Developing Assessment Procedures And Assessing Two Models Of Escalation Behavior Among Community College Administrators

By: David W. Hollar, John Hattie, Bert Goldman and **James Lancaster**

Abstract

Escalation behavior occurs when individual decision-makers repeatedly invest time, money, and other resources into a failing project. A conceptual model of escalation behavior based on project, organizational, social and psychological forces was developed, and a 75item measurement instrument was constructed to assess the various dimensions. The model was tested using data collected from a random sample of North Carolina Community College administrators. A LISREL measurement model analysis provided support for the four escalation forces. Two structural models were tested, leading to support for a mediational model for escalation behavior. The most important contributor to Escalation was the Psychological force.

Hollar, D., Hattie, J., Goldman, B. and **Lancaster, James** (2000). Developing assessment procedures and assessing two models of escalation behavior among community college administrators. Theory and Decision, 49, 1-24. Version of record available from Springer Verlag. [ISSN: 0040-5833], [DOI: 10.1023/A: 1005291216245].

DEVELOPING ASSESSMENT PROCEDURES AND ASSESSING TWO MODELS OF ESCALATION BEHAVIOR AMONG COMMUNITY COLLEGE ADMINISTRATORS

INTRODUCTION

Escalation behavior occurs in individual and group decision-making situations when people continue investing time, money, and other valuable resources into a failing course of action despite negative feedback information (Staw 1976). Variations on this phenomenon have been called 'knee deep in the big muddy' (Staw 1976), 'groupthink' (Janis & Mann 1977), entrapment (Fox & Staw 1979), the sunk cost effect (Arkes & Blumer 1985), and the 'Abilene Paradox' (Harvey 1988). Whereas the psychological construct called 'escalation behavior' has been studied extensively by economists, the phenomenon under different names has been explored in a variety of academic disciplines.

Escalation behavior represents an aberrant form of decision-making by individuals and by groups of individuals. Escalation includes such behaviors as excessive commitment of resources to failed projects and persistence with failing projects because of incurred sunk

costs (Staw & Ross 1989; Whyte 1993).

When individuals and groups become entrapped in these projects they tend to be reluctant to endanger peer perceptions of their decision-making consistency by examining better project alternatives (Fox & Staw 1979; Staw & Ross 1980).
From numerous laboratory and case studies, Staw & Ross (1989) advanced four forces that determined decisions to persist with failing projects or escalation behavior. First, project forces of escalation behavior include such contributing variables as project history, project problems, profits, expenses, and project efficacy (Staw & Ross 1989; Whyte 1993). Second, organizational forces of escalation include organizational communication, politics, rules, values, and organizational inertia (Clark 1972; Janis & Mann 1977; Miller & Chen 1994; Staw & Ross 1989; Whyte 1993). Third, social forces include public perceptions, peer perceptions, success, competition, and dominance (Staw & Ross 1989; Whyte 1993); for example, higher performance ratings are given to administrators who stay with a course of action than to those who change to alternative choices (Staw & Ross 1980). The competitive nature of business, pressures for institutional accountability, and the hierarchical dominance interactions of organizational members pressure individuals and groups, thereby constraining the decision-making processes of the institution (Bolman & Deal 1991). Fourth, psychological forces include perceptions of rationality, competence perception, self-esteem, helplessness, and self-justification (Beauvois, Joule & Brunetti 1993; Brockner 1992; Drummond 1994; Staw 1976; Staw & Ross 1989). It seems important for individuals to justify past poor decisions and negative outcomes in order to escalate continued investments into failing projects.

ESCALATION: SCENARIOS

Staw (1976) began experimental studies of escalation behavior by using the ‘Adams and Smith Company’ case scenario. The scenario was administered to 240 undergraduate business students who allocated specified funds to one of two hypothetical company divisions. The students also allocated further funding based upon positive or negative feedback information. Staw found that subjects significantly continued investments in failing company divisions and that two independent variables, personal responsibility and decision consequences, contributed to these escalating investments. Fox & Staw (1979) replicated the ‘Adams and Smith Company’ scenario with 160 undergraduate business students, and again found that subjects escalated psychological forces, particularly commitment to losing projects. Staw & Ross (1980) administered a similar scenario to 95 company managers, 48 business students, and 79 psychology students. The participants gave significantly higher ratings to hypothetical administrators who remained consistent with a course of action, who allocated minimal resources to projects, and who were successful (Staw & Ross 1980; see replications by Conlon & Parks 1987; McCain 1986). Conlon & Parks (1987) found that escalating subjects significantly requested more retrospective information in order to justify continued commitment of resources to failed decisions.

Both Staw (1976) and Whyte (1993) stressed the importance of self-justification in individual and group escalation behavior. McCain (1986) found that individuals de-escalated when given alternative courses of action. Nevertheless, escalating individuals and groups typically are pressured not to change committed decisions even with the availability of alternatives (Staw 1976; Staw & Ross 1989; Whyte 1993). Goltz (1993), for example, found that subjects presented with the ‘Adams and Smith Company’ case tended to escalate under conditions of high personal decision responsibility and information reinforcement. Similarly, Brockner

(1986) observed that individuals escalated when told prior to making a decision that ineffective performance would reflect negatively upon perceptions of their decisionmaking ability. Managers stay with bad decisions with the hope of reversing their fortunes, recovering sunk costs, and saving face with the public as well as with their peers (Beauvois, Joule & Brunetti 1993; Staw 1976; Whyte 1993).

Simonson & Staw (1992) suggested several measures for individual decision-makers to de-escalate, including emphasizing process over outcomes in administrator evaluations and the setting of project termination criteria for ending an escalation cycle early in the process. These suggestions further illustrate the external social and organizational pressures upon individual psychology leading to escalation behavior.

ESCALATION: CASE STUDIES

Several case studies of escalation have been conducted to assess the validity of escalation behavior and contributing escalation variables in actual resource allocation events. Ross & Staw (1976) studied the escalation of financial losses and reinforced commitment to Expo 86 by the British Columbia provincial government. A combination of inflation and severe cost overruns plunged the project several hundred million dollars into debt during the early 1980's. Rather than facing political humiliation by canceling the exposition, the government completed the project because of already incurred sunk costs (Ross & Staw 1986). This escalation/sunk cost justification phenomenon also was observed by Ross & Staw (1993) in their study of the Long Island Lighting Company's 19-year failed construction of the Shoreham Nuclear Power Plant, a project abandoned after over $5 billion in investments. Whereas this case did result in de-escalation, the turnaround occurred far too late, thus illustrating the importance of setting project termination criteria in decision-making (Simonson & Staw 1992).

Several often-cited 'classic' instances of escalation behavior include the conduct of the Vietnam War by President Lyndon B. Johnson's 'group-think' (i.e., group pressure to persist with failing strategies) administration (Janis & Mann 1977) and President Richard Nixon's Watergate scandal cover-up (Harvey 1988). Drummond (1994) performed a definitive ethnographic case study in her direct, long-term observations of escalation behavior within an English public works company. She identified decision-making 'helplessness' among administrative personnel, including a defeated, powerless director, in facing project setbacks; little changed even with the replacement of the director. Finally, in a factor analytical study of National Basketball Association player data, Staw & Hoang (1995) found that NBA teams escalate retention of high draft players and give these players more playing time regardless of performance.

ESCALATION: THE STRUCTURAL MODEL

A conceptual model describing escalation behavior is presented in Figure 1. This conceptual model (Hollar 1997) was derived from the qualitative three-stage escalation model described by Staw and Ross (1989). In the Staw & Ross (1989) model, 'perceived project economics' (i.e., Project Forces) initiate an individual/group decision to pursue the project (Phase 1). In Phase 2, negative project results influence Social/Psychological forces to persist with the project, thereby pressuring the decision-makers to continue with the project, thus starting escalation behavior. By Phase 3, more negative project results (sunk costs) activate Social, Psychological, and Organizational forces pressuring the individuals to continue their

escalation of committed resources to the project.

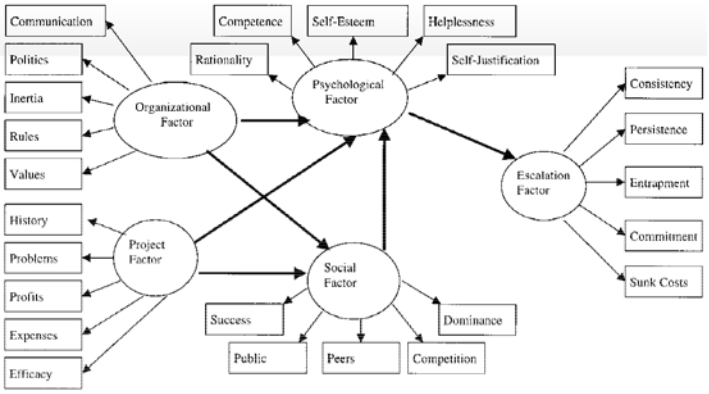

Figure 1. The conceptual escalation model.

The Conceptual Escalation Model (Figure 1) tested in the present study included directional regression weights from the Project Factor to both the Social and Psychological factors in accordance with the Phase 2 and 3 events of the Staw & Ross (1989) escalation model. Brockner (1992), Beauvois, Joule & Brunetti (1993), and Drummond (1994) have provided strong evidence for such psychological variables as competence perception, self-esteem, and helplessness in contributing to the escalating commitment of resources to failed projects. Likewise, Fox & Staw (1979), Ross & Staw (1986), and Drummond (1994) showed that the decision-makers' social environment discourages de-escalation.

The Organizational Factor (Figure 1) had directional regression weights to the Social and Psychological factors based upon Phase 3 of the Staw & Ross (1989) escalation model, where organizational forces to persist amplify the continued Social and Psychological forces for continued investment into the failing project. Drummond's (1994) case study of an English works organization, Ross
& Staw's (1993) case study of the Shoreham Nuclear Power Plant, and Staw & Ross' (1980) escalation scenario presented to company managers supported the role of Organizational forces contributing to the Social/Psychological escalation of resource commitment.

Finally, a directional regression weight links the Psychological factor to the outcome Escalation factor (Figure 1). This approach diverged from the original Staw & Ross (1989) model, which had the Social, Organizational, and Psychological forces all contributing to persistence with the failed project. Only the Psychological-toEscalation directional regression weight was included in the present Conceptual Escalation Model based upon the premise that the psychological make-up of the decision-maker directly forces the tendency of individuals to escalate. Social and Organizational forces contribute indirectly to escalation through the Psychology of the individual decision-maker, as demonstrated by Beauvois, Joule & Brunetti (1993), Brockner (1986, 1992), Festinger (1957), Janis & Mann (1977), and Staw (1976) in individual studies of entrapment/ escalation decision-making situations.

THE STRUCTURAL MODEL: COMPONENTS

As described above, the Conceptual Escalation Model (Figure 1) contains four forces/factors (i.e., Project, Organizational, Social and Psychological) that are hypothesized to directly or indirectly contribute to the outcome Escalation factor. The proposed directional regression paths are indicated in Figure 1, with the Organizational and Project factors contributing to the Psychological and Social factors, the Social factor contributing to the Psychological factor,

and the Psychological factor directly contributing to the outcome Escalation tendency factor.

Associated with each of these five principal factors are five variables hypothesized to load onto the indicated factor. Five variables (Organizational Communication, Politics, Inertia, Rules and Values) are proposed to load onto the Organizational factor. Staw & Ross (1989) emphasized the role of organizational inertia, the resistance of decision-makers to change, in causing escalation behavior. Poor organizational communication and politics can contribute to bad decisions and escalation (Bolman & Deal 1991; Harvey 1988). Furthermore, strong leaders and long-term employees of institutions define organizational rules and norms affecting decision- making processes (Beyer & Trice 1979; Clark 1972).

The Project factor (Figure 1) is presented as a stand-alone factor based upon the Staw & Ross (1989) qualitative escalation model, although project issues are embedded throughout the Conceptual Escalation Model analyzed in the present study. Five variables (History of the project, Problems with the project, Profits, Expenses and Efficacy) are proposed to load onto the Project factor. These variables are cited by Staw (1976), Staw & Ross (1989) and Ross & Staw (1993) as being important contributors to escalation behavior. Five variables (Success, Public perceptions, Peer perceptions, Competition and Dominance) are proposed to load onto the Social factor. Staw & Ross (1989) stressed the role of one's external environment in pressuring the tendency to escalate. Brockner & Rubin (1985) and Staw & Ross (1980) demonstrated the importance of individual success at projects in the face of public and peer scrutiny. Furthermore, competition and dominance relationships are realities of organizations (Aronson 1976; Perrow 1979), including colleges and universities (Bess 1988).
The five variables (perceived Rationality and Competence in decision-making, Self-Esteem, Helplessness, and Self-Justification) proposed to load onto the Psychological factor are among the most well-studied escalation variables. Staw (1976) and Beauvois, Joule & Brunetti (1993) have argued that individuals feel pressured to appear rational and competent in their decisions, thus leading to the escalation of bad projects. Brockner (1986) observed that individuals with high self-esteem are more likely to escalate. Drummond (1994) established the helplessness of individuals to stop escalation cycles. Finally, individuals self-justify the correctness of their 'bad' decisions in order to reduce cognitive dissonance (Aronson 1976; Festinger 1957; Staw 1976). The outcome Escalation tendency factor (Figure 1) has five proposed loading variables: Consistency, Persistence, Entrapment, Commitment and Sunk Costs. The incurring of project sunk costs is central to the definition of escalation behavior (Staw 1976). Nonrational consistency, persistence and commitment with losing projects allow escalation cycles to continue (Fox & Staw 1979; Staw 1976; Whyte 1993). Individual entrapment in an out-of-control escalation cycle is the final state of the phenomenon (Drummond 1994; Whyte 1993).

THE PRESENT STUDY

There are three major aims of the current research. First, most of the escalation studies have used management and economic situations embedded in the business domain, and thus this study extends our understanding by investigating escalation behaviors in the educational setting. Second, there is a lack of a systematic and dependable measurement instrument that is based on the conceptual models developed in the above studies. Third, a series of two structural models are evaluated to ascertain the most influential precursors to escalation behavior. Thus, the present study identifies a dependable instrument to assess all major aspects of escalation and then evaluates the structural models (Hayduck 1986; Joreskog & Sorbom 1989) of the antecedents and mediators of escalation, using senior administrators in

Community Colleges.

Therefore, the present study assesses the quantitative relationships between Staw & Ross' (1989) four forces to the Escalation factor and to the 25 loading variables for the five factors. The present study is exploratory in attempting to quantitatively define the relationships between a loose set of variables from the escalation literature and from Staw & Ross' (1989) qualitative escalation model. The present study analyzes the validity of escalation behavior in the administrative environment of community colleges.

METHOD

The Behavior Escalation Questionnaire ('Bees', Hollar 1997) is a 75-item instrument (i.e., three items per variable) designed to measure the tendency towards committing escalation behavior among community college administrators. Each item consists of a onesentence escalation scenario involving a hypothetical community college administrator (e.g., president, department chair) making an escalation-to-commitment decision with respect to an academic, college business, or personnel situation. Questionnaire respondents are asked, as administrators capable of influencing the hypothetical administrator decision, to rank their level of agreement with the administrator's escalating decision on a 1-6 Likert-type scale (i.e., 1 = I very much disagree, 6 = I very much agree). As such, individual's responses to the questionnaire reflected their tendency to approve of the occurrence of escalation in the community college.

Example items include: (a) 'a community college president advocates new building construction despite underestimation of building costs by $2 million (Project),' (b) 'a community college department chairperson decides to reprimand an instructor who routinely violates the college's smoke-free building policy (Organizational),'
(c) 'a community college dean fires a nursing department chairperson after nursing graduates posted only a 65 percent passing rate on the state licensure examination (Social),' (d) 'a community college vice-president advises the strategic planning committee members to follow established procedures for dealing with a sudden campus crisis and not to consider several unpopular options (Psychological),' and (e) 'a community college dean argues that a new academic program be continued even though the program has accumulated budgetary excesses approaching $400,000 (Escalation).' The questionnaire items contained negative escalation situations consistent with previous escalation studies (e.g., Arkes & Blumer 1985; Staw 1976) and with Prospect Theory (Kahneman & Tversky 1979; Tversky & Kahneman 1981), where individuals respond more strongly to project losses than to project profits. Each item questionnaire situation was designed to simulate an escalation event within the context of the measured force variable for that item. This design is consistent with previous escalation studies that utilized case scenarios requiring ordinal responses by individuals and sometimes groups of decision-makers (Arkes & Blumer 1985; Staw 1976; Staw & Ross 1980) There are five major dimensions identified from the escalation literature reviewed above: the four forces (project, organization, psychology and social) and a criterion escalation factor. For each major dimension a number of factors were identified and then three item scenarios were constructed for each factor. Figure 1 presents the underlying model from which the questionnaire was designed. There are four major forces that contributed to Escalation behavior.

The 'Bees' was administered by mail to a random sample of 505 administrators from a total population of 2197 administrators located at the 58 North Carolina community colleges.

These community college administrators included college presidents, vice-presidents, deans, department chairpersons, and program directors/ coordinators. A one-month follow-up was used to ensure the best possible response. Questionnaires were returned by 239 administrators (47.3 percent, of which 58% were males), from 55 of the 58 North Carolina community colleges. The respondents included seven presidents, fifteen vice-presidents, 37 deans, 77 directors, 58 department chairs, and 45 others (mostly program coordinators).

LISREL was used to estimate the maximum-likelihood parameters, provide goodness of fit information, and modification indices for both the measurement and subsequent structural models. The principal indices of fitness for the LISREL measurement and structural models were the chi-square (χ 2) with degrees of freedom (df), the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI). Although widely used, the chi-square, GFI and AGFI are inappropriately affected by sample size and to a lesser degree the number of items in the model. So, as well as providing these more commonly cited indices, a fit statistic least affected by sample size, the Root Mean Square Error of Approximation (RMSEA), is also provided. The RMSEA provides the error per degree of freedom of the fit of the population covariance matrix implied by the model (Browne & Cudeck 1993; Rigdon 1996; Steiger & Lind 1980). RMSEA has a minimum of 0 which implies perfect fit, and Browne & Cudeck (1993, p. 144) claimed that 'practical experience has made us feel that a value of the RMSEA of about .05 or less would indicate a close fit of the model in relation to the degrees of freedom ... We

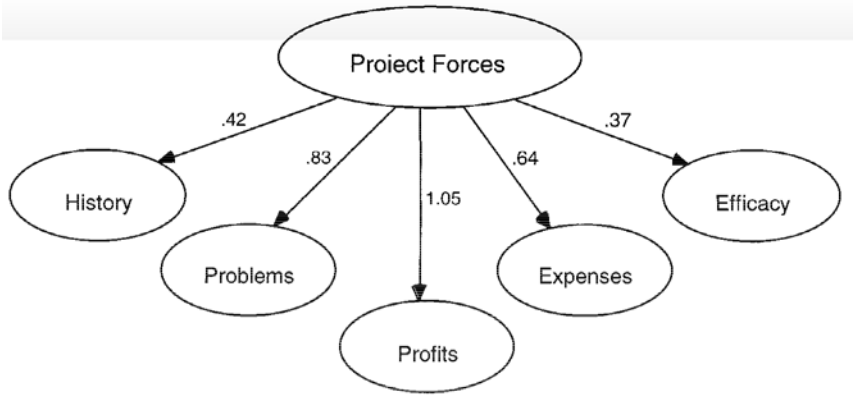

Figure 2. A second-order model of Project Forces.

are also of the opinion that a value of about .08 or less ... would indicate a reasonable error of approximation and would not want to employ a model with a RMSEA greater than .1'.

It should be mentioned that the measurement and structural equation model analysis of ordinal data in this study is supported by the use of PRELIS to screen and prepare the appropriate covariance matrix for LISREL analysis. Furthermore, Byrne (1998, p. 137) states that 'when the number of categories is large, the failure to address the ordinality of the data is likely negligible.' While noting that most psychological studies that utilize structural equation modeling have analyzed ordinal scales, Byrne (1998) emphasizes the importance of covariance analysis and category size, both of which were followed in this study.

RESULTS: THE MEASUREMENT MODELS

The first set of hypotheses related to the nature of the factor structure for each of the four forces and for the Escalation factor. For each of the four forces, a second-order factor model

was hypothesized. For example, Figure 2 presents the standardized parameter estimates for a second-order model for the Project factors. Each group of three items was constrained to load on the appropriate factor (i.e., the three History items were constrained to load only on the latent History factor, etc.), and then the five latent factors (History, Problems, Profit, Expenses and Efficacy) were constrainedTABLE 1
Goodness-of-fit information for the five second-order models

Model	df	Chi-square	p	GFI	AGFI	RMSEA
Project	84	318.88	<.001	.836	.766	.108
Organizationa	84	270.53	<.001	.848	.783	.097
Social	84	204.18	<.001	.890	.843	.077
Psychological	84	244.67	<.001	.881	.831	.089
Escalation	84	250.09	<.001	.876	.826	.091

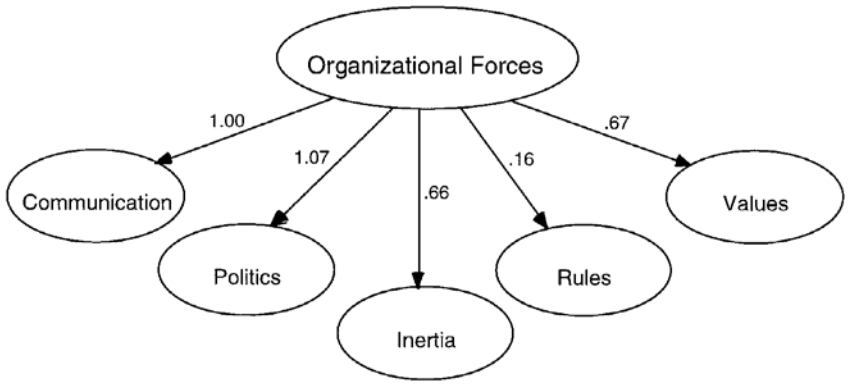

Figure 3. A second-order model of Organizational Forces.

on a single second-order factor (Project forces). All items made meaningful contributions to their respective factors, and all secondorder factor estimates indicate that there is much confidence that the items appropriately measure Project forces. The fit indices indicate that there is a reasonable fit (see Table 1), and the estimate of reliability for these Project items is .63. In a similar manner to the findings of Staw & Ross (1989), the Profits, Problems and Expenses contributed the most to the overall Project Forces.

The major contributors for the Organizational factor were the institutional values (politics) and relationships between individuals (communication) in the college organization. Values and Inertia were also contributing whereas Rules had only a minor influence (Figure 3). The fit indices again were reasonable and the estimate of reliability across all items was .69 (Table 1).

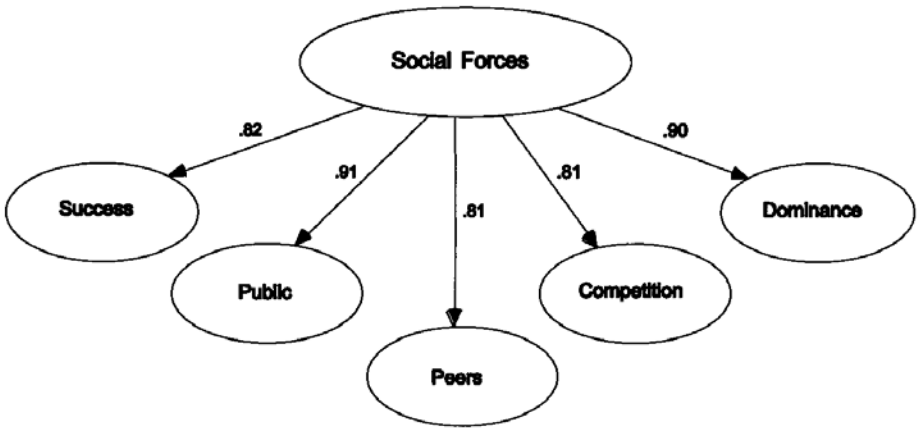

Figure 4. A second-order model of Social Forces.

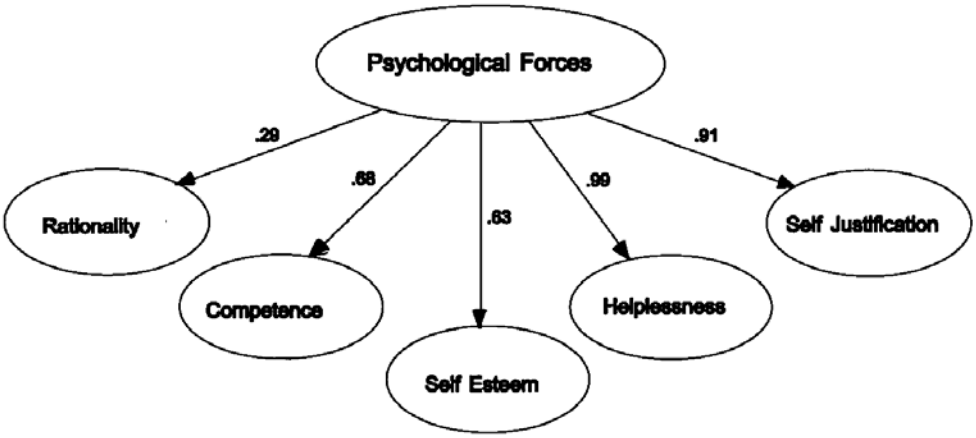

Figure 5. A second-order model of Psychological Forces.

All first-order factors contributed to a similar degree to the Social Forces factor (Figure 4). The fit indices on this factor were acceptable and the estimate of reliability was .77.

As expected, the Helplessness and Self-justification factors contributed most to the second-order Psychological factor (Drummond 1994; Staw 1976; Staw & Ross 1989), followed by Competence and Self-esteem (Figure 5). The estimate of reliability was .75. There has been a major debate as to the relative importance of Rationality and Competence (Brockner 1992; Staw 1976 Whyte 1993), and the results from this study clearly indicate that Competence is more critical to the Psychological Forces than Rationality.

A third-order factor model was then estimated. This model proposes that underlying items within each scale there are four escalation forces, and underlying these four forces there is a single dimension (Figure 6).

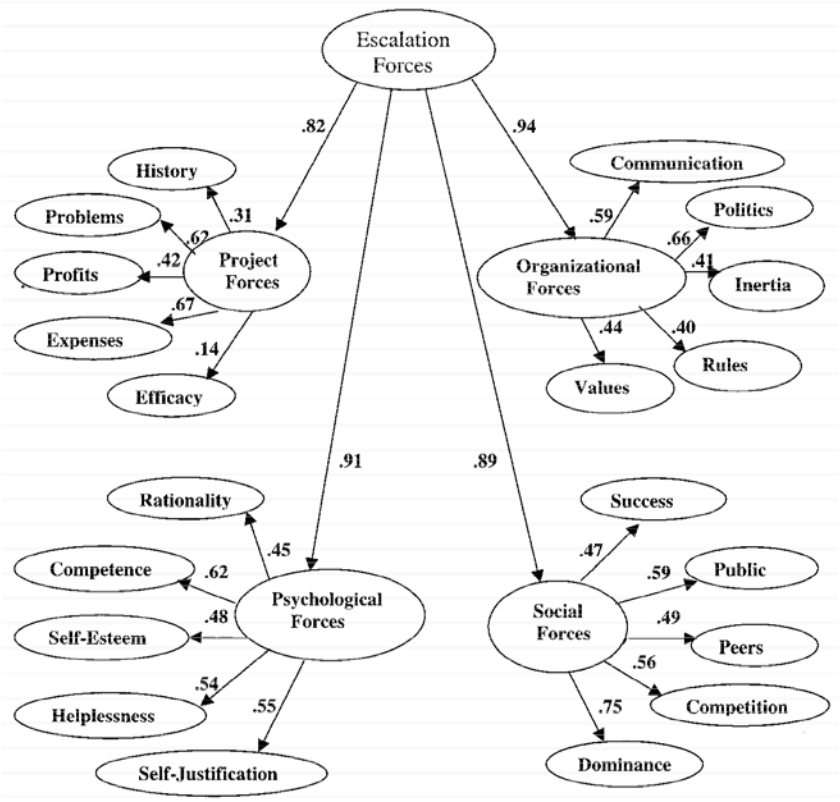

Figure 6. A measurement model for the four Escalation Forces.

(chi-square= 451. 21, df = 164, p <.001, GFI = .810, AGFI = .757, RMSEA = .085), and each of the factors contributed meaningfully to the overall Escalation Forces dimension.

Finally, the second-order Escalation factor model is presented in Figure 7. The major contributing variables to the Escalation factor were entrapment, commitment, and persistence. Fox & Staw (1979) claimed that the entrapment factor is a prerequisite to escalation. Decision making consistency was a relatively minor contributor to overall Escalation behavior. Staw (1976) as well as Staw & Ross (1980) argued for the importance of individual commitment in escalation situations, especially in connection with administrative leadership; administrators that remain committed to projects are more

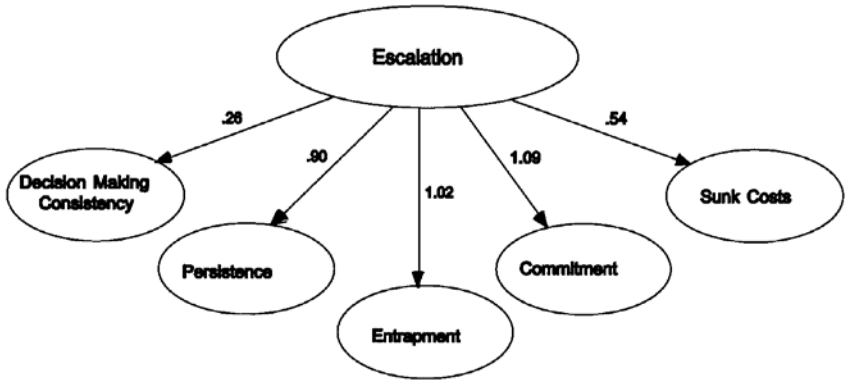

Figure 7. A second-order model of Escalation Be.

highly rated in terms of leadership ability than are administrators that change (Staw & Ross 1980).

The results from these measurement models indicate that the 'Bees' is dependable and appropriately assessing the 20 first-order factors, the four second-order dimensions, and all are contributing to the overall Escalation Forces factor. Further, the criterion dimension of Escalation behavior is dependable assessed by the five first-order factors.

THE STRUCTURAL MODELS

The first structural model represented the pattern developed by Staw & Ross (1989), and is depicted in Figure 1. In this model, labeled the 'Conceptual Escalation Model (Expected Model)', Project and Organizational Factors are expected to influence Social and Psychological Factors. In turn, the Social Forces are expected to influence Psychological Forces, which then influences the Escalation Factor. The goodness of fit indices (Table 2) are not acceptable, primarily because there were a number of free parameters that were not contributing to the model. The paths between Project and Social, and Project and Psychological were not statistically significant and were subsequently dropped from the model. The path between Social directly to Escalation was also not significant, and was deleted.

The message from the previous model is that the Project forces are not contributing to any other factor, and thus the final mediation model dropped the Project factor. The goodness of fit indices

TABLE 2
Goodness-of-fit indices for the various structural models

Model	df	Chi-square	p	GFI	AGFI	RMSEA
Expected	268	641.12	<.001	.788	.743	.076
Final Mediation	166	378.15	<.001	.847	.807	.073

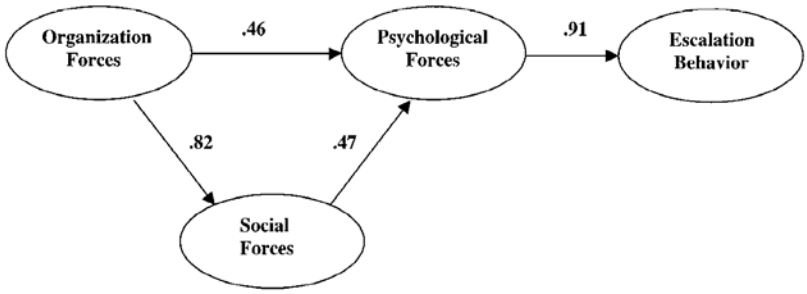

Figure 8. Final mediation model relating Escalation Forces to Escalation Behavior.

appreciably improved (b.χ 2 = 262.20, df = 114, p < .001). The standardized estimates from this mediation model are presented in Figure 8. All parameter estimates are statistically significant, and the final model has acceptable goodness of fit indices.
The Organizational forces directly influence the Social and Psychological forces, and seem to be precursors to subsequent Escalation behavior. Organizational forces such as politics,

communication between employees, the rules and values of the organization, and group resistance to change (i.e., inertia) affect individual decision- makers' tendencies to persist with failing investments (Clark 1972; Drummond 1994; Janis & Mann 1977; Ross & Staw 1993; Simonson & Staw 1992). As noted in the measurement model, all Organizational forces appear to be important, although communication and politics are most critical.

The Social factor has a direct influence on the Psychological forces and only an indirect and no direct influence on the Escalation factor (the modification indices were not significant for this direct path in the model). This places much emphasis on the Psychological factor as a critical determiner of Escalation behavior. The other forces are more important in influencing the Psychological Forces which then affects Escalation Behavior. The Psychological factor directly influences Escalation behavior. In this model all Psychological first-order factors contribute to the direct influence on Escalation. Individuals faced with failing projects experience threats to their competence and self-esteem (first- order Psychological factor), in the process becoming helpless and attempting to justify investment in the failing project. Ultimately, the final decision to escalate involves psychological processes aimed at coping with committed resources to a failing project. The individual becomes entrapped and remains persistent with the losing course of action, thereby escalating the behavior. The dominant force in Escalation behavior relates to the psychological aspects of the individual, although these are influenced by the Social and Organizational forces.

DISCUSSION

There are three major sources of evidence supporting the measurement procedure used in this study. First, the second-order factor models are all most defensible, with the factor loadings of meaningful value and the goodness-of-fit statistics indicating reasonable fit. This is most satisfying given that there are only three items per scale and, if necessary, the fit could be improved by including more items. We are reluctant to make this recommendation, however, as the instrument already is complex and time-consuming and further items could overtax the participants. Second, the estimates of reliability for the four forces and for the Escalation factor were most acceptable. Third, the measurement model underlying the four Forces provided reasonable fit. The factor loadings were typically high and the goodness of fit indices were reasonable. These significant relationships provide much support for the construct validity of the Staw & Ross (1989) escalation model with its project, social, organizational, and psychological forces of escalation behavior. These escalation antecedents have been observed in business environments (Drummond 1994; Ross & Staw 1986, 1993) as well as in simulated scenarios presented to business managers and to psychology/business students (Arkes & Blumer 1985; Staw & Ross 1980; Whyte 1993). The present study demonstrates that these escalation antecedents are present in the community college administrative decision-making environment.

Whereas previous escalation studies (e.g., Arkes & Blumer 1985; McCain 1986; Staw & Ross 1980) demonstrated escalation forces among business students and company managers, the presence of such forces in community college administrative decision- making is expected given the funding of community college programs based upon student enrollments and state government-mandated college performance measures (Levine 1997; Travis 1995). Administrators in community, technical, and other junior colleges increasingly must focus attention to regional business needs, student training for workforce development, government lobbying for college instructional funds, and proper dispensation of received funds in accordance with state laws (Pielstick 1998). Therefore, the functions of senior community

college administrators include critical management and financial decisions.

When the two structural models were tested, there was much comparative evidence to prefer the final Mediational model. This final mediational model was the most parsimonious of the two models, and was statistically superior. This model showed significant relationships from: (a) Organizational to Social, (b) Organizational to Psychological, (c) Social to Psychological, and (d) Psychological to Escalation. The most powerful predictors of Escalation behavior are the Psychological forces.

Organizational forces influence both Social and Psychological pressures to Escalate, and Social pressures directly influence Psychological forces which, in turn, influence individual approval of Escalation behavior. Therefore, it appears that organizational forces in the community college administrative environment pressure individuals to resist change and discourage the individuals from examining alternative courses of action (Social forces). Further, under these organizational and social influences, community college administrators influence psychological pressures to escalate commitments to failing courses of action. The strong psychological pressures include perceptions of competence and self-esteem, and especially helplessness plus self-justification. These psychological pressures may lead some community college administrators to escalate their persistence, entrapment, and commitment of resources to losing projects and sunk costs, thereby causing escalation behavior. The community college organizational culture (i.e., values, communication systems and policies) may pressure individuals to escalate, according to the mediational model. Furthermore, the social interactions (i.e., public/peer pressure, dominance structures) between individuals in the community college may constrain individuals from examining alternatives to failing projects. Together, these organizational and social pressures influence individual decision-making processes. Individuals are more likely to escalate when they feel pressured to stay with a course of action, even a failing course of action, because changing to alternatives might raise questions concerning the persons' competence by his/her colleagues. Furthermore, as the individual's self-esteem is threatened, he or she may become helpless and attempt to seek positive retrospective information in order to justify past decisions plus further adherence to these decisions. All of these psychological phenomena have been observed in escalation situations (Arkes & Blumer 1985; Drummond 1994; Fox & Staw 1979; Staw & Ross 1980; Staw & Ross 1989; Whyte 1993). The present study underlines the critical nature of these psychological forces.

The psychological forces acting upon the individual faced with a failing project with its organizational and social ramifications act as a powerful force to escalate. The individual escalates commitment of resources to the failing, sunk-cost project, and thus becomes entrapped and remains persistent with the commitment to the losing project (Fox & Staw 1979; Staw & Ross 1980). Therefore, Organizational, Social and especially Psychological pressures to Escalate commitment to losing courses of action appear to exist in the community college administrative environment.

Cohen & Brawer (1996) described the typical American community college as a political-bureaucratic entity. Authority structures, information flow, and resource management are tightly coupled with existing bureaucratic structures and to political coalitions in such institutions (Bess 1988; Birnbaum 1988). Community colleges as political-bureaucratic institutions thus are vulnerable to external pressures such as student-driven full-time equivalent (i.e., FTE) funding formulae from state and local governments, public and legislative demands for institutional accountability and increased efficiency with decreased

funding (Travis 1995). Community colleges face many of the financial and accountability pressures currently confronting most higher education institutions (Levine 1997). With such mounting pressures, community college administrators may have many opportunities to escalate commitments to failed projects and other losing courses of action.

Simonson & Staw (1992) argued that emphasizing organizational processes over outcomes was critical to de-escalation. The trend in higher education, and particularly in community colleges, is towards development of more outcome-based measures (i.e., program enrollments, strategic planning, quality improvement, corporate models, faculty merit pay) (Cohen & Brawer 1996; Travis 1995). Such outcome-based approaches could promote escalation behavior by inhibiting administrative decision-making flexibility and experimentation for fear of failure.

The development of a structural basis for understanding escalation behavior in general, plus its occurrence within higher education in particular, can be of critical importance to educational administrators confronting the internal and external pressures of the competitive, 1990's collegiate environment. Identifying the factors that trap administrators into failed actions can help college and university decision-makers to develop more efficient, people-friendly programs and services that emphasize process, not only outcomes. Such an approach can promote deep and profitable understandings between the people (i.e., students, faculty, administration, staff) who make American colleges and universities developmental learning communities.

From a higher education theoretical perspective, Illich (1977) has argued that Western educational systems self-justify their own existence and practices against the true educational needs of people. Such an argument is consistent with escalation behavior since Illich maintains that Western society is geared toward industrial mass production and consumption; educational systems produce workers for industry and technology.

While education is important for all people, it is possible that Western education has escalated in support of mass production when it should be focused upon the true learning needs of people to obtain the tools for having meaningful lives. American community colleges pride themselves in training people, regardless of prior educational backgrounds, to successfully enter the workforce (Cohen & Brawer 1996).

Thus, American community colleges offer people a chance to educationally improve their minds and to obtain the jobs they need to survive in an increasingly technological society. Community colleges meet people's needs. However, the increasing demands for institutional accountability in American higher education has led many community colleges to forge tighter linkages with business and industry in establishing educational curricula, events which reinforce Illich's (1977) arguments. Increasing pressures upon community college administrators to meet internal and especially external demands set the stage for escalation to happen.

The present study provides a structural basis for understanding escalation behavior. Future avenues of research into escalation behavior that can be developed from the present study include: (a) refinement of the escalation instrument per the final mediational escalation model, (b) further construct validation studies of the final mediational escalation model with other populations of college and school administrators, teachers, and other professionals who are directly involved in supervisory/planning activities, (c) examination of the uses for the

escalation model in administrative de-escalation awareness training, and (d) testing of possible interactions between escalation behavior and other psychological constructs (e.g., cognitive dissonance, conformity). Certainly, escalation interconnects with many behavioral constructs within the human experience, as evidenced by the present study and by a large body of literature (Staw & Ross 1989; Whyte 1993) devoted to the subject. The foregoing recommended studies could and should continue the exploration of escalation phenomena in the educational environment.

ACKNOWLEDGMENTS

We thank Sam Miller and Mary Olson for their contributions to this research

REFERENCES

Arkes, H.R. & Blumer, C. (1985), The psychology of sunk cost, Organizational Behavior and Human Decision Processes 35: 124–140.
Aronson, E. (1976), The Social Animal, 2nd ed. (San Francisco: Freeman).
Beauvois, J.-L., Joule, R.-V. & Brunetti, F. (1993), Cognitive rationalization and act rationalization in an escalation of commitment, Basic and Applied Social Psychology 14: 1–17.
Bentler, P.M. & Bonnet, D.G. (1980), Significance tests and goodness of fit in the analysis of covariance structures, Psychological Bulletin 88: 588–606.
Bess, J.L. (1988), Collegiality and Bureaucracy in the Modern University: The Influence of Information and Power on Decision-making Structures, (New York, NY: Teacher's College Press).
Beyer, J.M. & Trice, H.M. (1987), How an organization's rites reveal its culture, Organizational Dynamics 15(4): 5–24.
Birnbaum, R. (1988), How Colleges Work: The Cybernetics of Academic Organization and Leadership (San Francisco, CA: Jossey-Bass).
Bolman, L.G. & Deal, T.E. (1991), Reframing Organizations: Artistry, Choice and Leadership (San Francisco, CA: Jossey-Bass).
Brockner, J. (1986), Self-esteem at Work (Lexington, MA: Lexington Books). Brockner, J. (1992), The escalation of commitment to a failing course of action:
Toward theoretical progress, Academy of Management Review 17: 39–61. Brockner, J. & Rubin, J.Z. (1985), Entrapment in Escalating Conflicts (New York:
Springer-Verlag).
Browne, M.W. & Cudeck, R. (1993), Alternative ways of assessing model fit, in: K.A. Bollen & J.S. Long (eds), Testing Structural Equation Models (pp. 136–162). Newbury Park, CA: Sage.
Byrne, B.M. (1998), Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications and Programming (Mahwah, NJ: Lawrence Erlbaum Associates).
Clark, B.R. (1972), The organizational saga in higher education, Administrative Science Quarterly 17: 178–184.
Cohen, A.M. & Brawer, F.B. (1996), The American Community College, 3rd. ed. (San Francisco, CA: Jossey-Bass).
Conlon, E.J. & Parks, J.M. (1987), Information requests in the context of escalation, Journal of Applied Psychology 72: 344–350.
Crocker, L. & Algina, J. (1986), Introduction to Classical and Modern Test Theory (Fort Worth, TX: Harcourt Brace Jovanovich).

Drummond, H. (1994), Too little too late: A case study of escalation in decision-making, Organization Studies 15: 591–607.
Fassinger, R.E. (1987), Use of structural equation modeling in counseling psychology research, Journal of Counseling Psychology 34: 425–436.
Festinger, L. (1957), A Theory of Cognitive Dissonance (Stanford, CA: Stanford University Press).
Fox, R.V. & Staw, B.M. (1979), The trapped administrator: Effects of job insecurity and policy resistance upon commitment to a course of action. Administrative Science Quarterly 24: 449–471.
Goltz, S.M. (1993), Examining the joint rules of responsibility and reinforcement history in recommitment. Decision Sciences 24: 977-994.
Harvey, J.B. (1988), The Abilene Paradox and Other Meditations on Management (Lexington, MA: Lexington Books).
Hayduck, L.A. (1987), Structural Equation Modeling with LISREL: Essentials and Advances (Baltimore, MD: The Johns Hopkins University Press).
Hollar, D.W. (1997), Escalation Behavior in Higher Education: A Structural Equation Model, Unpublished doctoral dissertation, University of North Carolina at Greensboro, Greensboro, NC.
Illich, I. (1977), Toward a History of Needs (New York: Bantam Books).
Janis, I.L. and Mann, L. (1977), Decision Making: A Psychological Analysis of Conflict, Choice and Commitment (New York, NY: The Free Press).
Joreskog, K.G. & Sorbom, D. (1989), LISREL 7: A Guide to the Program and Applications, 2nd. ed. (Chicago, IL: SPSS, Inc).
Kahneman, D. & Tversky, A. (1979), Prospect theory: An analysis of decisions under risk, Econometrica 47(2): 263–291.
Levine, A. (1997), Higher education's new status as a mature industry, The Chronicle of Higher Education 43(21): A48.
Marsh, H.W., Balla, J.R., & McDonald, R.P. (1988), Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size, Psychological Bulletin 103: 391–410.
McCain, B.E. (1986), Continuing investment under conditions of failure: A laboratory study of the limits to escalation, Journal of Applied Psychology 71: 280–284.
Miller, D. & Chen, M.-J. (1994), Sources and consequences of competitive inertia: A study of the U.S. airline industry, Administrative Science Quarterly 39: 1–23. Perrow, C. (1979), Complex Organizations: A Critical Essay, 2nd ed. (Glenview, Illinois: Scott, Foresman and Company).
Pielstick, C.D. (1998), The transforming leader: A meta-ethnographic analysis, Community College Review 26(3): 15–34.
Rigdon, E.E. (1996), CFI versus RMSEA: A comparison of two fit indices for structural equation modeling, Structural Equation Modeling: A Multidisciplinary Journal 3: 369–379.
Ross, J. & Staw, B.M. (1986), Expo 86: An escalation prototype, Administrative Science Quarterly 31: 274–297.
Ross, J. & Staw, B.M. (1993), Organizational escalation and exit: Lessons from the Shoreham Nuclear Power Plant, Academy of Management Journal 36: 701– 732.
Simonson, I. & Staw, B.M. (1992), De-escalation strategies: A comparison of techniques for reducing commitment to losing courses of action, Journal of Applied Psychology 77: 418–426.
Staw, B.M. (1976), Knee-deep in the big muddy: A study of escalating commitment to a chosen course of action, Organizational Behavior and Human Performance 16: 27–44.
Staw, B.M. & Hoang, H. (1995), Sunk costs in the NBA: Why draft order affects playing time and survival in professional basketball, Administrative Science Quarterly 40: 474–494.

Staw, B.M. & Ross, J. (1980), Commitment in an experimenting society: A study of the attribution of leadership from administrative scenarios, Journal of Applied Psychology 65: 249–260.
Staw, B.M. & Ross, J. (1989), Understanding behavior in escalation situations, Science 246: 216–220.
Steiger, J.H., & Lind, J.M. (1980), Statistically Based Tests for the Number of Common Factors. Paper presented at the Psychometrika Society Meeting, Iowa City.
Travis, J.E. (1995), Rebuilding the community: The future for the community college, Community College Review 23: 57–71.
Tversky, A. & Kahneman, D. (1981), The framing of decisions and the psychology of choice, Science 211: 453–458.
Whyte, G. (1993), Escalating commitment in individual and group decision making: A prospect theory approach, Organizational Behavior and Human Decision Processes 54: 430–455.

Address for correspondence: David W. Hollar, Rockingham Community College, PO Box 38, Wentworth, North Carolina 27375, USA
Phone (336) 342-4261 x 176; E-mail: hollard@rcc.cc.nc.us