. 40). It is almost always unclear to the decision maker if an investment will be successful or unsuccessful in goal attainment. Thus, it is hardly surprising that escalation situations can be quite committing to the decision maker who is already invested. If goals are eventually reached, past resources may be seen as investments; but

if goal attainment fails, past resources sunk will be perceived as lost expenses. Viewed from an outsider's point of view, it may seem unreasonable for a decision maker to persist in a failing situation in the first place. However, ventures that do not make economic sense at their outset and yield negative outcomes overall may be very committing at later points in their life cycle (Staw, 1997). For example, organizations invest a great deal of time and money into new employees that have been hired and trained. Thus, the investment of time and money is high, increasing the likelihood that managers will keep employees around even if they turn out to be subpar workers. This is especially true when a manager has personally hired an employee, and as a result feels considerable personal responsibility for the decision to hire the worker (cf., Staw, 1976).

Escalation can occur on three scales: (a) individual scale, (b) organizational scale, and (c) governmental scale. Examples of escalation on an individual scale include the decision to continue repairing an aging automobile (Goltz, 1992; Goltz, 1993), continuing investment in a declining stock (Hantula & Crowell, 1994), or waiting an inordinately long time for a bus when walking to the destination would have been just as easy (Brockner, 1992). Escalation on an organizational scale could be continued funding for a failing information technology project (Drummond, 1998). On a governmental scale, examples include London's construction of the Millennium Dome (Drummond, 1998), America's involvement in the Vietnam conflict (Staw, 1997), and the Expo '86 in British Columbia, Canada which left the Canadian government with a CAN$311 million deficit (O'Leary, n.d.; Ross & Staw, 1993). The argument has been made that given the long-term consequences of greenhouse gas emission build-up, the continued investment in fossil fuel industries reflects escalation of commitment to a failing strategy (Arbuthnott & Dolter, 2013). The recent U. S. government bailouts also have some of the

hallmarks of escalation. As an example, the government assistance to financial services firm AIG (circa 2008) started with an initial commitment of $85 billion that eventually grew to $175 billion as new problems arose. The Government Accountability Office (GAO, 2009) indicated great uncertainty as to whether AIG would be able to repay the government.

Escalation of commitment on an organizational scale has been the focus for most escalation research. One particularly frightening example of how escalation can take down an organization is the Shoreham Nuclear Power Plant project. The Shoreham project was originally projected to cost $70 million, but the final tally ended up exceeding $5 billion. In the end, the plant was never operated at a commercial level, the entire facility was purchased by New York State for $1, and the materials were sold for scrap (Ross & Staw, 1993; Staw, 1997).

Clearly, escalation of commitment can be disastrous for organizations, but what is required to classify circumstances as an escalation situation? Three factors have been isolated as being common to all escalation situations: (a) there must be negative outcomes or losses that occur, (b) the situation must involve multiple decisions, and (c) uncertainty must exist (Staw, 1997; Staw & Ross, 1987). The first requirement, that negative outcomes or losses have occurred, can mean that the past or current course of action is not working as expected, and that an earlier decision is to blame for the unexpected outcomes. The second requirement is that the situation must involve multiple decisions. The rationale behind this assertion is that real-world escalation situations in organizational settings are complex and involve multiple decisions at several time points. The third requirement is that some level of uncertainty must exist. This means that the consequences and the utility of the decision to withdraw or persist are not obvious or clear-cut. In fact, research has shown that repeated negative feedback can lead to withdrawal rather than persistence (e.g., McCain, 1986). Similarly, when the consequences are clearly laid

out to participants, they do not exhibit escalation behavior (Simonson & Staw, 1992). However, the consequences are uncertain in escalation situations and there is a compounding of losses over time. Thus, the decision to withdraw may end a sequence of losses, yet the material and psychological costs may be large. Likewise, the decision to persist may involve more investment of money, time or materials, but the outcome holds at least the prospect for eventual gain (Staw & Ross, 1987).

History of Escalation Research

The term escalation of commitment is more common in the organizational literature (Staw, 2005), whereas other research areas, especially social psychology, use the term *entrapment*, which is considered synonymous with escalation (e.g., Brockner & Rubin, 1985; Staw, 2005). Furthermore, escalation is categorized as a special case of *sunk costs*, defined as decision makers' irrational tendency to take into account irretrievable prior investments in decision options (e.g., Arkes & Blumer, 1985). Sunk costs is a more general term than escalation of commitment because, unlike escalation of commitment, sunk costs is not restricted to situations with negative feedback and uncertainty of decision consequences (e.g., Greitemeyer, Schulz-Hardt, Popien, & Frey, 2005). In the next section, the three types of escalation studies will be described, including examples of each type.

Three lines of escalation research. There have been three distinct lines of research on commitment in escalation situations: (a) auction, (b) entrapment, and (c) role-playing (i.e., resource allocation). These three lines of research each provide insight into escalation of commitment and are discussed separately in the next section.

Auction studies. Early studies implementing auctions used experimental games to simulate an escalation context. The most cited auction game is known as the Dollar Auction

game (Shubik, 1971; Teger, 1980), and it was designed as an atypical auction in which both the top two bidders must pay their top bid, but only the highest bidder receives the prize. Teger (1980) used the Dollar Auction Game to illustrate the effects of escalation of commitment and sunk costs. The Dollar Auction Game is a simple competition amongst participants in which a dollar bill is auctioned off to the highest bidder. As in a normal auction, the high bidder wins the prize (i.e., the dollar bill). But the twist in the Dollar Auction is that the second highest bidder also has to pay the last bid, but receives no prize. For both the highest and second highest bidder, their last bids are similar to irretrievable investments made in business. Thus, the two high bidders are reluctant to quit the auction once they have made bids because losing would mean the loss of all previous investments. In escalation situations decision makers do not recognize that time and money already invested are sunk costs that cannot be recovered and should not be considered when selecting future courses of action (Bazerman & Neale, 1992). And this is what happens in the Dollar Auction Game; the top two bidders both feel compelled to win because they both fall into the sunk costs trap, believing that they must make back their invested money. At the point when the bidding reaches one dollar, the two high bidders are bidding a dollar in order to win a dollar. However, once that point passes, neither party can profit, even if they ultimately win the auction. After they pass the dollar bid, the auction changes into a contest to decide which party loses the least. The outcome, however, was that both top bidders ended up losing money in the attempt. They failed to realize that only future consequences should be considered when making the decision to persist or withdraw. The auction was performed over 40 times and the bidding always exceeded $1, and even went as high as $20 (Teger, 1980).

Murnighan (2002) increased the prize to $20 to account for inflation and established a set of rules for the bidders (Appendix A). Initial bidding was rapid, and several individuals participated until the top bid reached $19. After that point, only the top two bidders continued placing bids. The other bidders dropped out at this bid because the only possible outcome was losing money; both top bidders inevitably would be paying more than $20 for a $20 bill. The final result was the winning bidder paying $54 for the $20, and the second-highest bidder paying $53 with no reward. Several of these $20 auctions were performed in a row with the same group of individuals. Incredibly, the second auction resulted in even higher final bids (i.e., bids surpassing $100) than the first auction.

Bidders who have invested time, energy, and bids in an auction may feel compelled to justify their past bids (Ku, Malhotra, & Murnighan, 2005) and thus they exceed any limits they mentally set for themselves at the onset of the auction. Self-reflection from two top bidders revealed that both indeed felt that they needed to escalate commitment to the auction as a way of justifying past bidding. Instead of focusing on the economic sensibility of continued bidding, one bidder later reflected, "I was more concerned with 'winning' and 'not giving up,'" while the other top bidder admitted succumbing to auction fever and getting "caught up in the competitive bidding process" which ultimately led to him bidding "well over my self-imposed limits" (Murnighan, 2002, p. 63). Furthermore, similar results were found using a group of Hong Kong executive MBA students as bidders (Murnighan, 2002), suggesting that the dollar auction may have the same effect—perpetuating bidding beyond a logical point—regardless of nationality.

The results of the Dollar Auction game are a classic example of decision makers investing in a prospect that goes beyond a logical economic stopping point (i.e., when the bidding reached $1 or $20, depending on the auction prize). The results suggest that people are

willing to pay well over what a monetary reward is worth in order to avoid losing. In a more recent auction study (Ku, Malhotra, & Murnighan, 2005), researchers investigated a curious result from a real Chicago auction in which 140 life-sized hand-painted fiberglass cows sold for over seven times their initial estimated worth. The results indicated that auctions increased commitment in two ways through sunk costs: (a) by prompting a need for self-justification and (b) by increasing arousal. Sunk costs, particularly in the fast-paced and exciting context of an auction, increased arousal. In turn, the resulting increased arousal impaired decision making and fueled the vicious cycle of continued investment in the auction (Ku, et al., 2005).

Entrapment studies. The second type of escalation situation, entrapment, forces decision makers into feeling trapped into continuing investment in a failing project, often by providing a chance of payoff only once a project has been completed. A series of studies conducted by Brockner, Rubin and associates (e.g., Brockner & Rubin, 1985) used several games to simulate contexts in which participants were likely to expend resources working toward a receding or elusive goal.

One such task had participants solve a crossword puzzle with a chance of winning a jackpot (i.e., $8) if they completed at least eight out of the ten words (Rubin & Brockner, 1975). However, the amount of money that could be won depended on the time taken to complete the puzzle. As participants took more time to complete the puzzles, the jackpot incrementally decreased. Additionally, some of the words were so difficult that they required the use of a scarce resource, which in this case was a dictionary. Participants could at any time request the use of a shared dictionary and wait their turn to receive it. In actuality, there was no dictionary. Thus, the participants were trapped in a situation in which they could choose to wait for a valuable necessary resource that never became available, or they could choose to terminate the

experiment. More than half (54%) of the participants waited beyond the point when their jackpot winnings would have broken even with their initial investment (i.e., $2.40). Participants also waited an average of 4.06 minutes—approximately one third of the total experiment time—for the dictionary that never arrived.

A real-world illustration of entrapment was the Expo ’86 World Fair in British Columbia, Canada that went CAN$724 million over budget due to investor fears of huge closing costs and revenue only possible once the Expo was opened to the public. Despite attracting over 20 million visitors, the Expo 86 ultimately left the Canadian government with a CAN$311 million deficit (O’Leary, n.d.; Ross & Staw, 1993).

Laboratory experiments and real case studies of entrapment both illustrate how powerful the trapped sensation can feel within an escalation situation. Decision makers who have already invested heavily escalate commitment and continue to invest resources in hope of a turnaround or eventual gain (Sleesman et al., 2012). If individuals fail to understand that sunk costs can entrap them, then they “will be hard pressed to watch out for and guard against the psychological enticement of prior commitments” (Ku, 2008, p. 1478). With the emergence of entrapment studies, self-justification was the most prevalent theoretical explanatory mechanism for why individuals escalate (Ku, 2008). The motivation for continued investment has been attributed to the need to justify previous expenditures and the need to win at any cost (Brockner, Shaw, & Rubin, 1979). Both of these motives can be maladaptive when they amplify the feeling of entrapment and lead to prolonged investments. Furthermore, “entrapment begets entrapment” (p. 494) in the sense that factors that might dissuade a decision maker from continued investment are outweighed by the motives to continue investment (Brockner et al., 1979).

Role-playing studies. The third type of escalation situation, role-playing scenarios (i.e., resource allocation), have become the most popular type of scenario in escalation of commitment research. There are two types of role-playing studies: (a) economic scenarios and (b) human resources scenarios.

In economic scenarios, participants are asked to imagine themselves as decision makers who must allocate funds to one or more projects, often with ambiguous and sparse information regarding the probability of project success. As an illustration, Staw, Fox, and Ross conducted a series of experiments in which they asked students to play the role of administrator in charge of allocating resources to a money-losing project (e.g., Staw, 1976; Staw & Fox, 1977; Staw & Ross, 1978). The general experimental design was that decision makers were asked to make several decisions about the allocation of resources to an entity (e.g., a corporate division, an economic development project). Before the final decision, a setback was introduced by informing decision makers that the allocation decision had not produced the expected results. The dependent variable in these studies was the amount of funds allocated to the entity in subsequent allocation decisions. The main findings of these studies were that (a) participants allocated more money to declining rather than improving projects, (b) when participants were personally responsible for prior allocation decisions they were more likely to allocate more money to the initially chosen entity, (c) there was an interaction such that participants allocated more funds when they were personally responsible for negative consequences, and (d) when external justification for failure was provided, escalation was more likely to occur.

The second type of role-playing study, human resources scenario, asks participants to make investment decisions with regards to employees. For example, individuals may role-play an HR manager who is mentoring a trainee (Wolff & Moser, 2008), a Vice President evaluating

and/or promoting executives (Bazerman et al., 1982), or perform performance appraisals and evaluations of promotion decisions (Schoorman, 1988). This type of scenario is much rarer than the economic scenarios in the escalation literature. Thus, one of the goals of this study is to add to this gap in the escalation literature by including an HR escalation scenario.

With the introduction of role-playing studies, results showed it was possible for individuals to escalate their commitment even after receiving negative consequences (Staw, 1976). Policy makers may become trapped in a particular course of action, and at that point committing new and additional resources may seem like a more attractive option than accepting a loss (Campbell, 1969). The current study used a role-playing scenario design in which participants played the role of Vice President of Operations for a technology manufacturing firm. Participants were asked to make a decision regarding funding for a new product which was already mid-production. The circumstances and chances of project success were purposefully unclear to the decision maker. Participants used the limited information available and their own judgment to make a decision to escalate commitment to the project, or conversely, to disregard sunk costs and abandon the project. As previously mentioned, a contribution of this research project was the addition of a human resources scenario. For this portion of the study, participants were asked to decide whether to continue training new hires or terminate their employment. As in the economic scenario, limited information was given about the chances of employee success and the level of sunk costs in their training.

Though distinct from each other, the three lines of escalation research all point to a few explanatory mechanisms for why escalation occurs. These mechanisms include calculating expected utility, justifying previous investments, and framing decisions as losses or gains. The

following section introduces the theories behind these mechanisms and provides supporting evidence for each.

Theoretical models. Several theories have been proposed to explain why escalation occurs, but most fall into three categories: expectancy theories (i.e., expectancy theory and subjective expected utility theory), self-justification theory, and prospect theory (Brockner, 1992; Sleesman, Conlon, McNamara, & Miles, 2012).

Expectancy theory and *subjective expected utility theory* both posit that a decision maker assesses the probability that additional resource allocation will lead to goal attainment as well as the value of goal attainment (i.e., rewards minus costs). When applied to escalation situations, decision makers weigh the likelihood of outcomes for escalating versus de-escalating (e.g., financial turnaround or losing additional resources) and estimate the chances of each outcome (Sleesman et al., 2012). Using this formula allows the decision maker to generate a subjective expected utility associated with the decision to allocate additional resources (e.g., Vroom, 1964). Finally, the decision maker chooses to escalate or de-escalate depending on which outcome will yield the highest expected utility. Studies testing this perspective focus on economic or financial information related to venture initiation, continuation, or termination (Sleesman et al., 2012).

Self-justification theory, when used as an explanation for escalation behavior, contends that individuals, once immersed in an investment situation, continue investment in the venture even in the face of losses in order to rationalize their previous behavior or to psychologically defend themselves against adverse consequences (Aronson, 1968, 1972; Festinger, 1957; Staw, 1976). With self-justification theory, decision makers are influenced by a need to justify previous allocation decisions or otherwise rationalize their past actions through continued investment. Self-justification theory arose from Festinger's (1957) theory of cognitive

dissonance, in which individuals, forced to undertake an unpleasant or dissatisfying task such as lying to a fellow participant about the nature of a task, bias their attitude on the experimental task so as to cognitively reduce any negative outcomes resulting from the behavior. When applied to escalation situations, cognitive dissonance theory suggests that decision makers become entrapped in a course of action due to an unwillingness to admit to themselves and to others that a prior investment ultimately ended in failure (Brockner, 1992). Thus, self-justification theory contends that individuals invested in an escalation situation will continue investing in order to reduce cognitive dissonance through rationalizing past behavior.

Prospect theory is a more general theory of framing and decision making than self-justification which has also been used to explain escalation behavior. According to prospect theory, probabilities have nonlinear impacts on decisions (Gonzalez & Wu, 1999; Kahneman & Tversky, 1979; Kahneman & Tversky, 2000; Tversky & Wakker, 1995). The value function for losses is steeper than for gains, meaning that a loss of $X is more aversive than a gain of $X is attractive. Within this perspective, decision makers focus on whether information is framed in a gain or loss context. Loss aversion creates a general reluctance to trade or depart from the status quo because the potential negative outcomes associated with losing one's current possession loom larger than the potential positive outcomes of the alternatives (Samuelson & Zeckhauser, 1988). Taken one step further, people may be overweighting the certainty of the status quo, which may increase the attractiveness of continuing investment compared to other, more uncertain, options. For example, when situations that appear objectively negative were positively framed, people became more risk-averse and thus were less likely to escalate (Schoorman, Mayer, Douglas, & Hetrick, 1994).

Other factors in addition to the influences proposed by the aforementioned theories have had demonstrated effects on decisions. For example, choices are influenced by the regret anticipated in cases where another option could have been better (Bell, 1982). The reasons used to justify one choice over another (Tetlock, 1992) and the influences exerted by costs already suffered (Arkes & Blumer, 1985; Gourville & Soman, 1998) also alter decisions. In the circumstance of investment decisions, two outcomes are possible with continued investment in a failing venture: (a) the tide may turn and the decision may be ultimately justified as being rational or (b) the additional resources committed may fail to pay off, which can also turn into a negative cyclical process (Staw, 1976). In the first scenario, enlarging commitment of resources and undergoing the risk of investment in a seemingly failing venture appears to be a bold and brave decision. However, in the latter scenario, the decision maker, by increasing commitment in the face of negative consequences, has increased the stakes of the investment gamble, and by doing so has increased the probability of further negative consequences.

The theories proposed to explain escalation behavior are a useful first step in understanding this curious behavior's underlying mechanisms. Looking back at the roots of escalation research provides more insight into how these theories arose, what factors affect escalation behavior, and what questions remain to be answered.

Influential escalation studies. Staw (1976) and Teger (1980) were two of the most influential researchers who brought attention to the escalation of commitment phenomenon in decision making. Staw's study used a simulated business case in which responsibility for initial decision was experimentally manipulated. High responsibility participants were told to assume the role of Financial Vice President in a hypothetical corporation. They were asked to make a decision about which department—consumer products or industrial products—should receive

additional research and development (R&D) funding. Low responsibility participants were told that a funding decision had already been made by the previous Financial Vice President, while high responsibility participants made the decision themselves. Consequences were manipulated so that half the participants received positive feedback about the original funding decision and the other half received negative feedback. Participants were then asked to allocate additional R&D funds to the two departments however they deemed appropriate. Results showed that those in the high personal responsibility-negative consequences group allocated significantly more money to the failing option than any of the other three groups (high personal responsibility-positive consequences; low personal responsibility-negative consequences; low personal responsibility-positive consequences). Thus, when participants felt personally responsible for the original funding decision, they were more likely to allocate more money to the original, yet failing, option than those who felt low responsibility for the original decision. Furthermore, these effects were increased when the original decision led to negative outcomes.

Economic examples are not the only way that escalation can occur with sunk costs. There are many familiar examples of how sunk costs affect every day decisions. For instance, Arkes and Blumer (1985) conjured up several circumstances that most individuals can recognize from personal experience: Should I continue this relationship I have put so much time and effort into even though I am unhappy with this person? Should I continue with this terrible job because I already spent a year in training to get this position? Should I keep watching this movie because I am already half-way through it, even though it is terrible so far? The influence of sunk costs can be so powerful that it influences individuals to persist in a decision despite undesirable circumstances. Once committed to a course of action, executives often allocate resources in ways that justify their previous choices, whether or not they not appear valid (Bazerman,

Giuliano, & Appelman, 1984; Brockner & Rubin, 1985; Staw, 1976; Staw, 1981; Teger, 1980). As an illustration, the manager who personally hired an employee behaves differently toward that employee than toward employees who were not personal hires, regardless of level of performance. Managers negotiate harder for a personally hired employee, evaluate the employee more favorably, provide larger rewards to that employee, and make more optimistic projections of that employee's future performance—all to justify the initial hiring decision (Bazerman, Beekun, & Schoorman, 1982; Schoorman, 1988).

Loyalty and preferential treatment for high-investment team members have also been observed on sports teams. Longitudinal studies of the NBA showed that, after controlling for objective performance (e.g., scoring, assists, rebounds), players taken early in the NBA college draft were given extra playing time, traded less often, and survived longer in the league (Camerer & Weber, 1999; Staw & Huang, 1995). The findings suggested that past decisions about players affected future treatment of the players. In other words, NBA teams invested in players much as corporations commit funds to promising projects or as managers give special treatment to personally hired employees. When NBA teams expended substantial resources to obtain a particular player, they were more likely to give that player additional time on the court and retain a highly selected player longer than would be merited by objective performance alone. To sum up, the sunk costs dictated the treatment of players regardless of objective performance.

There has been no scarcity of research on escalation of commitment. Recent research continues to expand the escalation literature, including studies investigating ethical behavior (e.g., information concealment) in escalation scenarios (Jensen, Conlon, Humphrey, & Moon, 2011). However, only a handful of escalation studies have included all three levels of influence—individual, organizational, and decision context—that may affect escalation behavior.

In order to fill this gap and to gain an integrative understanding of the role these three levels of influence play in decisions to escalate, the current study will include individual-level variables (i.e., conscientiousness, neuroticism, openness to experience, escalation susceptibility, risk-taking), an organizational-level variable (i.e., organizational support), and decision context-level variables (i.e., sunk costs, level of completion, chance of success).

Escalation Situations

Escalation situations are predicaments where costs are suffered in a course of action and subsequent activities have the potential either to reverse or compound one's initial losses (Staw & Ross, 1987). Stated another way, escalation situations are circumstances in which decision makers recommit resources to a failed or failing course of action (Bowen, 1987). An escalation situation is a predicament where costs are suffered in the course of action, where there is a decision point to withdraw or persist, and where the consequences of persistence and withdrawal are uncertain. In escalation situations, not only have things gone wrong, but also potential actions aimed at curbing the problem may actually deepen or compound the difficulty (Staw & Ross, 1987). The decision to persist in an escalation situation even in the face of negative outcomes or losses is known as escalation of commitment. Escalation behavior most often occurs in situations in which there is some element of uncertainty (Staw, 1997).

However, a gap remains in the escalation literature in that few studies incorporate all three levels of factors that influence the escalation process: individual factors, organizational factors, and decision context factors. The goal of the current study was to incorporate these three components for an inclusive view of escalation influences. First, I will discuss the decision context and how variables at this level may affect escalation.

Decision context: Sunk costs and level of completion. Both sunk costs and level of project completion have been shown to increase decisions to continue investment (e.g., Moon, 2001a, 2001b). When completion level is low, a decision maker is less likely to feel entrapped into continuing investment. Low completion, combined with high expenditures, may actually prompt decision makers to focus on the negative budgetary outcomes of continued funding (Heath, 1995) and thus decrease escalation. However, high completion is psychologically associated with tangible and concrete outcomes. Decision makers in these situations may feel more entrapped because sunk costs are more likely to exert their impact (Moon, 2001a). In an escalation situation, individuals have invested time, energy, money or another important resource with the goal of future success. However, even in the circumstance of negative feedback and unmet goals goals, decision makers feel a psychological need to reinvest in their initially chosen decisions (Rubin & Brockner, 1975; Staw, 1976; Teger, 1980). Thus, decision makers in escalation situations honor sunk costs by retrospectively focusing on past expenditures (Staw, 1981; Staw & Ross, 1978), which in turn increases escalation.

Hypothesis 1: Sunk costs will be positively related to escalation behavior.

Hypothesis 2: Completion will be positively related to escalation behavior.

The following section discusses the organizational context and how varying support at this level may influence escalation.

Organizational support: Strong and weak situations. Mischel (1973) suggested that when situations are well-structured, individual differences are not as likely to influence behavior as when situations are unconstraining, ambiguous, or ill-structured. Moreover, organizational culture studies have indicated that employees act in a manner consistent with the organization's values. It follows that the nature of the organization's values influence employees' decisions,

especially in circumstances where the organization's culture is particularly strong. If the organizational culture is one that (a) makes people unwilling to admit failure or (b) values consistency in behavior (Staw & Ross, 1987), escalation is more likely to occur. However, if an organization values experimentation and tolerates errors, then escalation should be less likely (Brockner, 1992).

The way in which an investment decision is framed can also affect escalation. Davis and Bobko (1986) showed the effect of negative and positive framing on escalation by manipulating outcome feedback following an initial investment. In the positive framing condition, participants were told that the investment program, the Employability Development program, "*had placed* [italics added] 39.9% of all participants in jobs", whereas those in the negative framing condition were told that the program "*had failed to place* [italics added] 60.1% of participants in jobs" (pp. 128-129). Consistent with Bazerman's (1983) view that negative framing contributes to escalation behavior, Davis and Bobko hypothesized that negative framing would mimic allocation decisions seen in the private sector. The results supported this hypothesis; negative framing was related to increased funding for the original investment program, but positive framing decreased funding for the original program. In the authors' words, "context matters" (p. 137) when it comes to investment decisions (Davis & Bobko, 1986).

Some studies have already linked contextual influences to escalation. For instance, social determinants of escalation of commitment have included public evaluation of a decision (Brockner, Rubin, & Lang, 1981) and group identity or cohesiveness strength (Hogg & Terry, 2000; Janis, 1972), both of which facilitate escalation, and resistance to the decision from others (Fox & Staw, 1979), which reduces escalation. However, as Sleesman, Conlon, McNamara, and Miles (2012) pointed out in their meta-analysis of escalation literature, the inclusion of social

determinants has been limited and needs further exploration. They suggested that social determinants such as organizational culture should be included to paint a more complete picture of factors influencing escalation behavior. The current study is designed to answer Sleesman et al.'s call for additional research on social determinants by varying the level of organizational support in an escalation scenario.

> Hypothesis 3: There will be a difference in level of escalation for individuals in the high versus low organizational support condition; Individuals in the high organizational support condition will choose to escalate less than individuals in the low organizational support condition.

Decision context and level of organizational support provide a partial view of the influences affecting escalation decisions. The decision maker as a unique individual brings certain values, expectations, and personal preferences to any escalation situation and these should be accounted for when studying escalation behavior. Thus, in addition to the predictions regarding decision context and organizational support, the influence of individual difference variables on escalation behavior will also be observed.

Individual Differences

Moon's (2001b) remark still holds true: The literature on escalation of commitment has, in large part, failed to incorporate individual differences. Studies that have included individual difference variables found links between escalation and tolerance for ambiguity, risk-taking, Machiavellianism (Cary, Hills, & Katcher, 1980), locus of control, and repression-sensitization (Singer & Singer, 1986). Risk-taking, Machiavellianism, and tolerance for ambiguity were related to participants' physiological arousal during the course of the conflict, but the results

revealed no relationship between these personality measures and escalation behavior (Teger, 1980).

Aside from the work by Moon and colleagues (i.e., Moon, 2001a, 2001b; Moon Hollenbeck, Humphrey, & Maue, 2003) there has been little research on the Five Factor Model (FFM) personality traits (i.e., conscientiousness, agreeableness, neuroticism, openness to experience, extraversion) that play a role in escalation of commitment. The lack of research in this area may be the direct result of several studies that found no relationship between individual differences and escalation behavior (e.g., Davis & Bobko, 1986; Rogers, 1996; Singer, 1990; Staw & Ross, 1978; Teger, 1980). Mischel (1973) suggested that when situations are non-constraining, ambiguous, or ill-structured, such as in escalation scenarios, individual differences are more likely to influence behavior than when situations are well-structured. The potential influence of situational strength and its interaction with individual difference variables will be revisited following a discussion of personality variables that may affect escalation decisions.

Personality: Conscientiousness, neuroticism, openness to experience, escalation susceptibility, and risk-taking. Research on personality and its links to escalation has been limited, but there is some compelling evidence that personality may be an important factor in escalation behavior. For instance, work by Moon (2001b) revealed that two facets of conscientiousness—achievement striving and level of duty—were differentially related to escalation. Individuals high in achievement striving had increased escalation behavior; conversely, those high in duty showed decreased levels of escalation. Concern for self (i.e., achievement striving) was positively related to escalation, yet concern for others (i.e., level of duty) was negatively related to escalation, suggesting that individuals who work for the sake of the group and the organization may be less inclined to escalate commitment when investments

start to sour. The dimension of personality that has consistently been linked to job performance across occupational groups is conscientiousness (e.g., Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001). Barrick, Mount, and Judge (2001) in their meta-analysis found that the construct conscientiousness was associated with dependability, achievement striving, and planfulness. Moreover, conscientiousness was a valid predictor of work performance across jobs. Barrick and Mount's (1991) meta-analysis results indicated that conscientiousness showed consistent relations with all job performance criteria for all occupational groups. In fact, they found that conscientiousness was the only personality trait to display non-zero correlations with job performance across different occupational groups and criterion types. Barrick et al. (2001) suggested that conscientiousness is "the trait-oriented motivation variable that industrial-organizational psychologists have long searched for, and it should occupy a central role in theories seeking to explain job performance" (p. 22). Schmidt and Hunter (1998) found that conscientiousness added a moderate incremental validity in predicting overall job performance above and beyond intelligence. Based on their findings, Schmidt and Hunter deduced that once individuals are in a job, the quality and level of their performance is determined by personality traits such as conscientiousness. Indeed, it is hard to conceive of a job where it is beneficial to be careless, irresponsible, lazy, impulsive and low in achievement striving (low conscientiousness; Tett et al., 1991). Consequently, employees with high scores on conscientiousness should also obtain higher performance at work (Barrick et al., 2001).

Hypothesis 4: Conscientiousness will be positively related to escalation behavior.

Building on the personality research, neuroticism also appeared to be linked to escalation behavior (Moon, Hollenbeck, Humphrety, & Maue, 2003). Neuroticism is defined by anxiety, hostility, depression and personal insecurity (Barrick, Mount, & Judge, 2001). Neuroticism

significantly predicted escalation of commitment when it was partialled into two components: anxiety and depression (Moon et al., 2003). Results showed that anxiety and depression were differentially related to escalation behavior, with anxiety positively related to escalation while depression was negatively related to escalation. The authors reasoned that the opposing effects of the two components mutually suppressed each other's effects, creating the null result when both were included in a composite neuroticism measure. Similarly, another subscale of neuroticism, trait negative affect, was negatively correlated with escalation, but only when the decision maker was personally responsible for the initial decision (Wong, Yik, & Kwong, 2006).

And further highlighting the importance of neuroticism, meta-analytic data has shown that neuroticism negatively predicted overall work performance, but to a lesser extent than conscientiousness (Barrick et al., 2001). In a meta-analysis, neuroticism had small, but consistently negative relationships with job proficiency, training proficiency, and personnel data (Barrick & Mount, 1991). Ten years later, similar results emerged, in addition to a negative relationship between neuroticism and teamwork (Barrick, Mount, & Judge, 2001). Tett et al. (1991) found that of the Big Five personality traits, only neuroticism displayed non-zero (negative) correlations with performance. Being anxious, hostile, personally insecure and depressed is unlikely to lead to high performance in any job (Barrick et al., 2001). Based on previous research, I predict that there will be an inverse relationship between neuroticism and escalation.

Hypothesis 5: Neuroticism will be negatively related to escalation behavior.

Though escalation has been significantly related to conscientiousness (Moon, 2001b) and neuroticism (Moon, 2003), the same is not true for openness to experience. However, it is reasonable to predict that escalation and openness to experience would be linked. The decision

to escalate is almost always tantamount to sticking with the status quo (Fox, Bizman, & Huberman, 2009), whereas the decision to discontinue escalation is outside the norm because it means changing course. In other words, leaving an investment is a decision to try something different and unusual.

Intelligence, creativity, unconventionality and broad-mindedness define openness to experience. Openness has displayed positive relationships with training proficiency (Barrick & Mount, 1991; Barrick et al., 2001; Salgado, 1997), teamwork (Barrick et al., 2001), managerial performance (Barrick et al., 2001), and overall job performance (Barrick et al., 2001; Tett et al., 1991). Furthermore, openness has even been shown to have higher correlations with performance than conscientiousness (Tett et al., 1991). Individuals who are intellectual, curious, imaginative, and have broad interests are more willing to be open to learning experiences (Barrick, Mount, & Judge, 2001). While the typical response to a decision is to stick with the current path as demonstrated by the well-documented status quo bias (see Samuelson & Zeckhauser, 1988), those high in openness to experiences would be more likely to try a different decision path. Individuals high in openness tend to be imaginative, adventurous, intelligent, and have an interest in art and a liberal outlook (Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger, & Gough, 2006). These types of people would be more open to a decision that is not the norm, and thus should be less inclined to escalate commitment.

Hypothesis 6: Openness to experience will be negatively related to escalation behavior.

Escalation susceptibility is also predicted to be a positive indicator of escalation. Some individuals may be predisposed to persist in investment decisions, regardless of circumstances or other factors. Thus, escalation susceptibility will be included as an individual difference expected to influence escalation decisions.

Hypothesis 7: Escalation susceptibility will be positively related to escalation behavior.

It has already been established that escalation decisions may be perceived as status quo maintenance (Fox et al., 2009), so what type of individual would choose to escalate even if preserving the status quo is highly chancy? Risk propensity, a decision maker's tendency to take or avoid risks, has already been positively linked with escalation behavior (Wong, 2005). Those with high risk propensity tend to underestimate risk in general, and thus have a greater tendency to make risky decisions (Sitkin & Weingart, 1995). To extend this research, risk-taking was included as an individual difference variable, and it was expected to have a positive association with escalation.

Hypothesis 8: Risk-taking will be positively related to escalation behavior.

Organizational Support × Personality Interaction. Brockner and Rubin (1985) applied Mischel's (1973) theory of situational strength to escalation of commitment by hypothesizing that more structured escalation situations would lead to less influence of individual differences on escalation behavior. Brockner and Rubin defined a structured escalation situation as one in which immediate negative feedback was given after investment, and a social (vs. nonsocial) opponent was present, thus increasing competitiveness. The authors believed that the key to determining the influence of individual differences in escalation behavior was not to simply study the main effect of personality variables, but to investigate the personality-situation interaction. Furthermore, personality variables may moderate the effects of situational determinants of escalated commitment (e.g., Brockner, et al., 1981; Conlon & Wolf, 1980).

Brockner, Rubin, and Lang (1981) found that an individual difference variable (i.e., social anxiety) interacted with a situational variable (i.e., risky behavioral instructions) to affect

degree of entrapment. Participants invested more money in the risky advice condition than the cautious advice condition; furthermore, this effect was significantly greater for those high in social anxiety compared to those with low social anxiety. In 1987, Staw and Ross urged researchers to shift focus away from isolating single determinants of escalation and instead concentrate on how classes of variables may influence escalation behavior. A few years later, Brockner (1992) made a call to invoke several theoretical perspectives—at the individual level, interpersonal and group level, and the organizational level—to gain a more complete understanding of escalation. With this in mind, the current study was designed to provide a comprehensive view of escalation behavior by including individual variables and organizational variables, as well as examining how the two interact.

Based on previous research by those investigating strong and weak situations (e.g., Beaty, Cleveland, & Murphy, 2001), I expect that the relationship amongst personality, organizational support, and escalation behavior will vary depending on the level of organizational support. I hypothesize that personality (i.e., conscientiousness, neuroticism, openness to experience) will moderate the relationship between organizational support and performance on the escalation task.

Hypothesis 9a: Conscientiousness will moderate the relationship between organizational support and escalation behavior.

Hypothesis 9b: Neuroticism will moderate the relationship between organizational support and escalation behavior.

Hypothesis 9c: Openness to experience will moderate the relationship between organizational support and escalation behavior.

Method

Participants

Three hundred Auburn University undergraduate students (61% female, 89% Caucasian) recruited in-person and through the psychology department Sona system participated in this study as an opportunity to gain extra credit towards an undergraduate course. The majority (73%) of participants were between the ages of 20 and 25. Participants were undergraduate psychology students enrolled in at least one psychology course and undergraduate business students enrolled in a statistics course.

Design

Participants were randomly assigned to one of two organizational support conditions in which organizational support was manipulated as a between-subjects variable and level of sunk cost and completion were within-subjects variables. Scales measuring conscientiousness, neuroticism, openness to experience, escalation susceptibility, and risk-taking were included as individual difference variables.

Economic decision task. The economic decision task is an adaptation of the blank radar plane scenario first created by Arkes and Blumer (1985) and has been widely used by several other researchers as a measure of escalation behavior (e.g., Conlon & Garland, 1993; Garland, 1990; Garland & Conlon, 1998; Moon, 2001a, 2001b; Wong, Yik, & Kwong, 2006). Participants were shown several project economic scenarios with variations in sunk costs and completion. For example, each participant received the following scenario:

> As Vice President of Operations, you have spent $9 ($0, $1, $5) million towards a research project to develop a new electronic tablet that is thinner, sleeker, weighs less, and has more features and storage space than any other tablet

or e-reader currently on the market. So far, you have invested a large (small) amount of funds, compared with the $10 million normally budgeted for these types of projects.

The engineering department has informed you that the project is 10% (90%) complete.

You have just discovered that another firm has already begun marketing a similar product that weighs less and is much easier to operate than your design. The decision you face now is to either abandon the project or authorize the next $1 million from the budget to continue this electronic tablet research project.

On the basis of the scenario, participants were asked to determine (on a scale of 0 to 100) the probability (measured by percent) that they would continue investing in the aforementioned project. Participants received several similar economic scenarios with all possible combinations of sunk costs ($0, $1, $5, or $9 million) and level of completion (10% or 90%).

HR decision task. Another type of organizational decision scenario, an HR hiring/training scenario, was also introduced. In the HR scenarios, the variable chance of passing replaced completion as a within-subjects variable. In these scenarios participants decided between terminating an employee or continuing the employee's training. Participants received the following scenario with all possible combinations of sunk costs and chance of passing:

As Vice President of Operations, you have spent $15,000 ($75,000) so far training employee A, who you personally hired. Now it is time for a training evaluation. You know from the trainer's feedback that employee A has about a 0% (10%, 50%, 90%) chance of passing the evaluation.

The decision you face now is to either fire employee A or authorize spending an additional $15,000 to continue training employee A.

Once again, participants were asked to rate on a scale of 0 to 100. However, this time participants were rating the probability (measured by percent) that they would continue investing in the employee by authorizing the $15,000 for additional training.

Materials

Control variables. Heath (1995) suggested that controlling for participants' perceptions of project success reduces the chance of confounding escalation behavior. Two questions were asked to control for the effect of perceived success: (a) an item designed to directly measure participants' perceptions of their own project's success and (b) an item designed to indirectly measure perceptions of project success by measuring perceptions of the threat level introduced by the competing company. For the HR scenarios, the first question was replaced with an item designed to measure perceptions of employee success, and the second item was not included because there was no competition threat. Following Moon's (2001a, 2001b) approach to controlling for project success perception, participants were asked to indicate the likelihood of project success on a scale from 0 to 100 (0 = *no chance of success*, 100 = *100% chance of success*). In the HR scenarios, participants were asked to estimate the likelihood of employee success on the same scale. Next, similar to the question asked by Conlon and Garland (1993) in their sunk-costs study, participants indicated the extent to which they believed their competition represents a treat to the company's project success on a scale from 0 to 100% (0 = *no threat at all*, 50 = *moderate threat*, 100 = *a very big threat*).

Independent variables.

Sunk costs. Sunk costs were manipulated by stating that approximately $0 million, $1 million, $5 million or $9 million has already been invested in a project. Additional information was provided about the relative size of the sunk costs by comparing it to other projects in the same market (Moon, 2001a, 2001b; Staw, 1997). In the low sunk costs ($0 and $1 million) scenarios, participants were told that the amount invested so far was low compared with similar projects; in the medium sunk costs ($5 million) condition, participants were informed that the amount invested so far was moderate compared with similar projects; in the high sunk costs ($9 million) condition, participants were informed that the amount invested so far was relatively high.

Completion. Completion effects were manipulated by stating at the beginning of the scenario that the project was either 10% (low completion) or 90% (high completion) complete.

Passing probability. In the HR training scenarios, the chance of the employee passing was manipulated so that, based on trainer feedback, the employee was estimated to have either a 0%, 10%, 50%, or 90% chance of passing the upcoming training evaluation.

Organizational support. A variation of Kristof-Brown, Jansen, and Colbert's (2002) person-organization cues was used to manipulate organizational support. In addition to a verbal description, a photograph of the office space was provided as a visual cue (Figure 1). Two levels of organizational support were created: low organization support and high organization support. In the low organizational support condition participants read the low Person-Organization cue from Kristof-Brown et al. (2002): "Your company does not seem to treat its employees very well, and you frequently find yourself disagreeing with your company's management practices" (p. 987). Participants in the high organizational support condition read the high Person-

Organization description: “The company you work for treats its employees well. In addition, the company’s [management practices] support your personal values” (p. 987). Kristof-Brown et al. (2002) used the term *culture* in place of *management practices*. However, for the purposes of this study *culture* was replaced with *management practices* in order to keep the wording consistent with the low organizational support description.

Predictor variables.

Personality. The International Personality Item Pool (IPIP) representation of Costa and McCrae's (1992) NEO Personality Inventory was used to measure three personality domains: conscientiousness (Table B1), neuroticism (Table B2), and openness to experience (Table B3). Instructions were the following:

> Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence.

Participants were asked to rate on a 5-point Likert-type scale (1 = *Strongly Disagree*; 5 = *Strongly Agree*) how much each item describes them. Higher scores on the items represent higher levels of each personality trait. Reliabilities were as follows: conscientiousness (α = .90), neuroticism (α = .91), openness to experience (α = .89) and were very similar to the IPIP reliabilities, conscientiousness (α = .90), neuroticism (α = .91), openness to experience (α = .87). Personality tests have been shown to predict the performance of employees in a variety of jobs and hierarchical levels within the organization (Barrick & Mount, 1991; Ones, Viswesvaran, & Schmidt, 1993; Schmidt & Hunter, 1998; Tett, Jackson, & Rothstein, 1991). For example, Barrick and Mount (1991) aggregated personality data from five occupational groups

(professionals, police, managers, sales, and skilled/semi-skilled) and found relationships between personality and three job performance criteria (job proficiency, training proficiency, and personnel data). Tett et al. (1991) found a substantial relationship between personality and job performance in their meta-analysis. Salgado (1997) and Anderson and Viswesvaran (1998) found that two traits from the five-factor model, neuroticism and conscientiousness, displayed non-zero correlations with job performance. Most meta-analyses have suggested that two personality traits, conscientiousness and neuroticism, are positively correlated with job performance in almost every job (Anderson & Viswesvaran, 1998; Barrick & Mount, 1991; Salgado, 1997; Tett et al., 1991). Conscientiousness, neuroticism, and openness to experience will all be examined individually in the next sections.

Conscientiousness. Meta-analyses by Barrick and Mount (1991) and Barrick, Mount, and Judge (2001) show conscientiousness to be a valid predictor of job performance measured through various criteria (e.g., job proficiency, training proficiency, personnel data) and across multiple occupations. The results of the Barrick et al. (2001) meta-analysis underscore the importance of conscientiousness in any study of personality and work-related performance.

Neuroticism. Neuroticism is defined by anxiety, hostility, depression and personal insecurity (Barrick, Mount, & Judge, 2001). Being anxious, hostile, personally insecure and depressed is unlikely to lead to high performance in any job (Barrick et al., 2001).

Openness to experience. Intellectance, creativity, unconventionality and broad-mindedness define openness to experience. Individuals who are intellectual, curious, imaginative, and have broad interests are more willing to be open to learning experiences (Barrick, Mount, & Judge, 2001). Thus, these individuals may be open to trying experiences that others may not or take the less expected path, such as in escalation situations.

Escalation susceptibility. Teger (1980) noted that we often feel we have too much invested to quit in escalation scenarios. In rational decision making, sunk costs should not influence decisions; only incremental costs should be considered (Arkes & Blumer, 1985). Thaler (1980) proposed an example demonstrating the power of sunk costs over current decisions:

> Two friends have tickets to a football game. The first friend bought a ticket while the second won a free ticket from a radio contest. The night of the game arrives and a terrible blizzard rolls into town. The friend who bought the ticket insists that they should still go to the game, while the friend with the free ticket chooses not to go because the pain and extra time involved with traveling to the game during a blizzard outweighs the enjoyment of attending the game. The friend with the purchased ticket is behaving irrationally according to traditional economic theory because the sunk cost of the ticket should not outweigh the potential agonies involved with travelling in a blizzard.

Inspired by examples such as this, Arkes and Blumer (1985) developed a scenario in which a decision must be made between a more desirable and a less desirable option. Under normal circumstances the decision would seem straight-forward: the more desirable option is the logical choice. However, the twist in the scenario is that more money has been invested in the less desirable option than the more desirable option, there is no chance for a refund, and only one option may be chosen. Arkes and Blumer's goal was to determine if the sunk costs of the less desirable (more expensive) option would outweigh the expected enjoyment of the more desirable (less expensive) option. Their scenario had participants choose between a weekend ski trip to Michigan or Wisconsin. The Michigan ski trip was more expensive, but less appealing; the

Wisconsin skip trip was less expensive, but more appealing. Results showed that more individuals chose the more expensive, less desirable trip (n = 33) than the less expensive, more desirable trip (n = 28). An adapted version of their scenario was included as an indicator of escalation behavior:

> Assume that you have spent $400 on a ticket for the Rose Bowl football game. Several weeks later you buy a $200 ticket for the Fiesta Bowl football game. You think you will enjoy the Fiesta Bowl game more than the Rose Bowl game. As you are putting your just purchased Fiesta Bowl game ticket in your wallet you notice that the Rose Bowl game and the Fiesta Bowl game are on the same day! It's too late to sell either ticket, and you cannot return either one. You must use one ticket and not the other. Which football bowl game will you go to?

Choosing the Rose Bowl game—the more expensive, less appealing option—is an indicator of escalation susceptibility. Conversely, preferring the Fiesta Bowl game—the less expensive, more appealing option—is an indicator of resistance to escalation behavior. Three additional scenarios were included to assess escalation susceptibility (see Appendix C). Decision makers become risk-seeking in the domain of losses (Garland, 1990; Thaler, 1980; Whyte, 1986), so it stands to reason that those deemed to be *escalators* based on their answers to the escalation scenarios would be more likely to escalate when sunk costs are higher and when the level of completion is high.

Risk-taking. The DOSPERT Risk-taking scale (Blais and Weber, 2006) was used to assess how likely participants were to engage in chancy activities. The risk-taking construct consists of five facets each containing 6 items, for a total of 30 items (Appendix D). Internal consistency estimates (i.e., Cronbach's alphas) for overall risk taking (α = .86), ethical (α = .77),

financial investment/gambling (α = .79), health/safety (α = .68), recreational (α = .84), and social (α = .61) risk taking were in line with those found by Blais and Weber (2006) which ranged from .71 to .86. Participants were asked to read each statement and indicate the likelihood of engaging in the activity or behavior described on a 7-point Likert-type scale (1 = *Extremely Unlikely*; 7 = *Extremely Likely*).

Dependent variable. The dependent variable, escalation behavior, was a single-item variable presented after the scenarios. Participants indicated the probability from 0 to 100% (0 = *absolutely no*, 50 = *don't know*, 100 = *absolutely yes*) that they would authorize expenditure of the next $1 million to continue the project in the economic context, or the probability that they would authorize the next $15,000 to continue training an employee in the HR context. Higher percentages indicate higher levels of escalation behavior.

Manipulation checks. Manipulation check items used by Moon (2001a) were included for both sunk costs and completion. For sunk costs, participants were asked to answer on a scale of 0 to 100 the extent to which they felt they had already invested a lot of time and money on the project. For completion, participants were asked to answer on a scale of 0 to 100 the extent to which they felt that the project was near completion.

Several items assessing participants' level of escalation were included as a manipulation check for the escalation task (Appendix E). Furthermore, to assess the effectiveness of the organizational support manipulation, participants were asked to rate on a 5-point Likert-type scale (1 = *Strongly Disagree*; 5 = *Strongly Agree*) both (a) the extent to which they felt their decision to authorize the project funding would be supported by their organization and (b) how supportive they believed their organization to be.

Procedure

Participants were told some information about their organization, including a written description of their organization's level of support for employees and a visual preview of the office space. The escalation tasks (i.e., economic investment and HR training scenarios) were then completed. Participants were asked to complete the control items regarding perceptions of project success, competition threat, sunk costs, and level of completion. Manipulation check items assessing the escalation task, as well as the sunk costs, completion, and organizational support manipulations were then completed. Next, participants answered personality inventories for conscientiousness, neuroticism, openness to experience, and risk-taking, and completed the escalation susceptibility scenarios. Finally, participants completed a demographics survey including items such as race, gender, and age.

Results

Means, standard deviations, and intercorrelations of the study variables are reported for the economic scenarios (Table 1) and the HR scenarios (Table 2).

Descriptive statistics for my two control variables, perceived success and perceived threat of competition, were analyzed. I conducted repeated-measures ANOVAs to compare the means of perceived likelihood of project success amongst the four sunk cost levels in the economic scenario. Results of all the analyses and related tables will be presented later in this section. Likewise, the means of perceived likelihood of employee success were compared amongst the four probability of passing conditions in the HR scenario. A paired-samples t-test was used to test the mean differences in perceived likelihood of project success between the two completion levels. I used repeated-measures ANOVA to test the effect of sunk costs on perceived threat of

competition, and a paired-samples t-test to examine the effect of level of completion on perceived threat.

Hypothesis testing was conducted for independent variables, individual differences variables, and for interactional hypotheses. Finally, manipulation checks were performed for sunk costs, completion, level of escalation, and organizational support.

Control Variables

Two control variables (see Table 3) were included in the scenarios: (a) perceived likelihood of success and (b) perceived threat of competition. These are each described in the following sections.

Perceived likelihood of success. In the economic scenarios, sunk costs had a marginally significant effect on the perceived likelihood of project success, $F(3, 299) = 2.49$, $p = .06$. Perceived success was highest when sunk costs were moderate at \$5 million ($M = 62.56$), and was significantly higher than the three other sunk cost levels of \$0 million ($M = 60.39$), \$1 million ($M = 59.51$), and \$9 million ($M = 59.83$).

Project completion had a clear effect on perceived likelihood of project success $t(299) = 19.46$, $p < .001$. Participants were more likely to predict project success when projects were 90% complete ($M = 70.71$), than when projects were 10% complete ($M = 50.44$). In the HR scenarios, perceived success was measured by asking participants to estimate success of the employee. The mean differences amongst the 0% ($M = 16.73$), 10% ($M = 24.32$), 50% ($M = 55.50$), and 90% ($M = 86.71$) chance of passing levels was significant, $F(1, 294) = 1547.58$, $p < .001$, and in the proper direction, with estimated employee success ratings increasing as chance of passing increased. Sunk costs also influenced perceived likelihood of employee success, $t(299) = -2.56$, $p < .01$; when sunk costs were low (\$15,000), participants were more likely to think the

employee would be successful (M = 46.65) than when sunk costs were high ($75,000; M = 45.44).

In the HR scenarios, chance of passing an exam was given for the employee in question. The four levels for chance of passing were 0%, 10%, 50%, and 90%. The relationship between chance of passing and escalation was not included as a formal hypothesis; nonetheless it was predicted that chance of passing would be positively related to escalation. As expected, there was a significant positive relationship between escalation and chance of passing, $F(3, 296) = 941.32$, $p < .001$. Escalation increased as chance of passing increased, with the lowest levels of commitment when there was 0% chance of passing (M = 17.36), increasing when chance of passing was 10% (M = 24.64), and 50% (M = 57.17), and the highest levels of commitment when chance of passing was 90% (M = 82.38).

Perceived threat of competition. The second control variable, perceived threat of competition, was only included in the economic scenarios because it was not directly relevant to the HR scenario. Sunk costs had a marginally significant effect on the beliefs that the competitor's product was a threat, $F(3, 299) = 2.24$, $p = .08$. Competition threat was rated highest when sunk costs were $0 million ($M$ = 68.94) and $9 million ($M$ = 68.93), and were lower when sunk costs were $1 million ($M$ = 67.45) and $5 million ($M$ = 66.78). The effect of completion level on threat perceptions was more apparent than the effect of sunk costs. Project completion strongly influenced competitor threat perceptions $t(299) = -7.32$, $p < .001$; when the participants' projects were only 10% complete, they were more likely to report that the competitor's product was threatening (M = 71.69) than when participants' projects were 90% complete (M = 64.38).

Test of Hypotheses

Independent variables.

Hypothesis 1. The first hypothesis predicted that sunk costs would be positively related to escalation. In the economic scenarios, escalation scores were higher in the high sunk cost conditions than in the low sunk cost conditions (Table 3). For example, the lowest escalation scores were observed when sunk costs were $0 million ($M$ = 60.21) and $1 million ($M$ = 58.96), while escalation scores were higher when sunk costs increased to $5 million ($M$ = 66.13) and $9 million ($M$ = 64.80). Correlational analysis (see Table 1) showed that escalation was positively related to sunk costs, $r(299) = .33$, $p < .01$. However, in the HR scenarios mean levels of commitment were slightly lower when sunk costs were high (M = 44.37) than when sunk costs were low (M = 46.76). Contrary to what was expected, sunk costs were negatively related to escalation in the HR scenarios, $r(299) = -.13$, $p < .05$ (see Table 2 and Figure 2). Thus, based on the results of both scenario types Hypothesis 1 was partially supported.

Hypothesis 2. Hypothesis 2 stated that completion would be positively related to escalation. Escalation means were higher for when the project was 90% complete (M = 77.90) compared to when projects were only 10% complete (M = 47.04) overall and within every sunk cost level (i.e., $0, $1, $5, and $9 million). Figure 3 illustrates escalation of commitment for each sunk cost level and for both high and low completion. Finally, there was a positive relationship (see Table 1) between completion and escalation $r(299) = .22$, $p < .01$, so Hypothesis 2 was supported.

Hypothesis 3. Hypothesis 3 predicted that individuals in the high organizational support condition escalation would escalate less than those in the low organizational support condition. Looking at the means for each organizational support condition reveals the mean escalation

values were lower for those in the high organizational support than the low organizational support condition, as predicted. However, an independent-samples t-test reveals that the mean differences were not statistically significant, $t(298) = .39$, $p = .67$. Interestingly, in the HR scenarios the exact opposite was found. In the high organizational support condition escalation was slightly higher overall. Once again, the mean differences observed did not reach significance $t(298) = -.88$, $p = .38$. Thus, Hypothesis 3 was not supported.

Individual difference variables. Several individual difference variables were expected to be related to escalation, including conscientiousness, neuroticism, openness to experience, escalation susceptibility, and risk-taking. Stepwise multiple regressions were conducted for each individual difference variable to evaluate whether they predicted escalation. These are each described in the next sections.

Hypothesis 4. Hypothesis 4 predicted that conscientiousness would be positively related to escalation behavior. No significant relationship was found between escalation and conscientiousness in the economic context, $F(1,299) = 1.37$, $p = .24$, nor in HR context, $F(1,299) = 1.33$, $p = .25$. Based on the results, Hypothesis 4 was not supported.

Hypothesis 5. Hypothesis 5 predicted that neuroticism would be negatively related to escalation. The broad measure of neuroticism alone did not predict escalation, $F(1,299) = 2.59$, $p = .11$, in the economic context. At step 1 of the analysis depression entered into the regression equation and was marginally related to escalation, adjusted $R^2 = .01$, $F(1,299) = 3.01$, $p = .08$, $\beta = -.10$. The other neuroticism subscales, vulnerability, ($\beta = .06$, $p = .36$), anxiety, ($\beta = .01$, $p = .84$), and anger, ($\beta = -.02$, $p = .71$), did not enter into the regression equation.

In the HR context, the broad measure of neuroticism once again did not significantly predict escalation, $F(1,299) = 1.89$, $p = .17$. At step 1 of the analysis depression entered into the

regression equation and was significantly related to escalation, adjusted R^2 = .01, F(1,299) = 4.06, p < .05, β = .12. The other neuroticism subscales, vulnerability, (β = .07, p = .28), anxiety, (β = -.11, p = .12), and anger, (β = .04, p = .52), did not enter into the regression equation. Therefore, Hypothesis 5 was partially supported.

Hypothesis 6. Openness to experience was expected to be negatively related to escalation behavior, as stated in Hypothesis 6. In the economic context, the broad measure of openness to experience significantly predicted escalation, F(1,299) = 8.00, p < .01. Testing the subscales, imagination entered into the regression equation first and was significantly related to escalation, adjusted R^2 = .02, F(1,299) = 6.64, p < .01, β = .15. The other openness subscales, artistic interest, (β = .05, p = .46), liberalism, (β = .06, p = .32), and intellect, (β = .07, p = .29), did not enter into the regression equation.

In the HR context, the broad measure of openness to experience did not significantly predict escalation, F(1,299) = .14, p = .71.

Because the relationship between openness to experience and escalation of commitment in the economic context was significant in the opposite direction than predicted, Hypothesis 6 was not supported.

Hypothesis 7. Escalation susceptibility, calculated as the mean escalation score of four escalation scenarios, was hypothesized to be positively related to escalation. However, regressing escalation on escalation susceptibility yielded non-significant results in the economic context, F(1,299) = .09, p = .76, and in the HR context, F(1,299) = .38, p = .54, so Hypothesis 7 was not supported.

Hypothesis 8. In Hypothesis 8, it was predicted that risk-taking would be positively related to escalation. In the economic scenarios two of the five facets, social and ethical risk-

taking, were significantly related to escalation of commitment. When escalation was regressed onto all risk-taking variables, the model including two of the five risk-taking subscales, ethical (β = -.15, $p < .05$), and health and safety (β = .13, $p < .05$), was significant, adjusted R^2 = .01, $F(2, 299) = 3.08$, $p < .05$. The other risk-taking facets, financial (β = .04, p = .62), recreational (β = .04, p = .48), and social (β = .06, p = .34), did not enter into the regression equation.

In the HR scenarios, the regression model was not significant, adjusted R^2 = .01, $F(1, 299) = 2.00$, p = .16, and the five risk-taking variables, ethical (β = .20, p = .16) , financial (β = .04, p = .56), health and safety (β = .02, p = .81), recreational (β = .07, p = .24), and social (β = -.01, p = .86), did not significantly predict escalation. Though the HR results were not significant, there were a significant positive relationship between escalation and health and safety risk-taking in the economic context. Taken together, Hypothesis 8 was partially supported.

Interactional hypotheses. Hierarchical multiple regression was used to test for potential interaction effects between level of sunk costs and level of completion when predicting level of commitment (Table 4, Model 1). Step 1 regressed the proposed control variable likelihood of success advocated by Heath (1995). Results suggested a significant relationship between the perceived probability of success and subsequent escalation levels, $t(1, 298) = 18.42$, $p < .01$. Step 2 regressed organizational support on escalation, but no significant relationship was present $t(2, 297) = -.94$, p = .35. After controlling for perceived likelihood of success and organizational support, Step 3 regressed both level of completion and level of sunk costs on subsequent level of escalation. The interaction between level of sunk costs and completion was not significant $t(5, 294) = -1.58$, p = .12.

In the HR context hierarchical multiple regression was used to test the effect of chance of employee success, organizational support, and level of sunk costs when predicting level of escalation (Table 4, Model 5). Escalation was significantly predicted by both likelihood of employee success, $t(2, 296) = 15.18$, $p < .01$, and sunk costs, $t(2, 296) = -2.96$, $p < .05$, but not organizational support, $t(2, 296) = 1.09$, $p = .28$.

Hypothesis 9a. It was expected that conscientiousness would moderate the relationship between organizational support and escalation behavior. Examination of the economic context interaction plot (Figure 4) showed a diminishing effect, such that when there was low organizational support, individual differences in conscientiousness had differential effects on escalation. With high organizational support, there was no difference between those high, average, or low in conscientiousness in how much they escalated. However, when organizational support was low, individual differences in conscientiousness appeared to have a small effect on escalation, with those high in conscientiousness escalating more than those who were average or low in conscientiousness. Hierarchical multiple regression was used to test for potential interaction effects between organizational support and conscientiousness when predicting level of commitment (Table 4, Model 2). The interaction term between organizational support and conscientiousness was not significant, $F(3, 296) = 1.10$, $p = .36$. Similarly, in the HR scenarios, when escalation was regressed onto organizational support and conscientiousness there was no significant relationship, $F(2, 297) = 1.02$, $p = .36$, and the interaction term was also not significant, $F(3, 296) = 1.12$, $p = .34$ (Table 4, Model 6). However, the interaction plot (Figure 5) shows that, similar to the economic context, in the HR context differences in escalation were observed based on level of conscientiousness only when organizational support was low. Unlike the economic context, in the HR context participants low in conscientiousness

escalated the most in the low organizational support condition. Based on the results of the hierarchical regression analyses, Hypothesis 9a was not supported.

Hypothesis 9b. This hypothesis predicted that neuroticism would moderate the organizational support and escalation relationship. Interaction plots for the economic (Figure 6) and HR scenarios (Figure 7) are presented to illustrate the relationships between neuroticism and organizational support. In the economic context, low organizational support condition no significant differences in escalation were observed. However, when organizational support was high, individual differences in neuroticism appeared to have a small effect on escalation, with those low in neuroticism escalating more than those who were average or low in conscientiousness. Once again, hierarchical multiple regression was used to test for potential interaction effects between organizational support and neuroticism when predicting level of commitment (Table 4, Model 3). The interaction term between organizational support and neuroticism was not significant $F(3, 296) = 1.00$, $p = .39$. In the HR context, the interaction plot reveals little difference between escalation in the high and low organizational support conditions, but overall those high in neuroticism had higher escalation than those average or low in neuroticism. When escalation was regressed onto organizational support and neuroticism there was no significant relationship, $F(2, 297) = 1.27$, $p = .28$, and the interaction term was also not significant, $F(3, 296) = .87$, $p = .46$ (Table 4, Model 7). Based on the results, there was not support for Hypothesis 9b.

Hypothesis 9c. Openness to experience was predicted to moderate the relationship between organizational support and escalation behavior. Results revealed a significant relationship with commitment, $F(2, 297) = 4.20$, $p < .05$ (Table 4, Model 4). Next, the interaction term between organizational support and openness to experience was added to the

regression model. The interaction accounted for a significant proportion of the variance in escalation behavior, $F(3, 296) = 2.85$, $p < .05$. The interaction plot (Figure 8) reveals that openness moderated the relationship between organizational support and level of escalation in the economic context. Openness had a main effect on level of escalation in that those high in openness had the highest levels of escalation, followed by those with average and low openness. Though it is not overtly apparent from the graph, results from the hierarchical regression analysis confirmed that there is a significant interaction between organizational support and openness to experience.

In contrast, for the HR scenarios escalation was regressed onto organizational support and openness and there was no significant relationship, $F(2, 297) = .49$, $p = .62$, and the interaction term was also not significant, $F(3, 296) = .57$, $p = .63$ (Table 4, Model 8). The interaction plot (Figure 9) corroborates this finding. Based on the results of the regression analyses in the economic scenarios, there was support for openness as moderator in the relationship between organizational support and escalation. Hypothesis 9c was supported.

Manipulation Checks

Sunk costs. For sunk costs, participants were asked to answer on a scale of 0 to 100 the extent to which they felt that they had already invested a lot of time and money on the project in the economic scenarios. The mean difference amongst the \$0 ($M = 46.42$), \$1 ($M = 50.49$), \$5($M = 64.96$), and \$9 ($M = 78.03$) million sunk-cost levels was significant and in the proper direction, $F(1, 299) = 424.54$, $p < .001$. Similar results were found for the HR hiring scenario. For sunk costs, the participants were asked to answer on a scale of 0 to 100 the extent to which they felt that they had already invested a lot of time and money in the employee. The mean

difference between the $15,000 ($M$ = 56.71), and $75,000 ($M$ = 78.81) sunk-cost levels was significant and in the proper direction, $t(299) = 21.07$, $p < .001$.

Completion. Following the economic scenarios participants were asked to answer on a scale of 0 to 100 the extent to which they felt that the project was near completion. The mean difference between the 10% complete (M = 23.61) and 90% complete (M = 83.05) levels was significant, $t(299) = 39.96$, $p < .001$, and in the proper direction.

Level of escalation. Overall, the participants agreed that the scenarios were realistic (M = 3.74), and felt that they made good decisions on the task (M = 3.89). There was solid agreement that past costs affected their decisions (M = 3.99), but they did not feel as strongly about feeling an obligation to continue investing in the projects (M = 3.05).

Organizational support. To test the organizational support manipulation, participants were asked if overall their organization was supportive. An independent-samples t-test revealed no significant difference in perceived level of support between those in the high and low organizational support conditions, $t(298) = .99$, $p = .32$. Similarly, when asked if their decisions would be supported by their organization, there was no difference in how high and low organizational support participants responded $t(298) = -.25$, $p = .81$. Mean responses to the organizational support items were very similar for both high (M = 3.93) and low (M = 3.90) support conditions. Participants did not seem to consciously perceive the organizational support manipulation. Overall, participants thought that the investment projects were realistic (M = 3.74), believed they made good decisions (M = 3.89), and were confident in their decisions (M = 3.72).

Discussion

The current study helps to fill a gap in the escalation literature by including several individual difference variables, a decision context manipulation, and both an economic and an HR decision scenario. One of the most interesting findings was that several outcomes were different in the economic context when compared to the HR context. For example, sunk costs were positively related to escalation in the economic decision context, but negatively related to escalation in the HR context. Furthermore, facets of neuroticism, openness to experience, and risk-taking were significantly related to escalation in the economic context, but those relationships disappeared in the HR context. As expected, in the economic context completion was positively related to escalation, and chance of passing was positively related to escalation in the HR context. This study included a decision context variable, organizational support, though its effect was unexpectedly weak. Another surprise was that conscientiousness, which is typically strongly linked with job performance (e.g., Barrick et al., 2001), was not related to escalation. The finding that openness to experience potentially moderates the relationship between decision context and escalation adds a new perspective on how internal and external influences can interact and shape escalation decisions. The following sections interpret the meaning of the results and explore how they fit in with other research.

Economic vs. HR Context Effects

A common theme emerged in the HR context: effects of several variables, including sunk costs, neuroticism, openness to experience, and risk-taking, in relation to escalation of commitment were either nonsignificant or significant in the opposite direction compared to the economic decision context results. This finding begs the question: Why would HR decisions be different than economic decisions in terms of elicited escalation behavior? It will be proposed

that different implicit theories for economic and HR investment decisions are the underlying explanatory mechanism.

In the economic scenarios, sunk costs had a marginally significant effect on the perceived success of the project. When sunk costs were moderate, perceived success was significantly higher than the two low and one high sunk cost levels. Each sunk cost level was associated with a different technology project. The project descriptions were paired in the following way: $0 million sunk costs developing a touch-screen laptop; $1 million sunk costs developing noise-canceling headphones; $5 million sunk costs developing a LCD HD-TV; $9 million sunk costs developing an electronic tablet. The HD-TV project received the highest levels of perceived project success. It could be that the HD-TV project seemed like the most realistic and therefore the most marketable and promising project compared to the laptop, headphones, and tablet. This explanation could, at least partially, account for the high perceived success of the TV project. Conlon and Garland (1993) conducted a similar study in which participants were asked how much money they would invest in sonar scrambling material for submarines. Results demonstrated that sunk costs had no significant effect on perceived project success, but completion did affect perceived success. One major methodological difference between this study and Conlon and Garland was that the latter treated both sunk costs and completion as between-subjects variables. They had 32 experimental conditions, reflecting four levels each of sunk costs and project completion, and two levels of competitor information. Similarly, in Moon's (2001a) study, participants were randomly assigned to one of eight treatment conditions in which sunk costs and completion were manipulated as independent variables. Results showed an interaction between sunk costs and level of completion on escalation of commitment, most notably in the highest sunk cost condition. However, the current study found no such interaction.

Even when escalation was regressed onto perceived success, sunk costs and completion for only moderate sunk costs scenarios (when levels of perceived success were highest), the interaction between sunk costs and completion was not significant. However, success explained a significant proportion of variance in escalation, as did sunk costs and completion. It could be that the within-subjects design for sunk costs and completion precluded any interaction because decisions were likely to be tempered by the influence of the previous scenarios.

In the HR scenarios, sunk costs also influenced estimated employee success but in the opposite direction compared to the estimations of project success in the economic scenarios. When sunk costs were low, participants were significantly more likely to predict employee success than when sunk costs were high. Furthermore, as chance of passing increased, escalation of commitment also increased. This finding contradicts Staw's (1976) self-justification theory explanation of escalation. Staw found that when individuals were personally responsible for an investment decision, they invested significantly more money to the same investment decision after receiving negative feedback regarding the success of the initial investment. The opposite phenomenon occurred for the HR scenarios within this study. With personal responsibility held constant, escalation increased with positive feedback, manipulated here as chance of passing. One possible explanation is that decision makers observe room to improve when investing in an employee, and are therefore likely to initially give them a second chance. So when sunk costs are still low or when chances of the employee passing a training evaluation are high, decision makers see the investment as low-risk with a high potential of future success. But when sunk costs increase or when chances of the employee passing are low, the employee becomes a high-risk investment, and the investment is perceived as more wasteful than investing in a project, which in turn curbs escalation. In a similar vein, when facing negative feedback regarding

employee performance, decision makers are likely to retain an employee through several initial evaluations, but dismissal rates spike following this initial grace period (Wolff & Moser, 2008).

Another theory to explain these results is that social factors (Staw, 1997) or noneconomic concerns (Brockner & Rubin, 1985) are more important later in the decision process, which could account for the lower rates of escalation when sunk costs increased. As Arkes and Blumer (1985) astutely pointed out, economic sunk costs should not obscure the fact that there are numerous nonmonetary sunk costs involved in some escalation situations. For example, spending a year training an employee involves temporal and emotional sunk costs in addition to the monetary ones. These sunk costs promote our tendency to "linger until the bitter end" (p. 126) of decisions with personal and emotional undercurrents (Arkes & Blumer, 1985). Along these lines, personally hiring an employee increases commitment to particular employees (Bazerman, Beekun, & Schoorman, 1982; Schoorman, 1988). But if there is uncertainty regarding the hiring decision, de-escalation is more likely following future performance reviews (Schoorman, 1988). By extension, deescalating when sunk costs rise beyond what is reasonable could be perceived as an opportunity to save face. In other words, the decision maker may deescalate and correct what is, in hindsight, perceived as an error in judgment, despite the irrevocable investments that are forfeited with such a decision.

Finally, the differential results between economic and HR context could be a result o the undergraduate sample. The relatively young, and inexperienced participants may view human capital as more replaceable, and thus as a less valuable resource, than monetary capital. If the human capital was undervalued by the participants it would help to explain why they were more willing to stop investing in the employees with high sunk costs, but were less likely to stop

investing in a project. The next section reviews the personality and escalation relationship results.

Personality

In his review, Funder (2001) lamented that the relationship between personality traits and behaviors was thin at best. A catalog of contextualized behaviors that are robustly linked with particular personality traits simply does not exist. Research in escalation has just recently begun to link personality traits and their subfacets to escalation behavior, with varying levels of success. For example, research by Moon (2001a, 2001b) suggests that using subscales of certain personality traits (i.e., conscientiousness, neuroticism, openness to experience) may reveal relationships that would otherwise be missed by using broad personality measures. I found this to be the case when relating neuroticism and openness to experience to escalation. The broader measures of both personality variables had no significant relationship with escalation, but the opposite was true for several personality subscales. When neuroticism was divided into subscales (i.e., anxiety, anger, depression, and vulnerability), depression and anxiety were both negatively related to escalation, while vulnerability was positively related to escalation. These findings closely mirror work by Moon, Hollenbeck, Humphrey, and Maue (2003) who observed that neuroticism and escalation are only related when neuroticism is broken down into its subscales. The depression and anxiety relationship results support the finding by Wong, Yik, and Kwong (2006) that individuals who are higher on neuroticism are less likely to continue investment in a previous decision. However, the positive relationship between vulnerability and escalation runs counter to Wong et al.'s results. Research on risk taking has also shown that neuroticism is significantly, and negatively, related to risky decision making (e.g., Lauriola & Levin, 2001), suggesting that individuals high in neuroticism take fewer risks than those low in

neuroticism. To that same point, dispositional anxiety has been positively related to risk-avoidant decision-making (Maner, Richey, Cromer, Mallott, Lejuez, Joiner, et al., 2007). Several personality researchers suggest that neuroticism may be a broader construct than it has been treated in the past (Barrick et al., 2001; Judge & Bono, 1999; Judge, Locke, Durham, & Kluger, 1998), and facets including self-esteem and locus of control may be part of neuroticism (Judge et al., 1998). The differential effects of depression, anxiety, and vulnerability on escalation, coupled with the lack of relationship between neuroticism and escalation, lend support to this theory.

As with neuroticism, openness to experience as a broad measure was not significantly related to escalation. But three of its subscales— intellect, imagination, and artistic interest— were significantly and positively related to escalation. Individuals high in openness to experience have previously be found to adapt to a variable decision environment more readily, and as a result perform better on decision making tasks after changes occur (LePine, Colquitt, & Erez, 2000).

Taken together, the results of neuroticism and openness to experience in this study support the concept that meaningful relationships may be missed when subscales of personality are ignored in favor of broad personality measures (Hough, Ones, & Viswesvaran, 1998). Moreover, the results highlight the importance of examining the relationship between personality and escalation in various decision contexts. Another interesting finding regarding personality's relationship with escalation was that significant relationships in the economic context were nonexistent in the HR context. None of the personality variables included in this study were significantly related to escalation for the HR scenario. A possible explanation already exists within the personality psychology literature. Namely, it is generally accepted that personality

cross-situational consistency correlation coefficients are low because it is common to observe intra-individual behavioral variability across situations (Mischel & Shoda, 1995). The importance of situation must be acknowledged when trying to reconcile variations in the relationship between personality and behavior. According to this perspective, it is not outside of the realm of possibilities that the personality variables included in this study had relationships with escalation in an economic context, but not in an HR context.

Limitations

The organizational support manipulation had a very weak effect. There was no statistically significant difference in perceived level of support between those in the high and low organizational support conditions. The cues for organizational support manipulation were derived from Kristof-Brown et al. (2002). They conducted two pilot studies to determine whether the manipulated cue levels generated the desired perceptions of low, medium, and high levels of organizational support. The demographics of the pilot study participants were not specified. However, the main study participants were master's level business students with an average of 4.1 years of full-time work experience. Their mean level of perceived fit had statistically significant differences among the low, medium, and high levels of the cues. The current study also conducted manipulation checks for the organizational support cues, but did not find the differences that Kristof-Brown et al. observed. This may be attributed, at least in part, to changes made to the original organizational support cues. The purpose of the alterations was twofold: (a) the medium level was dropped to increase statistical power and (b) the wording for the high organizational support description was altered slightly to be more consistent with the low organizational support description. Kristof-Brown et al. (2002) had a medium-level organizational support description that read, "The company you work for treats its employees

well. However, some aspects of your company's culture do not support your personal values" (p. 987). The authors described this condition as a mix of features characteristic of a high and a low organizational support work environment. The medium level was excluded from this study because the high and low cues would provide a stronger contrast. Additionally, because organizational support was treated as a between-subjects variable, including three levels of organizational support instead of two would have decreased the number of participants in each condition and subsequently decreased the power of analyses performed across conditions. There were no observed differences in how participants perceived organizational support in the high and low conditions, so it is reasonable to assume that a medium condition that fell in between the two poles of high and low would not have added any variability to the resulting perceived support.

Other limitations include common method variance and a student sample which may not be representative of the general population. Common method variance may be a problem because a single source and method were used for obtaining data at one time point. Furthermore, the student participants may not represent the population of working adults. In the next section, theoretical and practical implications of the results and future research directions are discussed.

Implications and Future Directions

The results of this study suggest that there is a gap in the escalation literature in terms of the type of decision contexts used to study escalation of commitment. The differential, and sometimes conflicting, results observed in the economic and HR scenarios indicate that not all escalation scenarios elicit the same behavior. Deciding to invest in a project and deciding to invest in an employee appear to be quite different experiences. Each situation involves a different way of thinking about the investment. It is theorized that investing in a project is

perceived as an all-or-nothing gamble. There are two potential results: the project succeeds or it fails. Therefore, a relatively small increase in invested funds could be perceived as enough to push a project into success. Conversely, investing in an employee is a murkier endeavor. The potential outcomes are not as clear-cut, and thus the investment required to reach success is by its nature unclear and subjective, which adds one more layer of uncertainty to an already ambiguous escalation situation. An incremental increase in investment may lead to success, but because the investment is an employee, the chances of success are simply less certain. I propose that the employee success continuum is perceived as a gradual climb, as opposed to the all-or-nothing continuum characteristic of economic investment scenarios. To that point, continued investment in an employee would be perceived as riskier than a similar project investment, unless chances of future success are close to certain.

In addition to the theoretical implications of this study, there are practical implications of the results. For example, decisions regarding employees including selection, training, promotion, pay increase, and termination, may be vulnerable to escalation of commitment. As the results of this study suggest, it is not just personally hiring an employee that influences how managers choose to invest in an employee's professional development. Results showed that objective estimates of employee success influenced training decisions such that employees who had favorable future success estimates were more likely to receive funding toward additional training. Conversely, if a large amount of money had already been invested in an employee's training, decision makers were less likely to continue the employee's training and, by extension, were more willing to terminate the employee. Future research in this area could investigate long-term effects of training assessments on promotion and raise decisions later in an employee's career to track escalation in a work setting.

Additional research should examine escalation behavior in domains other than the economic contexts which overwhelmingly dominate this research field in order to better understand how decision makers view economic versus HR decisions. Furthermore, as previously suggested by other escalation researchers (e.g., Wolff & Moser, 2008), gaining insight into the mental processes involved in escalation in economic as well as HR situations is an equally meaningful goal. To answer this important question, future studies should include questions designed to probe the content of decision makers' thoughts with measures such as thinking-aloud protocols or prompting decision makers for the reasons behind their choices.

Conclusions

The topic of escalation of commitment is extremely relevant and important to us as psychologists, and to many professionals because "judgment and decision making under conditions of uncertainty probably describes the majority of the decisions managers, psychologists, market forecasters, and budget/policy planners make during the course of their work and research" (Education and Training Committee of the Society for Industrial and Organizational Psychology, 1999, Judgment and Decision Making, para. 1). Furthermore, it is important to put these decisions in context to get a comprehensive view of escalation. For instance, economic and HR decisions may be viewed as fundamentally different types of investments. Therefore it is essential to study them both and to recognize that decision makers may perceive them in differential ways.

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Table 1

Economic Scenarios: Means, Standard Deviations, and Intercorrelations

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Escalation	65.54	14.13	-															
2. Perceived Success	60.58	14.69	.73**	-														
3. Competition	68.04	15.50	-.03	-.13*	-													
4. Sunk Costs	59.95	11.77	.33**	.36**	.11	-												
5. Completion	53.34	9.25	.22**	.25**	.00	.49**	-											
6. Org Support	1.51	0.50	-.02	.02	.05	.04	.03	-										
7. Conscientiousness	3.86	3.86	.07	.15**	-.01	.08	.04	-.03	-									
8. Neuroticism	2.50	0.63	-.09	-.13*	.02	.02	-.01	.05	-.36**	-								
9. Openness	3.33	0.55	.16**	.06	-.02	.04	-.05	.08	-.01	-.06	-							
10. Esc Suscept	1.82	0.91	-.02	.05	-.08	.11	.13*	.02	-.04	.14*	-.03	-						
11. Risk-taking	102.21	23.81	.05	.01	-.01	-.03	.03	.05	-.08	-.15**	.02	-.04	-					
12. Ethical	12.85	5.85	-.09	-.10	-.13*	-.09	.06	.04	-.26**	.14*	-.11	.05	.60**	-				
13. Financial	18.57	6.85	.02	.04	-.07	.01	.05	.01	.01	-.08	-.08	-.05	.75**	.49**	-			
14. Health/Safety	19.81	7.24	.06	.01	.00	-.01	.04	-.01	-.12*	-.05	-.12*	-.03	.79**	.51**	.53**	-		
15. Recreation	23.43	9.40	.07	.05	.06	-.03	.00	.06	.04	-.27**	.10	-.05	.70**	.14*	.30**	.37**	-	
16. Social	27.56	5.49	.08	.00	.10	.01	-.06	.06	-.02	-.16**	.28**	-.04	.52**	.04	.26**	.25**	.33**	-

Note. N = 300. Perceived Success = Perceived Project Success, Competition = Perceived Threat of Competition, Org Support = Organizational Support, Esc Suscept = Escalation Susceptibility. Ethical, Financial, Health/Safety, Recreation, and Social are subscales of risk-taking. *$p < .05$, **$p < .01$.

Table 2

HR Scenarios: Means, Standard Deviations, and Intercorrelations

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Escalation	45.55	14.04	-													
2. Perceived Success	46.03	10.79	.66**	-												
3. Sunk Costs	67.76	16.35	-.13*	.00	-											
4. Org Support	1.51	0.50	.05	-.01	-.06	-										
5. Conscientiousness	3.86	0.53	-.07	-.04	.13*	-.03	-									
6. Neuroticism	2.49	0.63	.08	.05	-.05	.05	-.36**	-								
7. Openness	3.33	0.55	-.02	-.03	.06	.08	-.01	-.06	-							
8. Esc Suscept	1.82	0.91	.04	.03	.03	.02	-.04	.14*	-.03	-						
9. Risk-taking	102.21	23.81	.09	.15*	-.02	.05	-.08	-.15**	.02	-.04	-					
10. Ethical	12.85	5.85	.08	.13*	-.12*	.04	-.26**	.14*	-.11	.05	.60**	-				
11. Financial	18.57	6.85	.07	.13*	-.12*	.01	.01	-.08	-.08	-.05	.75**	.49**	-			
12. Health/Safety	19.81	7.24	.05	.11	.01	-.01	-.12*	-.05	-.12*	-.03	.79**	.51**	.53**	-		
13. Recreation	23.43	9.40	.08	.08	.08	.06	.04	-.27**	.10	-.05	.70**	.14*	.30**	.37**	-	
14. Social	27.56	5.49	-.01	.06	.03	.06	-.02	-.16**	.28**	-.04	.52**	.04	.26**	.25**	.33**	-

Note. N = 300. Perceived Success = Perceived Employee Success, Org Support = Organizational Support, Esc Suscept = Escalation Susceptibility. Ethical, Financial, Health/Safety, Recreation, and Social are subscales of risk-taking. *$p < .05$, **$p < .01$.

Table 3

Control variables

Variable	*M*	*SD*	*df*	*F*	*t*
			Economic Context		
DV = Perceived likelihood of project success					
Sunk Costs			3	2.49†	
$0 million	60.39	20.37			
$1 million	59.51	19.40			
$5 million	62.56	17.86			
$9 million	59.83	20.81			
Project Completion			299		19.46**
10%	50.44	17.17			
90%	70.71	17.31			
DV = Perceived threat of competition					
Sunk Costs			3	2.24†	
$0 million	68.94	19.59			
$1 million	67.45	18.56			
$5 million	66.78	17.76			
$9 million	68.93	19.94			
Project Completion			299		-7.32**
10%	71.69	16.91			
90%	64.38	18.57			
			HR Context		
DV = Perceived likelihood of employee success					
Sunk Costs			299		-2.56**
$15,000	46.65	11.09			
$75,000	45.44	12.00			
Chance of passing			3	1547.58**	
0%	16.73	18.92			
10%	24.32	18.14			
50%	55.50	14.21			
90%	86.71	12.46			

Note. N = 300. †$p < .10$, *$p < .05$, **$p < .01$.

Table 4

Hierarchical Multiple Regression Results (in Standardized Betas)

Variable	Economic Context				HR Context			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Control variables								
Likelihood of project success	0.71**							
Likelihood of employee success					0.66**			
Independent variable								
Org Support	-0.04	0.54	0.12	-0.19	0.05	-0.44	0.11	-0.26
Effects of sunk costs and completion								
Level of sunk costs	0.30*				-0.13**			
Level of completion	0.22							
Personality								
Conscientiousness		0.29				-0.26		
Neuroticism			0.01				0.13	
Openness				0.09				-0.19
Interactions								
Sunk Cost x Completion	-0.38							
Org Support x Conscientiousness		-0.60				0.52		
Org Support x Neuroticism			-0.18				-0.09	
Org Support x Openness				0.18				0.36
ΔR^2	0.00	0.01	0.00	0.00	0.02**	0.01	0.00	0.00
ΔF	2.48	0.74	0.35	0.19	5.17**	1.33	0.09	0.75
Overall model R^2	0.54	0.01	0.01	0.03	0.45**	0.01	0.01	0.08
Adjusted R^2	0.54	0.00	0.00	0.02	0.44**	0.00	0.00	0.01
Overall model F	69.90**	1.09	1.00	2.85*	80.19**	1.12	0.87	0.57

Note. N = 300. Dependent variable = escalation. *$p < .05$ **$p < .01$.

Low Organizational Support

High Organizational Support

Figure 1. Photographs of office spaces shown as visual organizational support manipulation.

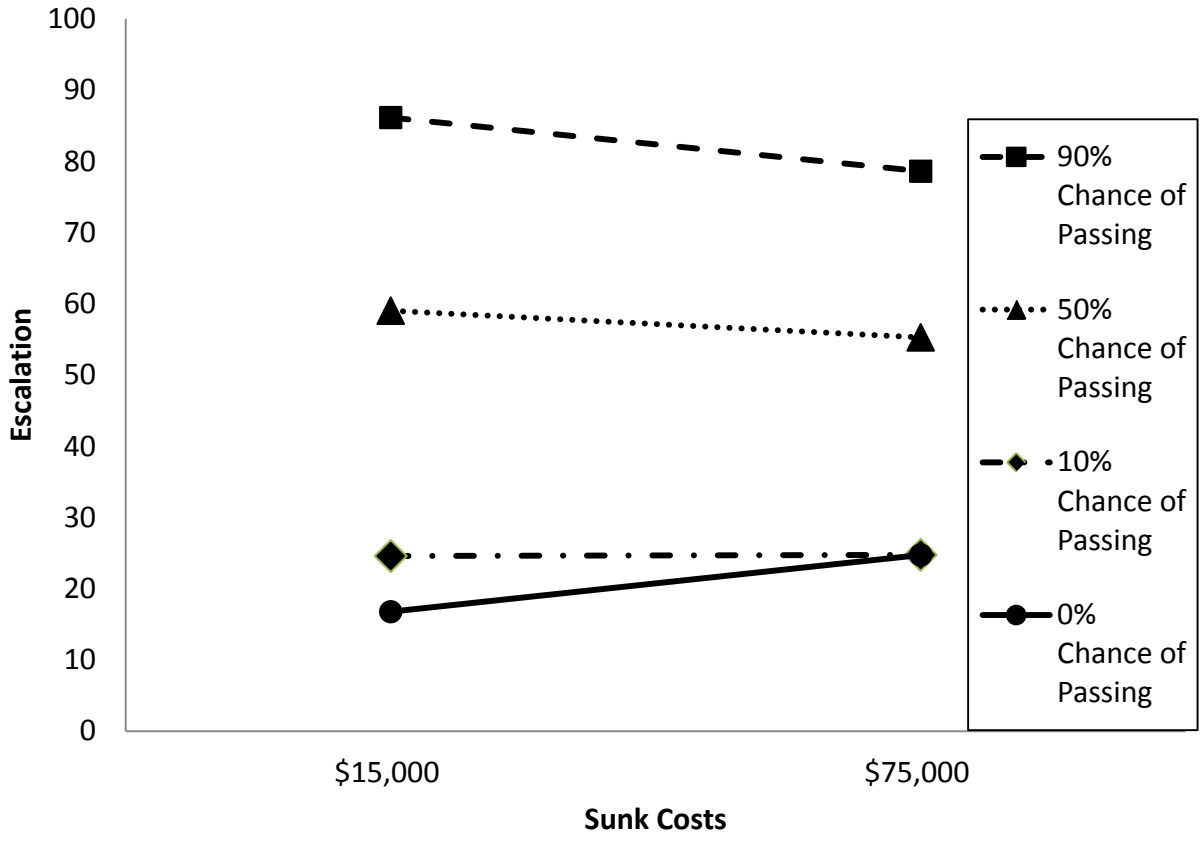

Figure 2. Level of employee chance of passing, sunk costs, and escalation.

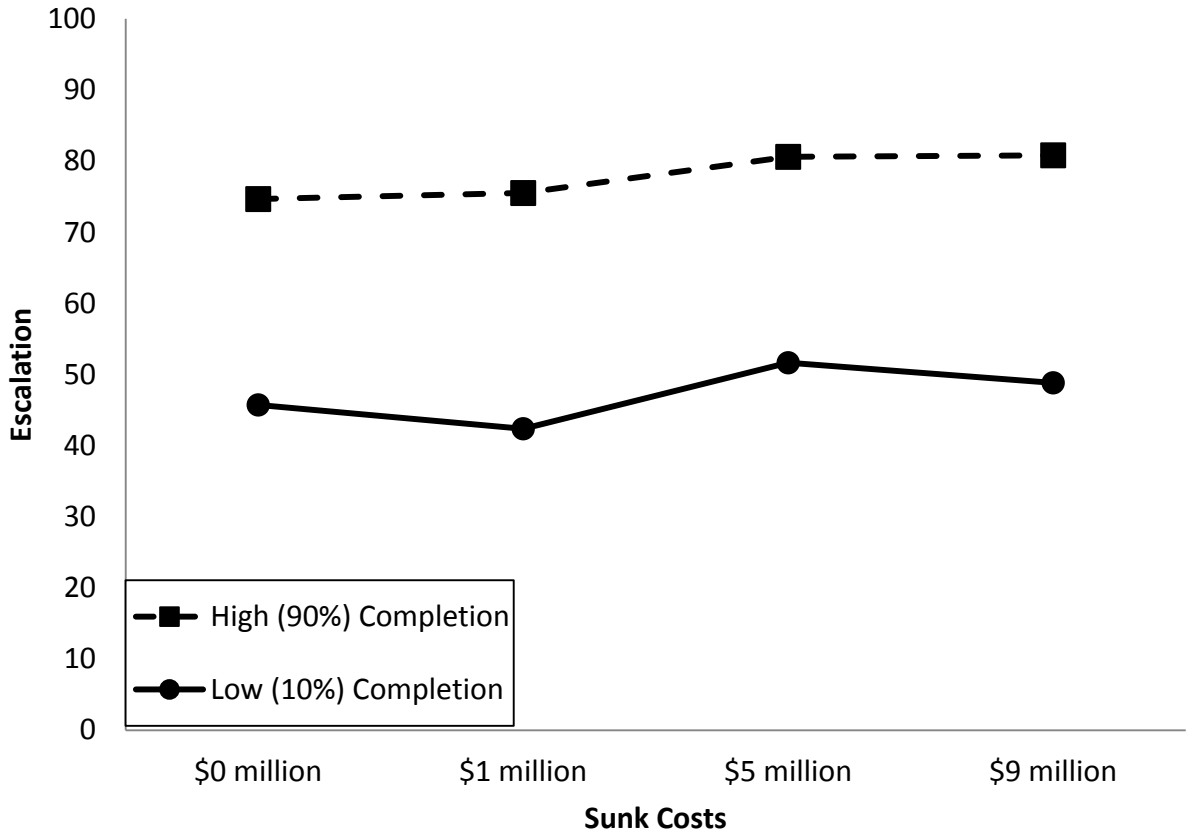

Figure 3. Main effect of level of completion on escalation in the economic scenarios.

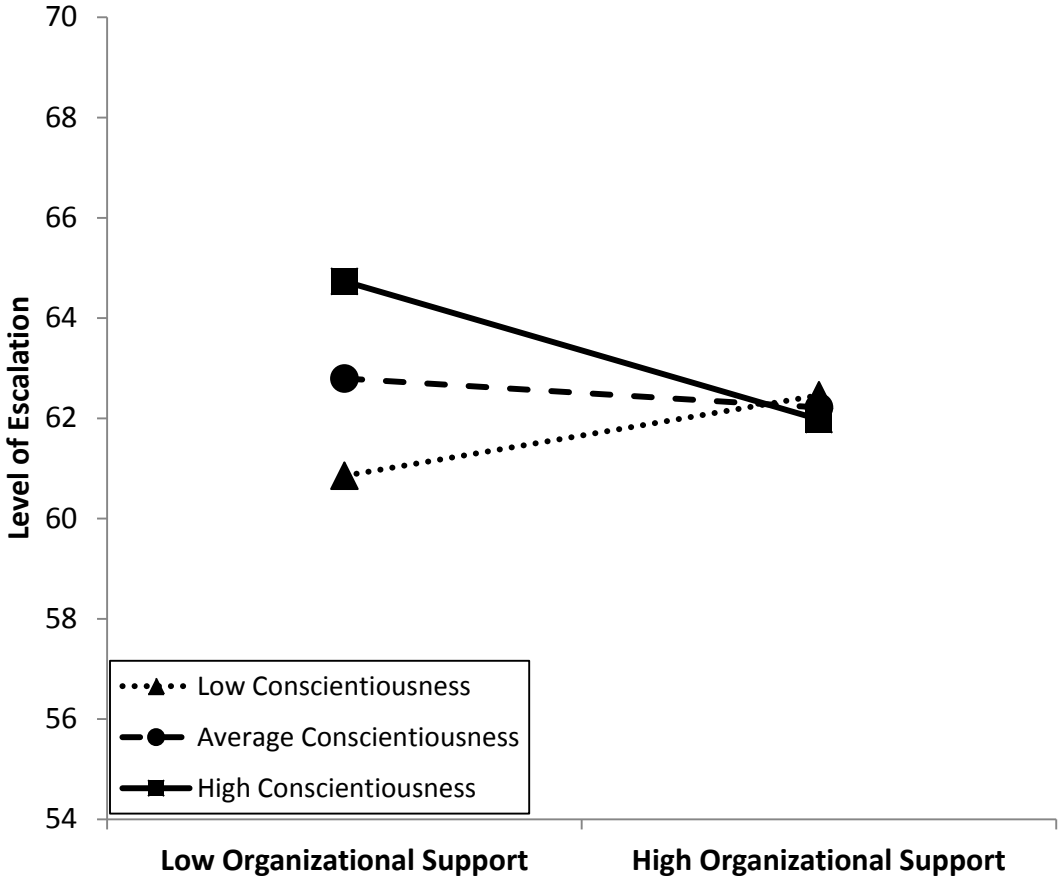

Figure 4. Effect of organizational support and conscientiousness on escalation in the economic context.

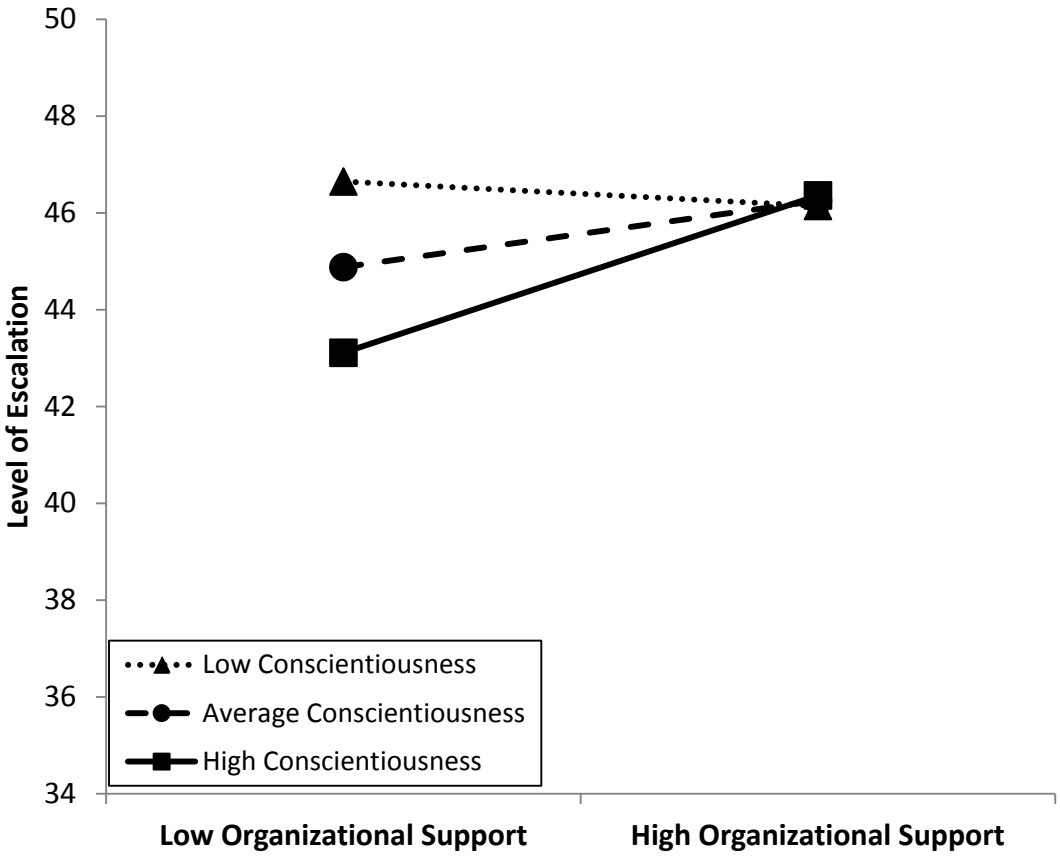

Figure 5. Effect of organizational support and conscientiousness on escalation in the HR context.

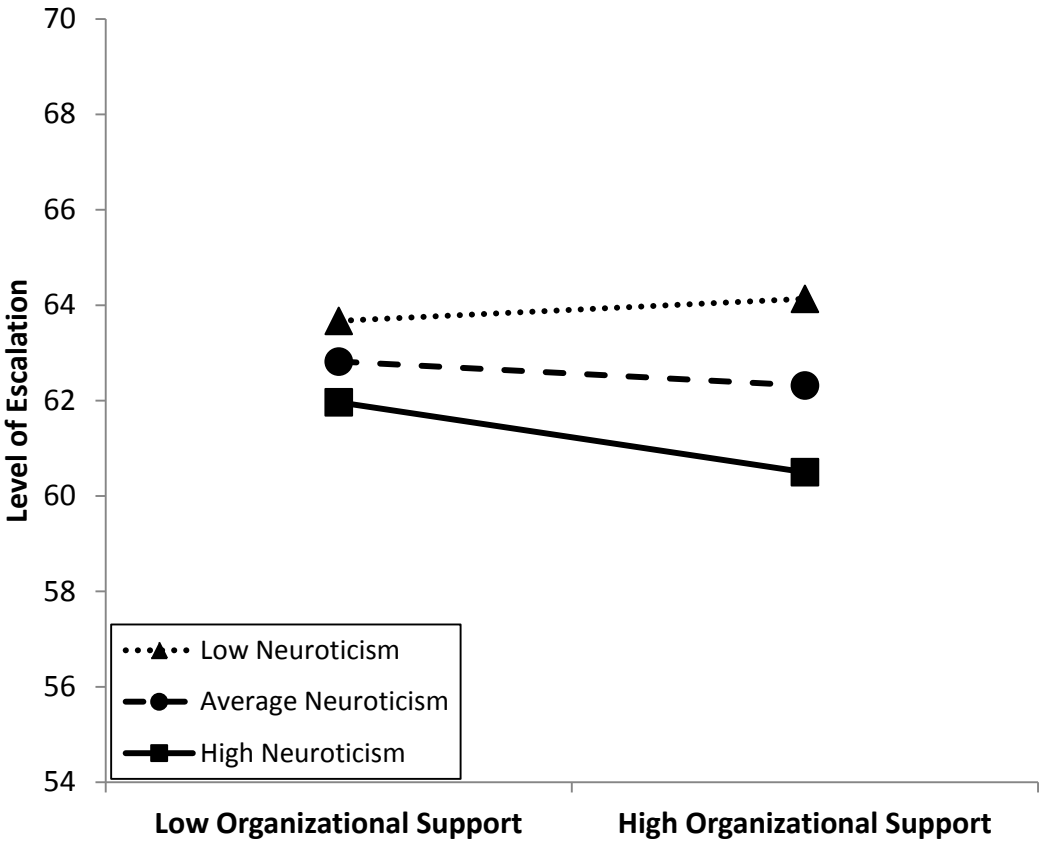

Figure 6. Effect of organizational support and neuroticism on escalation in the economic context.

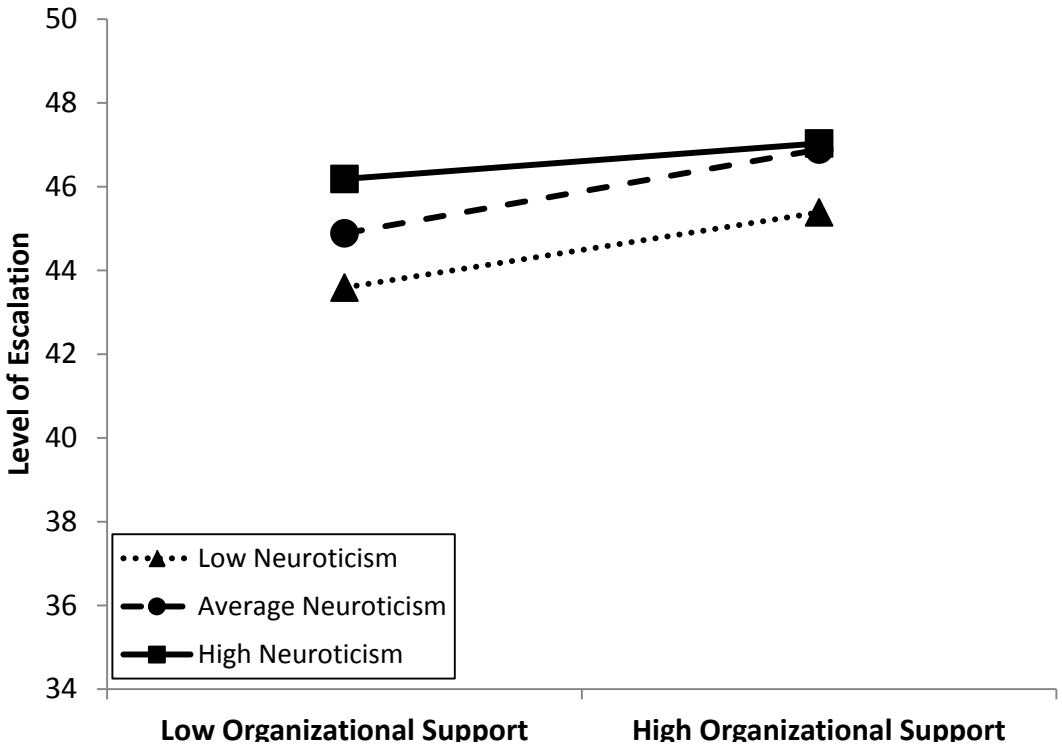

Figure 7. Effect of organizational support and neuroticism on escalation in the HR context.

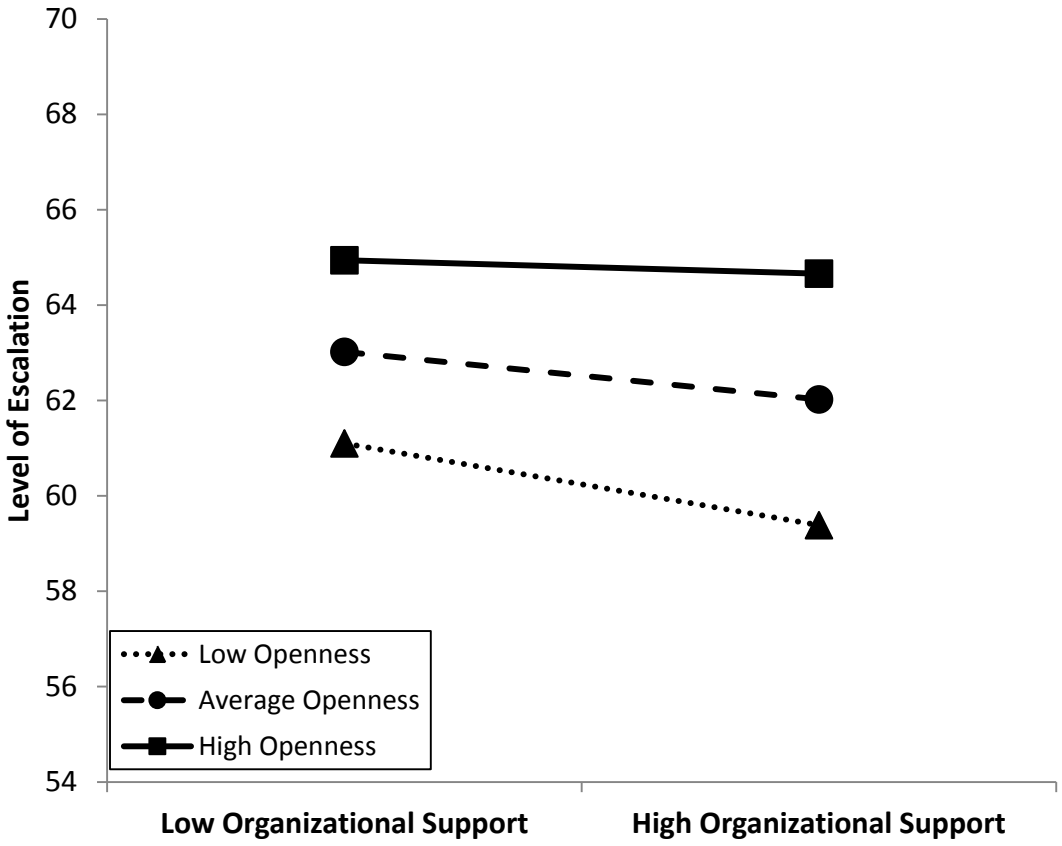

Figure 8. Effect of organizational support and openness to experience on escalation in the economic context.

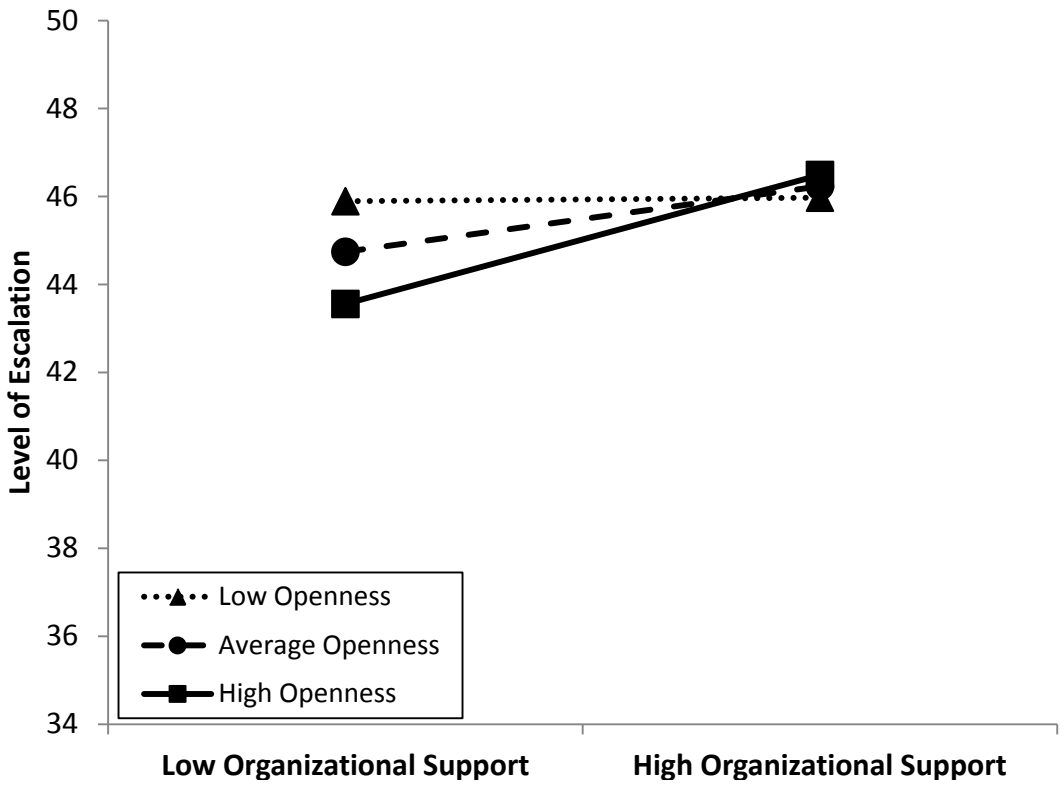

Figure 9. Effect of organizational support and openness to experience on escalation in the HR context.

Appendix A

Murnighan's Rules for the $20 "Dollar Auction"

The Rules for the Dollar Auction

1. Bidding starts at $1 and proceeds in dollar increments. And, yes, this is for real money.
2. No jump bidding.
3. The auctioneer will give all bidders fair warning before the auction ends.
4. Cartels and collusion among bidders are strictly prohibited. This means no communication, verbal or nonverbal, is allowed.
5. The highest bidder pays what they bid and receives $20. The second highest bidder pays what they bid.

Note. From "A Very Extreme Case of the Dollar Auction," by J. K. Murnighan, 2002, *Journal of Management Education, 26*, p. 57. Copyright 2002 by SAGE Publications.

Appendix B

Table B1

List of Items Measuring Conscientiousness

Am always prepared.
Pay attention to details.
Get chores done right away.
Carry out my plans.
Make plans and stick to them.
Complete tasks successfully.
Do things according to a plan.
Am exacting in my work.
Finish what I start.
Follow through with my plans.
Waste my time. (R)
Find it difficult to get down to work. (R)
Do just enough work to get by. (R)
Don't see things through. (R)
Shirk my duties. (R)
Mess things up. (R)
Leave things unfinished. (R)
Don't put my mind on the task at hand. (R)
Make a mess of things. (R)
Need a push to get started. (R)

Note. (R) indicates item was reverse-coded. Items are the International Personality Item Pool (IPIP) representation of Costa and McCrae's (1992) Revised NEO Personality Inventory (NEO-PI-R).

Table B2

List of Items Measuring Neuroticism

Often feel blue.
Dislike myself.
Am often down in the dumps.
Have frequent mood swings.
Panic easily.
Am filled with doubts about things.
Feel threatened easily.
Get stressed out easily.
Fear for the worst.
Worry about things.
Rarely get irritated. (R)
Seldom feel blue. (R)
Feel comfortable with myself. (R)
Am not easily bothered by things. (R)
Am very pleased with myself. (R)
Am relaxed most of the time. (R)
Seldom get mad. (R)
Am not easily frustrated. (R)
Remain calm under pressure. (R)
Rarely lose my composure. (R)

Note. (R) indicates item was reverse-coded. Items are the International Personality Item Pool (IPIP) representation of Costa and McCrae's (1992) Revised NEO Personality Inventory (NEO-PI-R).

Table B3

List of Items Measuring Openness to Experience

Believe in the importance of art.
Have a vivid imagination.
Tend to vote for liberal political candidates.
Carry the conversation to a higher level.
Enjoy hearing new ideas.
Enjoy thinking about things.
Can say things beautifully.
Enjoy wild flights of fantasy.
Get excited by new ideas.
Have a rich vocabulary.
Am not interested in abstract ideas. (R)
Do not like art. (R)
Avoid philosophical discussions. (R)
Do not enjoy going to art museums. (R)
Tend to vote for conservative political candidates. (R)
Do not like poetry. (R)
Rarely look for a deeper meaning in things. (R)
Believe that too much tax money goes to support artists. (R)
Am not interested in theoretical discussions. (R)
Have difficulty understanding abstract ideas. (R)

Note. (R) indicates item was reverse-coded. Items are the International Personality Item Pool (IPIP) representation of Costa and McCrae's (1992) Revised NEO Personality Inventory (NEO-PI-R).

Appendix C

Escalation Susceptibility Scenarios

On your way home you buy a frozen meal on sale for $3 at the local grocery store. A few hours later you decide it is time for dinner, so you get ready to put the frozen meal in the microwave oven. Then you get an idea. You call up your friend to ask if he would like to come over for a quick frozen meal dinner and then watch a good movie on TV. Your friend says "Sure." So you go out to buy a second frozen meal. However, all the on-sale frozen meals are gone. You therefore have to spend $6 (the regular price) for the frozen meal identical to the one you just bought for $3. You go home and put both dinners in the microwave oven. When the two dinners are fully cooked, you get a phone call. Your friend is ill and cannot come. You are not hungry enough to eat both dinners. Your freezer is broken, so you cannot freeze one. You must eat one and discard the other. Which one do you eat?

- ❍ $3 frozen meal
- ❍ $6 frozen meal*
- ❍ No preference

We are interested in your opinion of a particular product. As you many know, it is now possible to buy computer programs that help you calculate your income taxes. Suppose that you have purchased one of the standard tax programs for $25, which is a very good price. This program does all your federal income tax calculations for you, and it even generates the forms you have to send in to the Internal Revenue Service (IRS). Suppose you are very pleased with the product. Now it is one year later, and you have to pay your taxes for this new year. Since Congress always changes the tax laws every year, you have to buy a new computer program for your federal taxes. The old program you purchased is completely worthless this year. This year the computer program that calculates your federal taxes is being sold with a computer program that does your state taxes. The package of two programs costs $80. However, the money you spent on last year's program isn't wasted; the company that sells the programs is offering a $30 rebate to people who bought last year's federal tax computer program. If you send in your old computer program, they will give you a $30 reduction in the $80 purchase price so that the package of two new programs will cost you only $50. Since you cannot buy the programs separately, you will have to spend $50 if you want to do your taxes with a computer. Of course, you can save $50 by doing your state and federal taxes by hand without the computer programs. Would you be willing to spend $50 for the package of two computer programs to do your taxes?

- ❍ Yes*
- ❍ No

We are interested in your ability to predict what people will do in an economic situation. Consider the following problem: Ms. Munn and Ms. Fry each live in an apartment near the local movie theater. Ms. Munn can go to the movies only on Monday night. Ms. Fry can go to the movies only on Friday night. Each movie costs $10, no matter which night it is shown. Each movie generally is shown for a whole week. Since Monday night is generally a pretty 'slow' night at the movies, the manager of the theater offers a package to those who go to the movies on Mondays. Although tickets are $10, the manager will sell a three-pack for $25. The three-pack can be used on any three Mondays during the next month. Ms. Munn looks over the schedule for the next month and sees only two movies she is interested in seeing. So she decided not to buy the three-pack. Instead she pays $10 on each of the first two Mondays of the month to see a movie. Ms. Fry also pays $10 on each of the first two Fridays of the month to see a movie. Then there is a change in the schedule. One of the movies that was supposed to come that month cannot be obtained. Instead the manager substitutes a new movie that both Ms. Munn and Ms. Fry are somewhat interested in seeing. Had Ms. Munn bought the three-pack, she could have seen this new movie without paying any more money than the extra $5 she would have needed to buy the $25 three-pack. Since she didn't buy the three-pack, both Ms. Munn and Ms. Fry will have to pay $10 to see the new movie. The question is: will one of the two women be more likely to pay to see the new movie, or will they be equally likely to pay to see it? Select the option that corresponds to your prediction.

- ❍ They will be equally likely to pay to see the new movie.
- ❍ Ms. Munn will be more likely than Ms. Fry to pay to see the new movie.
- ❍ Ms. Fry will be more likely than Ms. Munn to pay to see the new movie.*

Note. * answer choice indicates escalation susceptibility.

Appendix D

DOSPERT Risk-taking scale items

Admitting that your tastes are different from those of a friend. (S)
Going camping in the wilderness. (R)
Betting a day's income at the horse races. (F)
Investing 10% of your annual income in a moderate growth mutual fund. (F)
Drinking heavily at a social function. (H/S)
Taking some questionable deductions on your income tax return. (E)
Disagreeing with an authority figure on a major issue. (S)
Betting a day's income at a high-stake poker game. (F)
Having an affair with a married man/woman. (E)
Passing off somebody else's work as your own. (E)
Going down a ski run that is beyond your ability. (R)
Investing 5% of your annual income in a very speculative stock. (F)
Going whitewater rafting at high water in the spring. (R)
Betting a day's income on the outcome of a sporting event (F)
Engaging in unprotected sex. (H/S)
Revealing a friend's secret to someone else. (E)
Driving a car without wearing a seat belt. (H/S)
Investing 10% of your annual income in a new business venture. (F)
Taking a skydiving class. (R)
Riding a motorcycle without a helmet. (H/S)
Choosing a career that you truly enjoy over a more secure one.12 (S)
Speaking your mind about an unpopular issue in a meeting at work. (S)
Sunbathing without sunscreen. (H/S)
Bungee jumping off a tall bridge. (R)
Piloting a small plane. (R)
Walking home alone at night in an unsafe area of town. (H/S)
Moving to a city far away from your extended family. (S)
Starting a new career in your mid-thirties. (S)
Leaving your young children alone at home while running an errand. (E)
Not returning a wallet you found that contains $200. (E)

Note. E = Ethical, F = Financial, H/S = Health/Safety, R = Recreational, and S = Social.

Appendix E

Manipulation Check Items for Escalation Task

The investment scenario was realistic.
Overall, I think I made a good decision on this task.
I regret my decision on the task. (R)
I am confident that I made the right decision on the task.
My performance on the task was better than others.
I felt like I had to keep investing in the project because of the initial investment.
I felt an obligation to keep investing in the project.
The past costs affected my decision.

Note. (R) indicates item was reverse-coded.