COMMITMENT TO CHANGE IN PHARMACY SCHOOLS:

DOES LEADERSHIP MATTER?

Except where reference is made to the work of others, the work described in this dissertation is my own or was done in collaboration with my advisory committee. This does not include proprietary or classified information.

_____

Mohammad Waheedi

Certificate of Approval:

_____	_____
Kenneth N. Barker Professor Pharmacy Care Systems	Bruce A. Berger, Chair Professor Pharmacy Care Systems
_____	_____
Bill G. Felkey Professor Pharmacy Care Systems	Anthony J. Guarino Associate Professor Educational Foundations, Leadership, and Technology
_____	_____
Stanley G. Harris Professor Management	Kem P. Krueger Associate Professor Pharmacy Care Systems

_____

Stephen L. McFarland
Dean
Graduate School

COMMITMENT TO CHANGE IN PHARMACY SCHOOLS:

DOES LEADERSHIP MATTER?

Mohammad Waheedi

A Dissertation

Submitted to

the Graduate Faculty of

Auburn University

in Partial Fulfillment of the

Requirements for the

Degree of

Doctor of Philosophy

Auburn, Alabama
December 16, 2005

COMMITMENT TO CHANGE IN PHARMACY SCHOOLS:

DOES LEADERSHIP MATTER?

Mohammad Waheedi

_____
Signature of Author

_____
Date

DISSERTATION ABSTRACT

COMMITMENT TO CHANGE IN PHARMACY SCHOOLS:

DOES LEADERSHIP MATTER?

Mohammad Waheedi

Doctor of Philosophy, December 16, 2005
(M.S., Auburn University, Alabama 2002)
(B.S. in Pharmacy, University of Toledo, Ohio, 1997)

207 Typed Pages

Directed by Bruce A. Berger

The challenges of achieving the new vision in pharmacy education have been cited as an important reason for advocating transformational leadership as the kind of educational leadership that is required to assist the pharmacy profession in creating a patient centered practice. Based upon Bass's transformational, transactional, and laissez-faire model of leadership, change leader behaviors and follower involvement in the change were hypothesized to determine followers' commitment to organizational change and commitment outcomes. A total of 190 faculty members in 24 US pharmacy schools undergoing substantive changes participated in this study. Results from structural equation modeling analysis revealed that faculty members' recognition of the value of the change (affective commitment) and their sense of duty in supporting the change

(normative commitment) were best predicted by their level of involvement in the change (participation in decision making, communication, and freedom to express doubts), rather than by the transformational behaviors of the change leader. Transactional contingent reward behaviors strongly predicted change involvement, and indirectly predicted affective and normative commitments. In addition, affective commitment was diminished by avoidant behaviors of the change leader (failure to intervene when problems become serious), and normative commitment was diminished by the leader's active management by exception behaviors (monitoring subordinates' failures). Faculty members' behavioral support of the change had strong positive associations with both their affective and normative commitments. Implications of these results for research and practice are also discussed.

ACKNOWLEDGEMENTS

I want to thank the faculty members who served on this dissertation committee for their support, conversations, and insights. In particular, to Dr. Bruce A. Berger, many thanks for his guidance not only through the dissertation process, but also through my spiritual journey. He provided spiritual and emotional support when it was needed the most. I am indebted to him for leaving graduate school a better person. Thank you to Dr. Kenneth N. Barker, who started me on this process as my advisor, who believed in me despite all the troubles I had earlier in my graduate work, and set me on the right course. To Mr. Bill G. Felkey, thank you for your generosity and your continuous offering of help, whenever and in whatever I or my family needed. To Dr. Kem P. Krueger, thank you for your presence and for providing the role model for what a teacher and colleague should be. To Dr. Stanley G. Harris, thank you for opening the doors to me at the Department of Management, and serving as a patient and caring advisor to me on the topic, despite your profound expertise and my novice enthusiasm. To Dr. Anthony J. Guarino, thank you for proving ($p = 0.000$) to me that genius and coolness can mix.

Beside my dissertation committee members, this work would not have been completed without the help of Dean Lee Evans. Thank you for the enjoyable and useful conversations and thank you for taking the risks so I did what I needed to do.

For the staff of the Department of Pharmacy Care Systems, thank you to Tammy Hollis for the encouragement and the readiness to tackle any logistic problem I was faced with. Thank you to Bobbi Gistarb for the assistance and support.

Thank you to the graduate students for their friendship, kind words, and encouragement.

And finally, but most importantly, thank you to my family: Rabab, Hasan, and Hussein, who have shared their life with this project and supported me to pursue my desire to complete this work. I can imagine what you have been through living with a person that reads and study continuously. I hope I can offer you the same kind of support in return.

Style manual or journal used: Publication Manual of the American Psychological Association Fifth edition.

Computer software used: MS Word, MS Excel, MS FrontPage, MS Access, Javascript, Endnotes, SPSS 12, AMOS 5.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

1.1. Background and Motivation

Since the early 1990s, extensive changes have taken place in pharmacy education in the United States in order to facilitate the adoption of the profession's new model of practice, pharmaceutical care. Unlike the traditional pharmacy practice model, which is mainly concerned with fulfilling physicians' orders (known as the drug distribution model), the pharmaceutical care model aims at achieving definite positive outcomes for drug therapy. To prepare pharmacy graduates for this new practice model, pharmacy schools have been undergoing fundamental changes in their curricula, students' and teachers' roles, and learning strategies. For example, curricula have been revised to include clinical training and programs have changed from five year bachelors of science to six year doctorate of pharmacy degrees. Problem-based learning methods have taken the place of traditional lectures in some courses.

The principal investigator conducted an organizational diagnosis exercise in a school of pharmacy that had just gone through such a reorganization. Organizational diagnosis is used to evaluate the functioning of an organization, or some aspects of the organization, in order to arrive at the causes of the problems and identify areas of potential improvement (Cummings & Worley, 1997). The faculty members and the staff at the school of pharmacy were asked to describe the school's strengths and weaknesses, and to provide their recommendations for improving the programs of the school.

The majority of the responses focused on the changes that had just taken place and the role of the school's administration regarding these changes. The findings indicated that while many of the respondents accepted the recent changes, others harbored concerns over them. While some respondents praised the new "vision of the dean" and the "willingness to try innovative approaches to education," others criticized the change as being "too much," "too quickly," and thought that the changes had been implemented inflexibly without considering the school's resources. In several instances, criticisms were directed specifically at the dean. For example, one faculty member described the dean as "ramrodding his own agenda through faculty and student groups" (Waheedi & Armenakis, 2003).

In view of these findings, it was useful to examine the causes of this variability in the reactions of the faculty to these changes, and since the dean was the initiator of the changes in the school, to also ask whether the behavior of a change leader effects his or her subordinates' reaction.

Within the organizational sciences, leadership behavior is taken to be a central factor in explaining processes and outcomes of change in organizations; however it is only one of several classes of variables. One of the prominent frameworks commonly used to understand organizational change was provided by Pettigrew (1987), and this model has been adopted by scholars in the organizational change literature (e.g., Armenakis & Bedeian, 1999; Pettigrew, Woodman, & Cameron, 2001). This framework views organizational change as being made up of interactions of context variables, content variables and process variables. The context variables can be either internal or external to the organization and include answers to the question of the change

justification, the "why" of change. Examples of internal context variables in the pharmacy academic sitting may include forces that exist within the school such as the availability of resources, technology or specialists that permit the change to occur. Examples of external context variables are accrediting agencies mandating the change or competitive pressures from other schools. The content variables include the attributes of the change itself and provide answers to the "what" of change. Examples of differences in content can include alternative strategies used by the school, administrative structures, tasks, or reward systems.

This scope of this study is limited to the third group of variables in this framework, the process variables. These variables can be summarized by the actions, reactions, and interactions occurring during the planning and implementation of the organizational change. The variables provide the answers to the questions concerning the "how" of change. Although some of the changes in pharmacy schools have been necessitated by context variables such as the new requirements for licensing pharmacists, the choice lies in how to implement the change. The process can be undertaken with or without adequate involvement of the faculty and in the presence or absence of certain leader behaviors. The faculty members' reaction can vary accordingly, as shown by the exploratory study described above, and may take different forms, such as resistance, compliance or commitment.

Among the process variables, change leader behaviors or attributes are considered a major factor. Specifically, the role of transformational leadership in affecting change was highlighted first by the writings of Bass (1985), Bennis & Nanus (1985), and Tichy & Ulrich (1984). Since then, the business press has assimilated these concepts into the

main stream until it has now spread as far as the pharmacy literature. In July 2003, the American Association of Colleges of Pharmacy (AACP) president stated, "as an organization, AACP has come to recognize that transformational leadership of the kind seldom seen in professional life is required of us if we are to achieve our vision in pharmacy education and if we are to assist our profession and other health professionals in creating a truly patient centered, seamless and safe, outcomes focused health care system" (Wells, 2003).

Searching the pharmacy literature on the topics of change and leadership, AACP appears to have provided the driving force for change in pharmacy schools through the publication of the report on The Commission to Implement Change in Pharmacy Education (1993). Many of the changes implemented in the last 10 years in pharmacy schools were a result of the recommendations of the Commission papers (Yanchick, 2005). The AACP has also focused on leadership and leadership development, especially of new and future deans, which has been a characteristic of the organization for years (Lin et al., 2003). The 2002 AACP annual meeting focused on leadership and leadership development through its general and special sessions, while the 2003 meeting also contained similar programming. However, although the association is clearly focused on leadership for the purpose of achieving changes in pharmacy academia, an evaluation of such an approach is lacking.

In addition to leader behavior, several scholars of organizational change argue for the involvement of subordinates as a main process ingredient to facilitate positive employee reaction to the change (e.g., Conner & Patterson, 1982; Klein, 1996; Armenakis, Harris, & Mossholder, 1993; Coetsee, 1999; Wanberg & Banas, 2000;

Lovelace, Shapiro, & Weingart, 2001). Accordingly, this study includes the following elements of involvement from these scholars: allowing for participation in decision making, sharing information about the change and allowing for adequate level of freedom of expression of doubts. These process variables are tested within the theoretical frame of this study.

1.2. Problem Statement

In recent years, schools of pharmacy in the United States have experienced fundamental changes in their curricula, students' and teachers' roles, and learning strategies in pursuit of achieving the new vision of pharmacy, pharmaceutical care. The American Association of Colleges of Pharmacy (AACP) acknowledges the difficulties facing leaders and strongly advocates leadership development as an approach for realizing the new vision, especially with regard to deans and future deans (Lin et al., 2003). Nevertheless, there has been no pharmacy research that investigates the relationship between leadership behaviors and followers' response to change. The literature on organizational change recognizes the importance of leadership; however, it also considers the involvement of followers in the change decision as a main determinant of their commitment. This study poses the following question: what are the effects of a change leader's behaviors and the involvement of subordinates in the change on their commitment to organizational change. Figure 1 provides a general depiction of the constructs of the study and their hypothesized relationships.

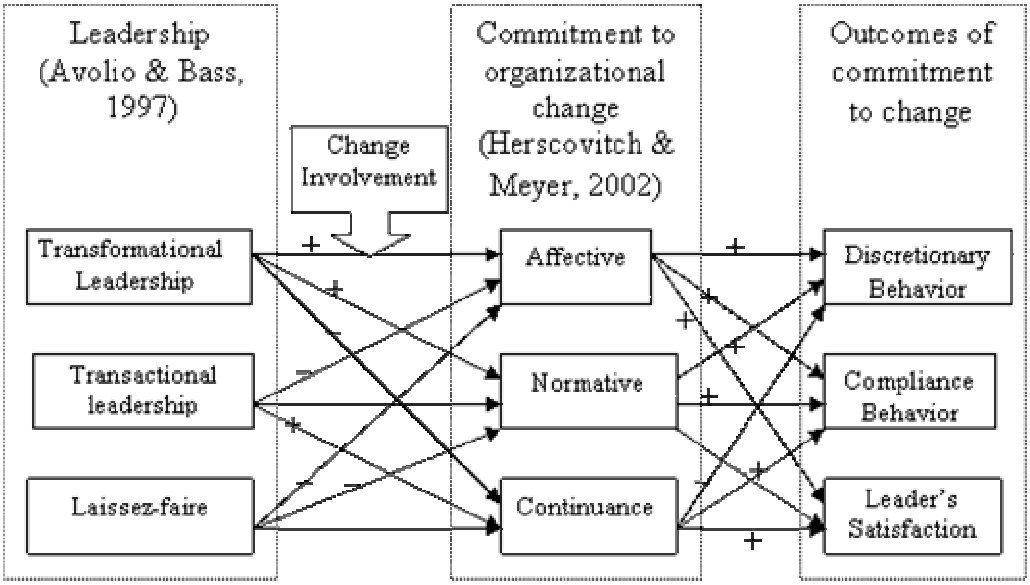


Figure 1: Study Constructs and their Interrelationships

1.3. Significance

The study has implications for future practice, research, and theory. For practice, this research provides evidence on the causes of commitment to change in pharmacy schools and should thus help AACP member schools decide whether to pursue the development of leadership, establish a formal participative system, and/or work on communication strategies to help them achieve high levels of commitment to change. Leadership development programs can benefit by the incorporating the behaviors identified in this study as important to enhance a leader's competency within change implementation. Schools that are in the process of recruiting a person to a leadership position can use those attributes and behaviors as part of their selection criteria. Also, based on the results of the study, schools of pharmacy could adopt better methods for involving faculty in the decision and implementation of change.

For research, future work can refine the concepts and methods used to better fit them to the context of pharmacy education. The research can also be extended to issues of leadership and change among pharmacists in their practice setting.

Finally, for theory, this research began to explore a gap in the change management literature by connecting the different aspects of leadership, change involvement, and how they relate to commitment to organizational change and, in turn, to the degree of change success.

1.4. Summary of Methods

The population of this study was composed of all the faculty members at accredited schools of pharmacy in the United States. The study involved three phases:

Phase 1: Identifying a Change and a Change Leader

The purpose of the exploratory phase was to identify the changes that have occurred in each school and to identify the change leader linked to it. The type of change of interest for this study was one that can be classified by the Accreditation Council for Pharmacy Education (ACPE) as "substantive change," which is defined as "any change in the established mission or goals of the institution; the addition or deletion of courses, pathways or programs that represent a significant departure in either content or method of delivery, from those that were offered during the program's previous accreditation cycle (e.g., a non-traditional doctor of pharmacy program, development of a joint delivery of program agreement, etc.)… and any other changes that the Dean feels require notification of ACPE" (American Council on Pharmaceutical Education, 1993, p.2). An Internet survey containing a list of potential changes was sent to faculty members of the AACP members' schools.

The faculty members were asked whether the changes included in the list occurred in the last 3 years, whether they were completed or still ongoing, and which were of concern to them personally or would have an effect on the way they did their job. Also, for each change they were asked to provide the name of the main change leader. In addition, an open ended question was included to offer an opportunity for respondents to list any other changes that were not included in the list. The responses from this exploratory phase were analyzed to identify one change and a change leader for each school.

Phase 2: Getting Change Leaders' Consent, Validating Faculty Responses, and Measuring Leaders' Satisfaction with the Change

The second phase was directed to the change leader identified in each school in the first phase. A short Internet survey was sent with two purposes. The first was to obtain change leaders' consent to sending the phase 3 survey to the faculty members at their schools. The second purpose was to collect data from the change leader to validate the faculty members' identification of the change and the change leader and to measure leaders' satisfaction with what had been accomplished from the change initiative. This survey also had an optional open-ended question designed to collect additional information.

Phase 3: Determining the Interrelations among the Study's Variables

The specific change for each school, with the change leader's name, was included in an e-mail message for the faculty from that school, who were asked to fill out the phase 3 Internet survey. This survey contained items aimed to measure (1) types and strengths of faculty commitment to organizational change, (2) their behavioral support of

the change, (3) their perceptions of the change leader behaviors, (4) their perception of the extent of their involvement in the change (extent of participation in the decision making, of communication, and of the freedom allowed to express their doubts about the change), and (5) their demographics. Structural equations modeling (SEM) were used as the main analytical tool to test the hypotheses of the study.

2. REVIEW OF THE LITERATURE

This chapter presents a literature review related to the research problem addressed by this study. As the problem centers on change, commitment to change and the effect of leadership, this chapter reviews the organizational change literature with a focus on these topics. It consists of three sections: the first section describes previous work that attempted to measure and understand people's commitment to organizational change, the second section describes a summary of transformational leadership theory as it relates to organizational change and, finally, the third section presents the concept of individuals' involvement in the change, which is theorized by several organizational change models to be a main antecedent of commitment to change. The hypotheses investigated by this dissertation are developed and stated as the relevant literature and arguments are described.

2.1. Commitment to Organizational Change

The emergence of the concept of commitment to organizational change is a result of more than 50 years of development within theories of organizational change. Kurt Lewin's (1951) change model is considered one of the earliest influences on planned change theory (Cummings & Worley, 1997). Using analogies from the physical sciences, Lewin proposed that at any moment behavior is the result of two opposing forces: those that push for change and those striving to maintain the status quo. For change to occur, one must increase the forces for change (e.g., increasing supervisory pressure), decrease

the forces against it (e.g., change performance norms among subordinates), or implement a combination of both. Lewin suggested that modification of the forces against change is more beneficial because it leads to less tension and less resistance.

This conceptualization of organizational change became an important framework on which scholars and practitioners have based their models and analyses. Dent and Goldberg (1999) made the observation that resistance, one of the earliest concepts describing employee reaction to change, is considered to have originated from this framework. They also noted that Lewin's notion of resistance was a system phenomenon, and hence it did not necessarily describe an individual psychological reaction. For many years, employee resistance to change was the focus of organizational change publications (e.g., Coch & French, 1948; Zander, 1950; Lawrence, 1969; Strebel, 1996) and resistance became a standard part of management vocabulary, as seen in almost all management textbooks (Dent & Goldberg, 1999).

Although resistance as an employee reaction has been widely studied, the concept suffers from being only weakly defined. In a review of past literature, Piderit (2000) noted that resistance, as an individual phenomenon, has been conceptualized and operationalized in several different ways: sometimes as a behavior, other times as a cognitive state or as an emotional state.

In contrast, the concept of commitment to change is a useful alternative to resistance. Commitment is considered one of the main variables in theoretical models for organizational change and of effective innovation implementation in the workplace (Armenakis, Harris, & Field, 2001; Klein & Sorra, 1996). Herscovitch and Meyer (2002) noted that “commitment is arguably one of the most important factors involved in

employees' support for change initiatives," (p. 474) but despite its importance, no one before them had conducted empirical work for its definition and measurement.

In three studies, Herscovitch and Meyer (2002) provided a new conceptualization of commitment to organizational change, constructed scales for measurements and provided empirical support for the validity of the scales. They conducted the studies in order to test the application of the three components model of workplace commitment (Meyer & Allen, 1984; Allen and Miller, 1990) in the context of employee commitment to organizational change. Allen and Meyer's (1990) model defines commitment to the organization as "a psychological state that binds the individual to the organization" (p.14) which is composed of an affective dimension characterized by emotional attachment to the organization, a normative dimension marked by feeling of obligation, and a continuance dimension that reflects a person's awareness that there are costs associated with leaving the organization. Numerous studies have been conducted to examine this model with confirmatory of results including the predictions of different types of behaviors for affective, normative, and continuance commitment (For example, for a meta analysis see Meyer, Stanley, Herscovitch, & Topolnytsky, 2002)

Herscovitch and Meyer (2002) adapted this conceptualization of commitment to the context of organizational change. They defined the three components as:

a) Affective commitment to organizational change, defined as "a desire to provide support for the change based on a belief in its inherent benefits" (p. 475).

b) Continuance commitment to organizational change, defined as "recognition that there are costs associated with failure to provide support for the change" (p. 475).

c) Normative commitment to organizational change, defined as "a sense of obligation to provide support for the change" (p. 475).

In their validation studies of the commitment to organizational change instrument, they measured organizational commitment and also measured behavioral support for change. They found that commitment to change goes beyond the components of organizational commitment in predicting employees' behavioral support for change. Further, they found compliance behavior to be correlated positively with all three dimensions, but cooperation and championing (discretionary) behavior correlated positively only with the affective and normative dimensions.

This differential effect of the dimensions on outcomes is consistent with previous research, though in the context of organizational commitment. A research study examining the relationship between organizational commitment and three measures of managerial performance found performance to be positively correlated with affective commitment, but found it to be negatively correlated with continuance commitment (Meyer, Paunonen, Gellatly, Goffin, & et al., 1989). The authors concluded that when it comes to organizational commitment, it is the type (affective versus continuance) of commitment that matters the most.

The findings from the previous two studies suggest that different types of commitments produce different effects. Pharmacy school faculty members who are committed to the change because they want to change (affective or normative commitment) are expected to demonstrate more supporting behaviors towards the change than those who are committed because they are obligated to do so (continuance commitment). Therefore the following hypotheses are proposed:

H1: A faculty member's affective commitment to organizational change is positively associated with both compliance behavior and discretionary behavior related to the change.

H2: A faculty member's normative commitment to organizational change is positively associated with both compliance behavior and discretionary behavior related to the change.

H3: A faculty member's continuance commitment to organizational change is positively associated with compliance behavior but negatively associated with discretionary behavior related to the change.

As with their expected effects on behaviors, the three components of commitment are also expected to have an effect on the extent of realization or achievement of the change initiative. The higher the affective, normative, and continuance commitment the more likely the initiative is to be successfully implemented. One way to monitor this is by measuring the level of satisfaction a change leader has with the implementation. Although different dimensions of commitment are expected to affect faculty behavioral support differently, exhibiting higher commitment levels to change, regardless of the dimension, is expected to increase the likelihood of achieving the change initiative, as perceived by the change leader. Therefore, the following hypothesis:

H4: A faculty member's commitment to organizational change is positively associated with a change leader's satisfaction with what was accomplished from the change.

2.3 The Transformational Leadership Theory

The study of leadership has been examined from many different perspectives. It took 1182 pages for Bass and Stogdill's Handbook of Leadership (1990) to provide a full review of leadership theory and research, while it took a 65-page journal article for House and Aditya (1997) to only provide a "brief overview of the research paradigms that have been most prominent in the leadership literature" (p.410). Covering such vast literature would entail going beyond the scope of this chapter, however, it is important to emphasize that this study should not be concerned with theories of leadership per se, but rather theories of change-oriented leadership. For this reason, the study adopts Bass's (1985) transformational, transactional, and laissez-faire leadership model over other models of leadership.

Among the different approaches to the study of leadership, only transformational leadership (or its subsumed charisma factor) exclusively focuses on leadership as it relates specifically to organizational change. Since the mid 1980s, a body of theoretical work has been developing on the role of transformational leadership in affecting change (e.g., Bass 1985, Bennis & Nanus, 1985, and Tichy & Ulrich, 1984). This model has been suggested more than any other leadership model to link leadership behavior to organizational change, and within the pharmacy literature, it has been advocated as the kind of educational leadership that is required to achieve the new vision of pharmacy (Wells, 2003). Transformational leadership has been defined as "the process of influencing major changes in the attitudes and assumptions of organization members and building commitment for the organization's mission or objectives" (Yukl, 1989, p. 204). Other dominant theories of leadership refer mainly to a dyadic relationship between

supervisors and subordinates in their day-to-day activity (e.g., how formally appointed superiors affect subordinates' motivation and satisfaction), but not necessarily concerned with leaderships as it relates to change or specifically how leaders affect change in people (House, 1996).

Therefore, because of its relevance to organizational change, the transformational leadership model developed by Bass and Avolio (Bass, 1985; Avolio & Bass, 2002) was adopted for this study. The model, as operationalized by the Multi-factor Leadership Questionnaire (MLQ), encompasses descriptions of three groups of leaders' behaviors: transactional leadership, transformational leadership, and laissez-faire or non-leadership. An important distinction needs to be made here between this model and what has been referred to as leadership styles (House & Aditya, 1997). The categories of behaviors within the transformational and transactional leadership are independent of the leadership style, i.e., the manner in which the leader's behaviors are expressed, such as autocratic or consultative style. For example, the same transformational leader behavior can be expressed autocratically, consultatively, or democratically.

In relation to organizational change, Nadler and Tushman (1990) noted that various discussions of leadership in the context of organizational change led to:

> A picture of the special kind of leadership that appears to be critical during times of strategic organizational change. While various words have been used to portray this type of leadership [e.g., transformational], we prefer a label charismatic leader. It refers to a special quality that enables the leader to mobilize and sustain activity within an organization through specific personal actions combined with perceived personal characteristics (p. 82).

To be effective in organizational change, leaders need more than charisma; they must also demonstrate transactional behaviors, such as clarifying goals, setting up performance measures and applying rewards and punishments (Nadler & Tushman, 1990).

Transactional leadership is strongly related to the concept of exchange between a leader and subordinates, which has its roots in the theory of social exchange (Blau, 1964). It has similar variables to those used in the Leader Member Exchange (LMX) theory (Dansereau, Graen, & Haga, 1975). The concepts of transformational leadership as it relates to organizations can be traced back to Weber's (1947) introduction of the concept of charisma. He defined charisma as legitimacy that is derived from a leader's exceptional powers or qualities, as opposed to traditions, rules, positions or laws. Not until the mid-seventies, however, did a clear theory of transformational leadership emerge. House (1977) speculated that personality traits such as self-confidence, motivation to attain and practice influence, and strong conviction in the moral correctness of his beliefs characterize an effective charismatic leader. Burns (1978), qualitatively analyzed leadership cases to make a distinction between transformational and transactional leadership. He wrote:

> The relations of most leaders and followers are transactional -- leaders approach followers with an eye to exchanging one thing for another: jobs for votes, or subsidies for campaign contributions… Transforming leadership, while more complex, is more potent. The transforming leader recognizes and exploits the existing need or demand of a potential follower. But, beyond that, the transforming leader looks for potential motives in followers, seeks to justify

> higher needs, and engages the full person of the follower. The result of transforming leadership is a relationship of mutual stimulation and elevation that converts followers into leaders and may convert leaders into moral agents (p.4).

Bass (1985) developed items describing leaders' behaviors in order to operationalize Burns' theory. In military and industrial settings, he measured subordinates ratings of their superiors on specific behaviors derived from Burns' definitions of transformational and transactional leadership. Five factors emerged, two of which (contingent rewards and management by exception) were judged to be transactional, and three transformational. Later work (Bass & Avolio, 1994) separated one of the transformational factors into two and thus obtained four factors characterizing transformational leadership behaviors (idealized influence or charisma, inspirational motivation, intellectual stimulation and individualized consideration).

A few years later, Conger noted that the impact of this conceptualization and operationalization of leadership through the Multi-Factor Leadership Questionnaire (MLQ) has received more attention in the leadership literature than any other contribution (Conger, 1999).

In relation to employees' commitment to organizational change, since the scale of commitment to organizational change was developed, no study has examined the effect of leadership on the scale variables. An empirical study examined the effect of transformational leadership on commitment to change, but conceptualized commitment to change differently, as a composite of personal goals, capacity beliefs and context beliefs (Yu, Leithwood, & Jantzi, 2002). Although they found a significant effect for

transformational leadership on commitment to organizational change, commitment was conceptualized and operationalized differently from the usage here.

Other measures of employees' outcomes, including organizational commitment, established the effect of leadership. For instance, Reichers (1986) carried out a study to measure the commitment of health professionals to several constituencies within and outside of the organization (e.g., manager, customer, organization). Among them, only commitment to top management's goals and values was significantly correlated with organizational commitment.

In another study, Becker (1992) examined whether commitments to several constituencies (e.g., top management, supervisors and work groups) contributed beyond organizational commitment to three outcome measures. The study found that employees' commitment to top managers contributed significantly more than commitment to the organization. Another study compared the effect of commitment to the supervisor or to the organization on the employees' performance, as measured by supervisors' ratings. Again, commitment to supervisors and their values was more strongly related to performance ratings than was commitment to the organization (Becker, Billings, Eveleth, & Gilbert, 1996).

These findings suggest that organizational commitment is consistently correlated with employee performance outcomes, and that top management may have a significant and unique effect on both organizational commitment and performance outcomes. Commitment to organizational change, then, is expected to be highly affected by top management, and hence leadership. Therefore, the concept of leadership is included as the main antecedent to commitment to change in this study.

2.3.1. Transactional Leadership

According to Bass (1985), transactional leaders prefer operating within the existing system or culture, tend to avoid risk and rely on organizational rewards and punishments to motivate employee performance. He describes transactional leaders as cost-benefit oriented, where they concentrate on rewarding efforts appropriately and ensure that behaviors confirm to expectations (Bass & Avolio, 1994).

Transactional leadership behaviors include three factors in the Multi-Factor Leadership Questionnaire (MLQ). The first factor is contingent reward, which refers to an exchange agreement between leader and follower: "You do this, and you will receive this in return." The other two factors are active and passive management by exception. These are corrective leadership behavior, where in the active form the leader actively monitors subordinates' performance and corrects any deviations. In the passive form, the leader does not monitor, but waits for mistakes to happen and then takes action.

Avolio and Bass (2002) argued that contingent reward is reasonably effective, though not as effective as the transformational components in motivating others to achieve higher performance levels. They also argued that management by exception tends to be ineffective, but in certain situations it may be needed. In a meta-analytic review of the literature on the MLQ instrument, Lowe and Galen Kroeck (1996) found the contingent reward aspect of transactional leadership to be positively correlated with subordinates' perceptions of effectiveness. Management by exception was found to be weakly correlated with effectiveness, and was negatively correlated when found to be statistically significant.

In relation to employee response to change initiatives, a study of leadership effect on Total Quality Management (TQM) behaviors and policies suggested that management by exception leadership behaviors are likely to result in a reluctance on the part of followers to take risks associated with change efforts or other improvement initiatives (Sosik & Dionne, 1997). Therefore, one would expect that the more frequently a change leader practices transactional leadership (especially management by exception), the less likely the faculty members are to subscribe to the change goals, resulting in adverse effects on their affective and normative commitments to organizational change.

Continuance commitment, on the other hand, is developed when the perceived cost of not following directions is high, and there is no alternative to individuals other than complying (Meyer & Herscovitch, 2001). Faculty members can still be engaged with the change implementation, not because they want to, but because they have to. In this situation, transactional leadership is expected to be associated with higher levels of the continuance commitment to organizational change. In view of the above discussion, the following hypothesis can be proposed:

> H5: Transactional leadership on the part of a change leader will be negatively associated with the affective and normative dimensions of commitment to organizational change, but will be positively associated with the continuance dimension of commitment to organizational change.

2.3.2. Transformational Leadership

Transformational leaders transform followers' thoughts and attitudes so that they become motivated to perform beyond normal expectations. They help followers buy in to their vision and make every effort to accomplish it. The category of theory this

transformational leadership belongs to has been referred to the as "neocharismatic theory" (House & Aditya, 1997), or "the new leadership theories" (Bryman, 1993). House and Aditya (1997) describes four common characteristics among these theories. First, they all attempt to explain the accomplishment of outstanding performance by leaders. Second, they attempt to explain how certain leaders can induce high levels of motivation, trust and commitment among followers. Third, they emphasize the symbolic or emotional aspects of the appeal used by certain leaders. Fourth, they specify the effects on followers as increased self-esteem, motivation and identification with the leader's vision.

How do they accomplish such effects? To better understand this, Bass (1985) developed items describing leaders' behaviors, subjected them to testing, and came up with three factors, later expanded to four factors, that characterized the behaviors and attributes of transformational leaders (Bass & Avolio, 1994). The four factors are:

1. Charisma or idealized influence. This refers to the role modeling behaviors that gain admiration and trust. For example, making personal sacrifices for others, going beyond self-interest for the good of the group, remaining calm amidst crisis, displaying competence and being respected by subordinates.

2. Inspirational leadership. This refers to a leader's behavior such as articulating attractive future state that result in creating a sense of meaning and challenge in the associates.

3. Intellectual stimulation. This includes behaviors such as questioning assumptions, reframing problems and approaching them with a fresh perspective. Also

included are behaviors that support followers' participation and creativity in problem-solving.

4. Individualized consideration. These behaviors include coaching and mentoring to fulfill individual's need for growth, and paying attention to and accepting differences in individual's needs and adjusting the support behavior accordingly.

These behaviors are expected to induce commitment to the leader's vision and generate extra effort and satisfaction among subordinates (Avolio & Bass, 2002).

Empirical evidence generally supports the effects of transformational leadership on a variety of performance measures in organizations. A meta-analysis of studies that used the MLQ found transformational leadership to be reliable and a good predictor of work unit effectiveness in 39 studies (Lowe & Galen Kroeck, 1996). A recent study by Waldman and others (2001) examined transformational and transactional leadership at the CEO level in 48 Fortune 500 companies, and found companies' outcomes to depend on a CEOs charismatic leadership. Transformational leaders greatly influence all aspects of the organizational cultures they operate in (Carlson & Pamela, 1995), an indication of their potential influence on employees' commitment to change.

It has been suggested that regardless of the commitment target (e.g., organization, career, occupation, organizational change), basic processes are involved in the development of affective, continuance and normative commitment (Meyer & Herscovitch, 2001). Affective commitment is developed when a) involvement strategies are used, b) recognition of the value occurs, c) individuals derive identity from the target and d) associate with it. Continuance commitment is developed when there is no alternative other than the target. Normative commitment is developed when individuals

receive benefits that make them need to reciprocate. If these mechanisms of commitment formation are applicable to the context of organizational change, it is plausible to expect transformational leadership to have positive effects on affective and normative commitment and negative effect on continuance commitment.

Yu, Leithwood and Jantzi (2002) studied the effect of transformational leadership on teachers' commitment to change in Hong Kong primary schools. They conceptualized commitment to change as a composite of personal goals, capacity beliefs and context beliefs, which are more related to the affective and normative than the continuance dimension. They found a significant effect of transformational leadership on commitment to organizational change.

Since transformational leaders by definition build bonds through individualized consideration and idealized influence and work toward a shared vision of the future through inspirational motivation and intellectual stimulation, subordinates may experience higher affective and normative commitment to organizational change. Since threats and punishment and other forms of coercion are not within transformational leadership behaviors, followers are also expected to have lower levels of continuance commitment to change (i.e. they do not feel that they have to comply). This leads to the following hypothesis:

> H6: Transformational leadership on the part of a change leader will be positively associated with the affective and normative dimensions of commitment to organizational change, but negatively associated with the continuance dimension of commitment to organizational change.

2.3.3. Laissez-faire

The MLQ also measures laissez-faire leadership, which is actually the set of behavioral characteristics of non-leadership. These behaviors are characterized by an avoidance of important issues, absence when involvement is needed and avoidance of decision-making. Avolio and Bass (2002) considered this as the most ineffective leadership style.

In a change involving the implementation of TQM, Sosik and Dionne (1997) noted that change requires socio-emotional support from leaders to encourage subordinates to seek out new opportunities to improve the status quo, and laissez-faire leadership is incompatible with the leadership behavior needed in this context. Therefore, maintaining a faculty's focus and effort requires deans to actively support and reiterate the vision and strategies of implementation. Failure to do so is expected to lower all aspects of commitment to change, leading to the following hypothesis:

> H7: Laissez-faire or non-leadership on the part of a change leader will be negatively associated with the three dimensions of commitment to organizational change.

2.4. Change Involvement

The Blackwell Encyclopedic Dictionary of Organizational Behavior states that the term “employee involvement” is commonly used to express a wide range of practices in organizations, which all have in common “the increasing employee influence over how their work is carried out or over other areas of organizational policy and practice” (Nicholson, Schuler, & Van de Ven, 1998, p.153). Common methods to increase employee involvement include communication and practices that increase influence on

decision making (e.g., quality circles and consultative committees). Scholars and managers assume that keeping employees informed about the issues related to their work and allowing them to make decisions on these issues will benefit both the organization and the employee. Meta-analyses of the literature on participative decision making suggest that participation improves employee attitudes and performance, at least under some conditions (Cotton, Vollrath, Froggatt, Lengnick-Hall, & Jennings, 1988; Sagie, 1994).

Researchers have noted that the terms "participation" and "involvement" have been used interchangeably throughout the literature, with numerous different definitions (Shadur, Kienzle, & Rodwell, 1999). In this study, the term "change involvement" is borrowed from Thompson and Van de Ven (2002) to describe faculty members' perception of the extent of their influence over the change.

The relation between change involvement and commitment to organizational change is the main focus of Armenakis, Harris, and Mossholder (1993) conceptual model for institutionalizing change. Their model includes participation, communication, and management of information as they key elements determining employee commitment to change. It proposes that among other strategies, active participation and persuasive communication facilitate moving employees through four phases of psychological responses to change, namely through readiness to adoption, then to commitment, and ultimately to institutionalization.

No research was found that establishes a link between transformational leadership and employee involvement. Sagie (1997) noted that the theory of transformational leadership combines autocratic and democratic elements, citing Kuhnert, who described

the transformational leader as one exhibiting a “strong sense of inner purpose and direction” while at the same time is “able to energize followers to take actions that support” the purpose (Kuhnert, 1994, p.18). Sagie also cited Yammarino, describing two dimensions of transformational leadership, inspirational motivation and idealized influence, as being directive in their effect on followers, while the other two dimensions, individualized consideration and intellectual stimulation, as imply that the transformational leader respects the autonomy of his or her followers and solicits ideas from them (Yammarino, 1994). A paper discussing leadership in the context of K-12 education stated that transformational leaders, unlike transactional leaders, “are more concerned about gaining overall cooperation and energetic participation from organizational members” (Mitchell & Tucker, 1992, p.33).

This study attempts to investigate whether change involvement mediates the effect of transformational leadership on faculty commitment to organizational change, suggesting the following hypotheses:

H8: Transactional leadership on the part of a change leader will be positively associated with faculty change involvement.

H9: Transformational leadership on the part of a change leader will be positively associated with faculty change involvement.

H10: Laissez-faire or non-leadership on the part of a change leader will not be associated with faculty change involvement.

H11: Faculty change involvement will be positively associated with affective and normative commitment, but negatively associated with continuance commitment.

Change involvement is conceptualized in this study as a latent variable that is composed of three factors:

1. Participation in change decision
2. Communication during the change
3. Freedom to express doubts about the change

These three factors are proposed here to account for the majority of processes within the change involvement variable. The first two factors, participation and communication, are well established dimensions of the involvement concept and have been proposed as determinants of positive reactions to change by several organizational change models (e.g., Conner & Patterson, 1982; Klein, 1996; Armenakis, Harris, & Mossholder, 1993; Coetsee, 1999; Wanberg & Banas, 2000; Lovelace, Shapiro, & Weingart, 2001). The third factor, freedom to express doubts, is defined here as the degree to which faculty members perceive pressures to conform to group norms about not expressing their own beliefs and opinions about the change (Van de Ven & Chu, 1989).

Freedom to express doubts was included because of its relevance to the research context of the study. A consistent finding of the previously mentioned exploratory survey of pharmacy faculty members at a school pharmacy and an informal discussion with a change leader at a school of pharmacy suggested to the investigator that participation in decision making may be short of describing involvement. Although faculty were given the opportunity to participate in the decision making process through their committee membership, one respondent to the survey stated that “many faculty do not appear to vote their conscience on many issues, not sure if this is out of fear of retribution from administration.” In a follow-up discussion with the change leader, he

gave examples of faculty members who came to decision-making committees and supported the decisions reached, but went back to their departments and talked about how bad it was, or how they did not agree with what was decided.

Research supports the existence of such a phenomenon and its effect on commitment. For example, Thompson and Van de Ven (2002) studied determinants of the commitment of physicians to the profession and to the organization during organizational change, and found several "organizational enabling characteristics" to be antecedents to commitment. The enablers were: 1) change involvement (measured by the extent of being informed of changes and participation in decision making), 2) freedom to express doubts, and 3) work discretion (measured by influence on the type of work and influence on policies and procedures). These findings suggested a strong positive effect for the enabling characteristics on commitment to both the organization and to the profession during organizational change.

In addition, research by Lovelace, Shapiro, and Weingart (2001) suggested that employees' freedom to express doubts is related to leadership. They tested a model that relates communication, leaders' effectiveness, and performance in the context of new product teams' performance. They found that freedom to express doubts mediates the positive correlation between leader effectiveness and new product teams' effectiveness. When team members feel encouraged to express their differences in developing the innovation and do not feel pressure to censure, they can incorporate the differences in the developed innovation.

3. STATEMENT OF THE PROBLEM

3.1. Problem Statement

In recent years, schools of pharmacy in the United States have undergone fundamental changes in their curricula, students' and teachers' roles, and learning strategies in pursuit of achieving the new vision of pharmacy, namely pharmaceutical care. The American Association of Colleges of Pharmacy (AACP) acknowledges the difficulties facing leaders as a result of these upheavals and strongly advocates leadership development as an approach for realizing the new vision, especially within deans and future deans (Lin et al., 2003). Nevertheless, there has been no research investigating the relationship between the behaviors of change leaders in pharmacy schools and faculty members' response to change. The literature on change management recognizes the importance of leadership; however, it assumes the involvement of followers in the change decision to be the main determinant of their commitment (Armenakis, Harris, & Field, 2001). This study aims to fill this gap by exploring these relationships.

The following is the problem addressed by this study in the context of an academic pharmacy setting: how does commitment to change vary according to whether the change leader approaches followers with transactional processes ("do this for me and I do this for you"), with transformational processes (engaging the full person of the follower), or in a laissez-faire (non-leadership) manner? Also, how does the level of

involvement of followers in the change mediate the effect of leaders' behaviors on commitment?

3.2. Research Questions

1. How do behaviors of a change leader affect a faculty member's commitment to organizational change?
2. How does involvement in change affect a faculty member's commitment to organizational change?
3. How does faculty members' commitment to change affect their support for change initiatives in pharmacy schools?
4. How does faculty members' commitment and their behavioral support affect the satisfaction of a change leader with change accomplished?

3.3. Hypotheses

The research hypotheses are as follows:

- H1a: A faculty member's affective commitment to organizational change is positively associated with compliance behavior related to the change.
- H1b: A faculty member's affective commitment to organizational change is positively associated with discretionary behavior related to the change.
- H2a: A faculty member's normative commitment to organizational change is positively associated with compliance behavior related to the change.
- H2b: A faculty member's normative commitment to organizational change is positively associated with discretionary behavior related to the change.

- H3a: A faculty member's continuance commitment to organizational change is positively associated with compliance behavior related to the change.
- H3b: A faculty member's continuance commitment to organizational change is negatively associated with discretionary behavior related to the change.
- H4a: A faculty member's affective commitment to organizational change is positively associated with a change leader's satisfaction with what was accomplished from the change.
- H4b: A faculty member's normative commitment to organizational change is positively associated with a change leader's satisfaction with what was accomplished from the change.
- H4c: A faculty member's continuance commitment to organizational change is positively associated with a change leader's satisfaction with what was accomplished from the change.
- H5a: Transactional leadership on the part of a change leader will be negatively associated with affective commitment.
- H5b: Transactional leadership on the part of a change leader will be negatively associated with normative commitment
- H5c: Transactional leadership on the part of a change leader will be positively associated with continuance commitment.
- H6a: Transformational leadership on the part of a change leader will be positively associated with affective commitment.

- H6b: Transformational leadership on the part of a change leader will be positively associated with normative commitment.
- H6c: Transformational leadership on the part of a change leader will be negatively associated with continuance commitment.
- H7a: Laissez-faire or non-leadership on the part of a change leader will be negatively associated with affective commitment.
- H7b: Laissez-faire or non-leadership on the part of a change leader will be negatively associated with normative commitment.
- H7c: Laissez-faire or non-leadership on the part of a change leader will be negatively associated with continuance commitment.
- H8: Transactional leadership on the part of a change leader will be positively associated with faculty change involvement.
- H9: Transformational leadership on the part of a change leader will be positively associated with faculty change involvement.
- H10: Laissez-faire or non-leadership on the part of a change leader will not be associated with faculty change involvement.
- H11a: Faculty change involvement will be positively associated with affective commitment.
- H11b: Faculty change involvement will be positively associated with normative commitment.
- H11c: Faculty change involvement will be negatively associated with continuance commitment.

3.4. Concepts and Definitions

The hypotheses will be tested in two models. Figure 2 illustrates the first four hypothesis concepts and their relationships.

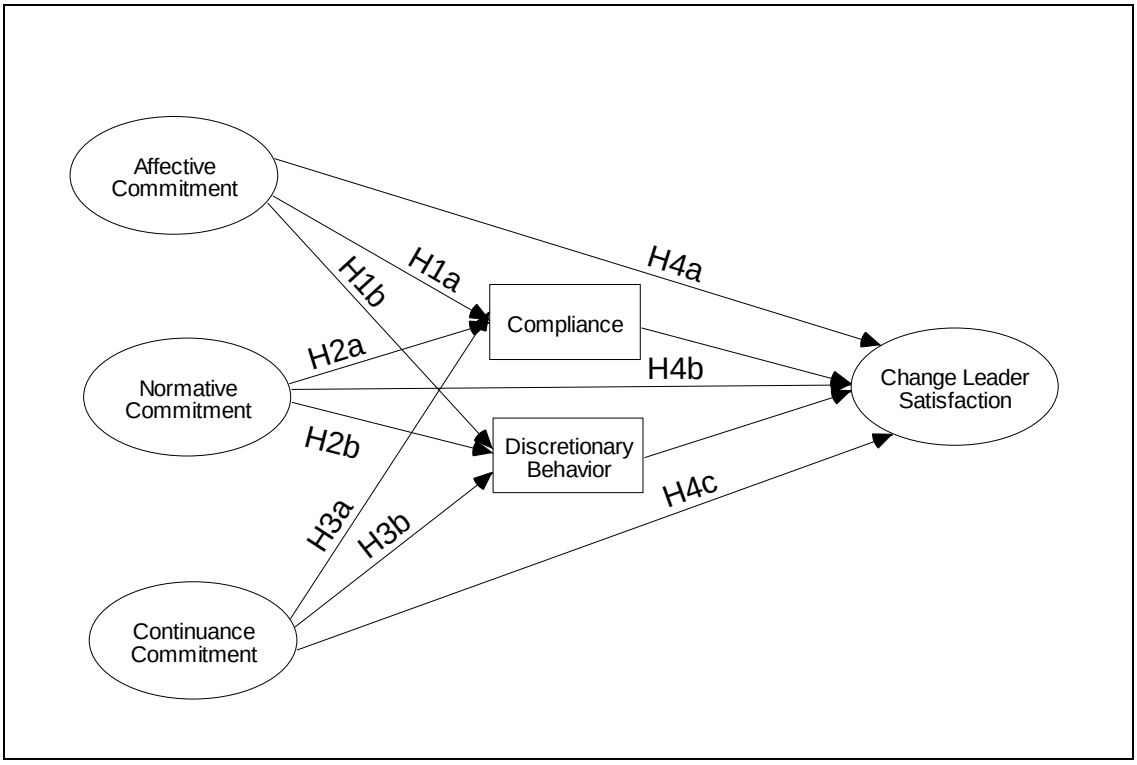


Figure 2: The First Model for Testing, Including Concepts, Causal Paths, and Hypotheses

The next group of hypotheses (H5 to H11) were grouped together in another model. Figure 3 illustrates one example of the three models that were tested, which were identical for all the concepts, except that each model examined a different one of the dimensions of commitment: affective, normative, and continuance.

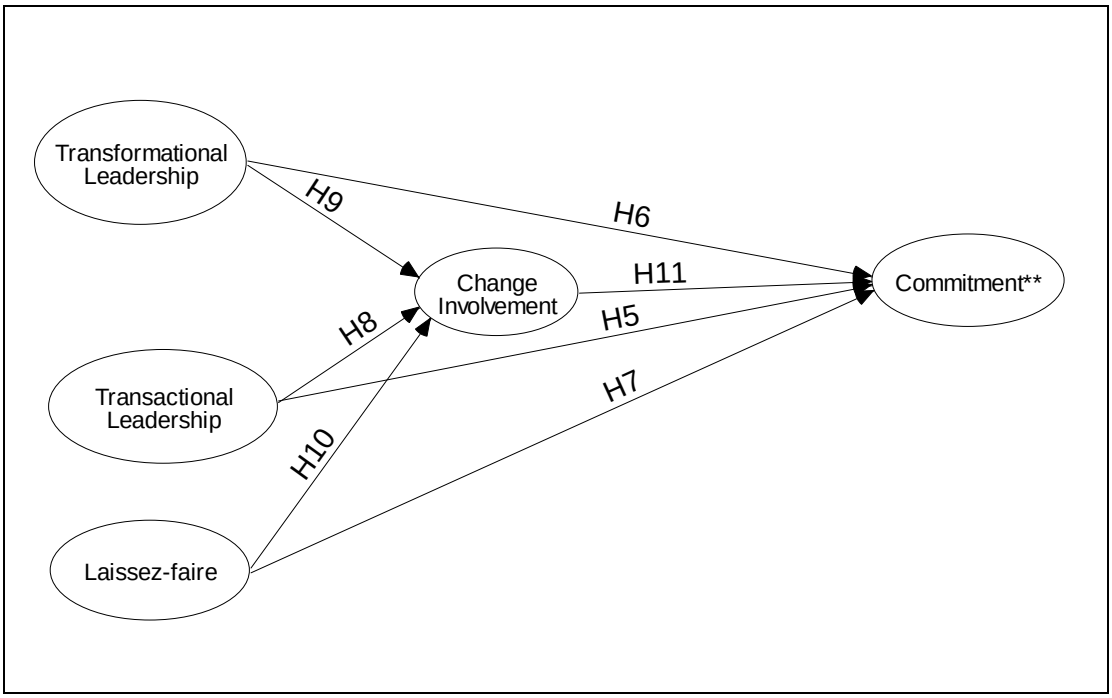


Figure 3: The Second Model for Testing, Including Concepts, Causal Paths, and Hypotheses.

**One commitment component was used in each of the three separate models tested: the affective, normative, and continuance.

Table 1 lists the definitions of the concepts involved in the study. The first column lists the concepts, the second lists a constitutive definition, and the third column describes how the concept has been operationalized in this study.

Table 1: Study Concepts and Definitions

Concept	Constitutive Definition	Operational Definition
Organizational Change	Any change within the pharmacy school that can be classified by the ACPE as "substantive change" which is defined as "any change in the established mission or goals of the institution; the addition or deletion of courses, pathways or programs that represent a significant departure in either content or method of delivery, from those that were offered during the program's previous accreditation cycle (e.g., a non-traditional doctor of pharmacy program, development of a joint delivery of program agreement, etc.)… and any other changes that the Dean feels require notification of ACPE." (ACPE, 1993)	A "yes" given on any of the 9 changes offered to the faculty members in the first phase survey (Appendix B), or provided by them in response to the open-ended question at the end of that survey, given the following qualifications: (1) the change occurred in the last three years, (2) the change is at least 70% completed (mean percentage scores provided by respondents), (3) the mean score of the three items measuring the importance of the change equals or greater to 3 (on a 5-point scale), and (4) a change leader is identified with the change.
Change Leader	A person who leads and manages the change within an organization.	A dean or associate/assistant dean that is agreed to be the change leader of the identified change by at least half of the respondents from a school for that particular change.
Commitment to Organizational Change	"A force (mind-set) that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative" (Herscovitch & Meyer, 2002).	Scores on each of the three scales of commitment dimensions (affective, normative and continuance), each of which are measured by six items (Table 6, Ch.4).

Concept	Constitutive Definition	Operational Definition
Affective Commitment to Change	"A desire to provide support for the change based on a belief in its inherent benefits" (Herscovitch & Meyer, 2002).	Scores on the affective commitment scale which contains six items (Table 6, Ch.4).
Normative Commitment to Change	"A sense of obligation to provide support for the change" (Herscovitch & Meyer, 2002).	Scores on the normative commitment scale which contains six items (Table 6, Ch.4).
Continuance Commitment to Change	"A recognition that there are costs associated with failure to provide support for the change" (Herscovitch & Meyer, 2002).	Scores on the continuance commitment scale which contains six items (Table 6, Ch.4).
Transformational Leadership	A class of leader behaviors who aim to increase the subordinates' awareness of what is right and important and to raise their motivational level so that they identify with the needs of the leader.	Scores on each of the four scales of transformational leadership: charisma/idealized influnce, inspirational motivation, intellectual stimulation, and individualized consideration (Table 7, Ch.4).
Charisma or Idealized Influnce	A class of behavior and/or personal attributes of a leader proposed to cause followers' admiration, respect, trust and emulation of such leader.	The score on six items. Three of the items for charisma and three for idealized influnce (Table 7, Ch.4).
Inspirational Motivation	A class of leader behaviors that verbalize and clarify shared vision and goals for the future.	The score on the three items representing the construct (Table 7, Ch.4).

Concept	Constitutive Definition	Operational Definition
Intellectual Stimulation	A class of leader behavior that gets subordinates to question the tried ways of solving problems, and encourages them to question the methods they use to improve upon them.	The score on the three items representing the construct (Table 7, Ch.4).
Individualized Consideration	A class of behavior of a leader focuses on understanding the needs of each follower and works continuously to get them to develop to their full potential.	The score on the three items representing the construct (Table 7, Ch.4).
Transactional Leadership	A class of leader behaviors that rely on organizational rewards and punishments to motivate employee performance.	Scores on each of the three scales of transactional leadership: Contingent Reward, Active Management by Exception, and Passive Management by Exception (Table 7, Ch.4).
Contingent Reward	A class of leader behaviors that clarifies what is expected from followers and what they will receive if they meet expected levels of performance.	The score on the three items representing the construct (Table 7, Ch.4).
Active Management by Exception	A class of leader behaviors that focuses on monitoring task execution for any problems that might arise and correcting those problems to maintain current performance levels.	The score on the three items representing the construct (Table 7, Ch.4).

Concept	Constitutive Definition	Operational Definition
Passive Management by Exception	A class of leader behaviors that tends to react only after problems have become serious to take corrective action, and often avoids making any decisions at all.	The score on the three items representing the construct (Table 7, Ch.4).
Laissez-faire	A class of leader behaviors that can be described best by absence of behaviors; lack of transactions and low involvement with subordinates.	The score on the three items representing the construct (Table 7, Ch.4).
Change Involvement	Faculty members' perception of the extent of their influence over the change (Thompson & Van de Ven, 2002).	Scores on each of the three scales of change involvement: Participation in Decision Making; Communication Intensity; Freedom to Express Doubts (Table 8, Ch.4).
Participation in Decision Making	The degree to which the faculty members perceive themselves as having a role in the decisions made in relation to the change.	The score on the five items representing the construct (Table 8, Ch.4).
Communication	Faculty members' perception of the degree they have been kept informed throughout the change.	The score on the six items representing the construct (Table 8, Ch.4).
Freedom to Express Doubts	The degree to which faculty members perceive there to be pressure to conform to group norms by not expressing their own beliefs and opinions about the change (Van de Ven & Chu, 1989).	The score on the three items representing the construct (Table 8, Ch.4).

Concept	Constitutive Definition	Operational Definition
Change Leader Satisfaction	Degree to which a change leader reports satisfaction with what was accomplished from the change at his/her school.	The scores on two-item on the satisfaction scale created for the study (Appendix H, items 2 and 3)
Compliance	Showing minimum support for change by going along with the change and not engaging in behaviors aimed at preventing the success of the change (Herscovitch & Meyer, 2002).	A score from 0 to 60 in Herscovitch & Meyer (2002) 101 point behavioral support scale. Higher scores indicate higher levels of compliance.
Discretionary Behavior	Actions that involve going along with the spirit of the change and being prepared to make modest sacrifices (Herscovitch & Meyer, 2002).	A score from 61 to 100 in Herscovitch & Meyer (2002) 101-point behavioral support scale.

4. METHODS

The design of this study can be described as a non-experimental cross-sectional study based on individuals' self-reports through Internet survey questionnaires. This research was conducted through three separate phases, with the three surveys being sent out at different times. The following describes the methods and procedures used for each phase of the study.

4.1. First Phase: Identifying a Change and a Change Leader

Since the focus of this research is on change and leadership in pharmacy schools, there was a need to first identify which schools of pharmacy had undergone a recent change and whether such changes can be linked to a leader within each school. This exploratory first phase was thus conducted.

4.1.1. Population and Sampling

The population of this phase was composed of all the faculty members at the 89 accredited schools of pharmacy in the US whose names were listed in the AACP Roster (Microsoft Excel datasheet received from the AACP by e-mail on October 12, 2004). The roster contained 4157 entries from 89 schools. However, the final population that was eligible for sampling consisted of a subset of the 89 schools, as described in Table 2. The table displays the number of schools and individuals who were initially excluded,

those who were excluded later due to the absence of any response confirming reception of e-mail invitations, and those remaining that composed the final population.

Table 2: Population and Sampling Summary for Phase 1

	Schools	**Individuals**
AACP Roster	89	4157
Excluded	8	160
Sent Invitations	81	3997
Zero Response	4	126
Final Population	77	3871
Responded	77	421

From the 89 schools in the AACP Roster, eight were excluded; seven because they were established relatively recently (within the last five years) and thus unlikely to have a substantive change in the last three years; and one school due to a technical failure in the survey Web site created for it. The 3997 individual faculty members from the remaining 81 schools were sent an e-mail invitation to participate in the first phase survey with an embedded hyperlink directing potential respondents to an Internet site containing the first phase survey. Appendix A contains the information letter sent in the first phase and Appendix B contains a copy of the survey. Appendix C shows screen shots of parts of the phase 1 survey as it should have appeared to the participants.

One week after sending the invitation e-mails, there had been no response from 16 of the schools. To check whether this was due to a failure of the e-mail message to reach these schools, such as blocking by a spam detection device, a personalized e-mail

message was sent to 15 schools by the chair of the dissertation committee who knew one faculty member from each school (Appendix D). The e-mail asked the recipients to respond by confirming whether they had received the recruitment e-mail or, if not, to supply the contact information for the information technology specialist at their schools. None of the 15 schools reported of a failure of the original message to reach them.

One further reminder message was sent by e-mail one week after the first contact (Appendix E). After this reminder message, there were only four schools with absolutely no response and these were subtracted from the potential population.

Four hundred and twenty one individuals responded, representing 77 schools. After an analysis of their responses (identification of a change and connecting the change to a change leader) 54 schools were eligible for the second phase.

4.1.2. Data Collection Method

The purpose of this phase was to identify the changes that had occurred in each school and identify the change leader responsible for each. The following describes the sections of the survey and the types of question included (Appendices B and C):

1. Introduction page:

Once potential participants followed the hyperlink embedded within the recruitment e-mail, they arrived at the introduction page. This page contained the title of the study and a paragraph describing the purpose of the first phase and defining what the researcher meant by a change, including the ACPE's definition of "substantive change" and some examples. A hot-button link to start the survey was provided below the introductory paragraph.

2. Items aimed at the identification of the change and the change leader:

Two types of items were used to identify the change. First, a list of specific changes that had been identified from the pharmacy literature were given to the participants and they were asked whether any of the changes had occurred in the last three years at their schools. The second type of question was open-ended and asked whether the participants could list one or more additional changes that fit the definition provided. Both types of questions, the closed-ended and the open-ended, were followed by a request to name the main leader for the change identified.

3. Items aimed at ascertaining the importance of the change:

The researcher wanted to exclude changes that had little effect on the way the faculty members did their jobs, or were of little or no concern to them. Three questions were developed to measure the importance of the identified change to the respondents: "this change affected the way I do my job," "this change is of concern to me," and "this change doesn't matter to me." Responses were made using a 5-point Likert-type scale ranging from 1 (strongly disagree), to 5 (strongly agree).

4. Item aimed at ascertaining the percentage completed from the change:

Another way the researchers sought to qualify changes eligible for inclusion in the second phase was to ascertain whether they were completed, in progress, or in the early stages. To control for the potential effects of variability in the amount completed of the change on the studied variables, only changes that had been completed or near completion (within 70% completion, as identified by respondents) were included in the second phase.

5. Closing:

The questionnaire ended with a “Submit” button which participants could click on to submit their answers. Submission was followed by another page that contained a note thanking the participants and telling them that a follow-up e-mail regarding the final phase of the study would follow within two months.

4.1.3. Pre-test

The draft of the questionnaire was tested on paper, prior to developing the Internet version, first by two graduate students, and then by two faculty members. In general, the pre-test showed there to be little difficulty in understanding the questions, although several changes were made to grammar and word choices. The final Internet version was also pre-tested for understanding by one faculty member. Corrections made here were limited to font choice and size. Overall, the Internet survey was shown to be adequate in eliciting the information desired.

4.1.4. Data Analysis Methods

The submitted data were collected automatically in Microsoft (MS) Access datasheets, one for each school involved. Later, all the schools’ data were manually imported to one MS Excel datasheet, where they were prepared for analysis. Finally, cases in the imported data were randomly compared with their corresponding cases in the original schools’ MS Access datasheets to check for accurate transfer of the data.

Each school’s data were analyzed separately. For the question: “did one of the following changes take place within your school during the past three years?” the responses with “yes” to a particular change were summed up and recorded as a proportion of the total number of participants from the particular school. The names of

the change leaders mentioned in relation to a change were recorded, with their relative frequency to other change leaders.

The percentage of completion for a change was determined by computing the mean of the scores from all the respondents in relation to the particular change within the particular school. The importance of the change was computed similarly using the mean, but for all three items measuring importance. Each of three items was rated using a 5-point scale, with anchors labeled as 1 (strongly disagree) to 5 (strongly agree). One item, "this change doesn't matter to me," was reversely coded. The responses to the three items were averaged to provide an importance score for the individual, and then individuals' scores were averaged to arrive at the importance index for that particular change in a particular school.

The decision rules for selecting a change for a school were as follows:

- A change must be at least 70% completed as measured by averaging the responses from the relevant item for a particular school. This rule was created to control for the potential effects of the amount completed of the change on the variables under study. Changes at earlier stages were excluded because some of the implementation processes, such as behaviors of a change leader or participation in decision making, may not had the chance to manifest, thus would pose a threat to the reliability and validity of responses.
- The change must be rated 3 or more on the importance index. This rule was applied to insure a minimum level of internal state of interest in the change, thus the respondents would more likely have sufficient knowledge

and ability to recall particulars of the change, change leader's behavior, and other variables when they receive the third phase survey. This is needed in order to have more valid and reliable responses to the survey items in the third phase. The faculty member with certain level of interest or concern would be at a certain degree of arousal to engage in specific information processing in relation to the variables under study. In the marketing literature this phenomenon is referred to as consumer involvement (Andrews, Durvasula, & Akhter, 1990). For example, under high involvement situations brand beliefs is expected to strongly predict attitudes, but under low involvement, beliefs are not necessarily related to attitudes.

- A change must be mentioned by the majority of respondents (more than 50%) from a particular school. This rule was applied in an attempt to increase the validity of the change chosen. If only a few faculty members from a school agree on a change one would expect problems with face validity for the potential respondents in the next phases.
- A dean or associate/assistant dean must be identified as the leader of the change. The theoretical framework for this study contains behaviors of a change leader that assumes a hierarchical situation between the leader and a follower. For example, in order for the concepts of leader's contingent reward behaviors or management by exception behaviors to apply, the change leader cannot be at equal organizational level with a follower, or

from a different department where the follower is not accountable to the change leader.

- At least half of the respondents from a school on a particular change must agree on the change leader. This rule is applied so that the validity of the identification of the leader is increased. In some situations, several individuals were identified as change leaders for one change in one school, and therefore, this rule excluded such a change if there were no majority agreement on one person, so when a leader's name sent in the third phase of the study, it will have more validity to most of the respondents from a particular school.

4.1.5. Validity

The change and change leader identified from the faculty members' responses were validated by the change leader responding to the following item during the second phase: "are you a primary leader for (the specific change inserted here)?" The respondent had two choices; yes or no. Also, the change leader had the opportunity to write in further comments. Only one of the change leaders challenged the validity of her change leadership, and therefore was dropped from the sample.

4.1.6. Response Rate

The phase 1 population was composed of 3871 faculty members from 77 schools. The sample was composed of 421 faculty members who responded to the phase 1 Internet survey, for an 11% response rate. The distribution of the response frequency ranged from

1 to 15 responses per school with a mean of about five and a half responses per school (S.D. = 3.19).

For phase 1, the purpose was to identify changes and the change leaders responsible for each in each school, and therefore no other descriptive statistics were collected for either the participants or for the school.

4.1.7. Changes Identified and their Change Leaders

The analysis of the responses from the 77 schools identified 10 different changes from 57 schools (Table 3). According to the criteria used for the analysis (discussed above), for 20 schools a change or a change leader could not be identified.

Table 3: Changes Identified and the Position of the Change Leader

Change Identified	**AD**	**Dean**	**Total**
Conversion from five year B.S. to six year Pharm. D.	1	8	9
Implementation of problem-based learning in place of traditional lectures.	3	2	5
Major change in curriculum	1	6	7
Establishing a distance learning site for a traditional Pharm. D. program	1	10	11
Change in the established mission or goals	1	7	8
Changes in admission standards	3	4	7
Implementation of dress code (professional attire)	2	3	5
Change in college structure (departmentalization)	0	1	1
Increase in class size/enrollment	0	3	3
Implementation of a faculty incentive plan	0	1	1
Grand Total	12	45	57

In Table 3, the first column lists the changes identified and the last column contains the total number of schools who experienced that particular change. The second and third columns state the number of deans or associate/assistant deans (AD) identified with each change.

Three of these 57 schools were dropped from inclusion in the second phase. Two of these schools had undergone a change of curriculum twice during the last three years, during which two different deans were responsible for the changes. The third school had two campuses with two deans. The responses from these two campuses could not be separated to indicate conclusively in which campus the change occurred or which dean was responsible for which change. Excluding these three schools brought the total number of schools to be targeted in the second phase of the study to 54.

4.2. Phase 2: Change Leaders' Survey

An informed consent from the identified change leader was needed in order to send the third phase survey to the faculty members at a particular school. In addition to obtaining consent from the change leaders, this second phase aimed at collecting information to validate the data collected from the faculty about the identified change and the change leader and to measure the leaders' satisfaction with what had been accomplished by the change initiative. This survey also included an optional open-ended question with which to collect additional information.

4.2.1. Population and Sampling

The change leaders from the 54 schools identified from the first phase constitute the population of this phase. A recruitment e-mail message was sent directly to the identified change leaders at each of the 54 schools (Appendix F). Attached to the e-mail

message were two documents in a Microsoft Word format: (1) an Informed Consent letter (Appendix G), and (2) a copy of the third phase faculty survey. A summary report of the study results was promised for consenting individuals. One week after sending these e-mails, a telephone call was attempted for each non-respondent change leader.

4.2.2. Data Collection Method

The e-mail message sent to the change leaders asked the recipient to first read the attachment containing the questionnaire to be sent to faculty in the third phase. The goal was to allow change leaders to make an informed decision as to whether or not to allow the collection of such data from the faculty members at their schools. After reading this attachment, they were asked then to open the second attachment and read the informed consent letter (Appendix G). To communicate their decision to the researcher, they were asked to follow the Web address provided at the bottom of the informed consent letter. This would take them to the Web site containing the second phase change leaders survey (Appendix H). The components of this instrument were as follows:

1. Getting Consent

Arriving at the Web site, a participant was given three options: either (A) participate AND allow other faculty members to participate; (B) NOT participate BUT allow other faculty members to participate; or (C) NOT participate AND NOT authorize others in the school to participate. Consents were documented electronically by collecting the leaders' responses to the first two options. Faculty members from a school with a non-consenting leader did not receive the third phase faculty survey.

2. Items aimed at validating the first phase findings

Two items were included to check whether the change leader agreed with the faculty members' responses. The first item asked the identified change leader whether he or she was in fact the primary leader for the change under investigation within his or her school. The second item asked him or her to provide an estimate of the percentage of the goals actually accomplished by the change to compare it with the estimate the faculty provided in the first phase.

3. Items aimed at ascertaining change leaders' satisfaction

Two items were developed to measure the change leader's satisfaction with what had been accomplished by the change under study: "how satisfied are you with how much (quantity) was accomplished?" and "how satisfied are you with the quality of what was accomplished?" These two items were rated on a five-point scale ranging from "very unsatisfied" to "very satisfied."

4. Items aimed at collecting additional information

At the end of the survey, an open-ended question was included to allow the participant to mention in their own words any perceived factor(s) that could have affected the way the faculty members responded to the change.

5. Closing

The participant was asked to click on a hot-button provided in order to submit his or her response. Another page then opened with a thank you note and a prompt to close the Web browser window.

4.2.3. Pre-test

The survey instrument and the processes involved in collecting the data from the change leaders were pre-tested with one of the potential participants among the 54

targeted change leaders. An appointment was arranged for a meeting with this individual. A few minutes before the appointment, the principal investigator sent the invitation e-mail with the attachments as planned for the phase 2 participants. Then during the meeting, the pre-test participant was asked to open the e-mail and follow the directions. The principal investigator observed the process and responded to inquiries.

Notes were taken for suggested improvements in the wording, for clarification of the purpose of the study, and for minimizing any potential misunderstanding. For example, realizing the confusion that could occur when a change leader opened the attachment containing the faculty survey (for phase 3) and the possibility of misunderstanding its purpose, as a result of the pre-test, it was decided to incorporate a note into the faculty survey attachment:

> "Note for the change leader: This survey is NOT for you, the change leader, to complete. Only if you approve, this survey will be sent to your faculty. Please indicate whether you approve sending the survey to your faculty by following the link within the Informed Consent document you received. At that site, there is also a 4-item survey for the change leader to complete."

4.2.5. Response Rate

Among the 54 individuals, 24 responded (nearly a 44% response rate) by consenting to allow the researcher to send the third phase survey to the faculty members at their schools. However, among the consenting change leaders, only 18 filled out the change leader's survey. No descriptive statistics for the change leaders or for the schools they work at were collected. A comparison of consenting and non-consenting change leaders was thus not possible.

4.2.6. Results

The following tables summarize the data collected from 18 of the 24 consenting leaders who filled the leader's survey. For the item validating whether that person was in fact the change leader, all the respondents confirmed that they were indeed the main change leaders at their schools except one. This person responded with a "no" when asked if she was the main change leader, but followed with the following comment:

> "I came in when the change had already been implemented. I was assigned to carry out the goals of the change and modify the program to maintain the quality as I see fit. Today is not a good day to ask me what I think has been accomplished."

Although this person was refusing to be called the change leader, her comment shows that she was in charge of implementation of at least part of the change, which supports the responses from the faculty in phase 1 that identified her as the main change leader. Therefore, the data from her school were admitted.

For the second question, which asked how much of the change had been accomplished, the findings are displayed in Table 4. Seventeen of the change leaders responded to this item (one missing value). The majority confirmed the phase 1 faculty responses that the change was 70% completed, although several change leaders did not give such confirmation.

Table 4: Change leaders Responses for the Percentage of Change Goals Completed

Percentage of change goals accomplished	100%	90%	80%	70%	60%	20%	10%	Total
Number of Responses	5	3	2	3	2	1	1	17

Recall that only changes with at least 70%, as rated by the faculty in the first phase, were sent to change leaders in this second phase, thus, Table 4 shows some discrepancy between faculty responses and change leaders responses in meeting this cut off value in at least three cases. The discrepancy between the faculty members' responses and the leaders' responses could be due to two issues. The first is a problem with different wording of the question. Here the leaders were asked for percentage of goals accomplished, while the faculty members were asked for percentage of change accomplished. Alternatively, it could be due to a difference in perception or knowledge related to the change. For the change leaders, who are more closely observing the change unfold, the change goals tend to be in the early stages of completion, while faculty members, who were not as involved with the details of the change, could not make such a judgment.

Table 5 displays the statistics for the satisfaction items. One item asked about satisfaction with how much (quantity) was accomplished, and the other item asked about satisfaction with the quality of what was accomplished. The descriptive statistics for the two items were close to each other ranging from 2 to 5 with a mean of about 4.1.

Table 5: Description of Responses to Leader's Satisfaction Items

	N	Minimum	Maximum	Mean	S.D.
Satisfaction with Quantity	18	2	5	4.11	0.83
Satisfaction with Quality	18	2	5	4.06	0.80

4.3. Phase 3: Determining the Interrelations Among the Study's Variables

The purpose of phase 3 was to answer the research questions addressed by the study and to test the hypotheses. This involved the administration of an Internet survey that measured the variables of the study (leadership behaviors, commitment to change, change involvement) and the analysis of the collected data using structural equation modeling. What follows is a description of the methods and procedures involved. The results are included in the next chapter.

4.3.1. Population and Sampling

Only the 24 schools of consenting leaders were included in third phase survey. The AACP Roster showed a total of 1215 faculty members from these 24 schools. All of them were sent the information letter via e-mail (Appendix I). The e-mail message was undeliverable to 65 e-mail addresses, reducing the total number of invitations sent to 1150. A reminder message was sent two weeks later, again via e-mail (Appendix J). The total number of responses was 190 from the 24 schools.

4.3.2. Data Collection Method

An e-mail including the information letter (Appendix I) was sent to the faculty members of schools with consenting change leaders. Faculty members were identified by 24 schools' names from the AACP Roster (Microsoft Excel datasheet received from the AACP by e-mail on October 12, 2004). The specific change and the change leader identified in phase 1 for each school were included in the e-mail message. The faculty were invited to respond to an Internet survey (Appendix K contains the survey items). If a recipient decided to participate, he or she could click on a hyperlink within the e-mail that directed them to the Internet site containing the survey questionnaire (Appendix L contains computer screenshots of the Internet format).

Anonymity of data was strictly enforced. The survey did not ask participants for any identifiable information, and the computer server did not collect identifiable information such as IP addresses.

4.3.3. Measures

The questionnaire measured variables related to the change and the change leadership (faculty commitment to the change, their behavioral support, their rating of the change leadership, the extent of their change involvement, their demographics and other control variables).

Commitment to organizational change:

The three components of commitment to organizational change were measured using the instrument developed by Herscovitch & Meyer (2002). Table 6 lists each component and the items that make up its scale and the code utilized in this dissertation to represent the item. Responses were modified from a 7-point scale to a 5-point scale in

order to match the other measures in the instruments. The 5-point scale ranged from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicated higher levels of commitment.

Table 6: Measures of Commitment

Commitment components and their items	**Codes**
Affective Commitment	
I believe in the value of this change.	AC1
This change is good for this organization.	AC2
I think that administration is making a mistake by introducing this change.	AC3R
This change serves an important purpose.	AC4
Things would be better without this change.	AC5R
This change is not necessary.	AC6R
Normative Commitment	
I feel a sense of duty to work toward this change.	NC1
I do not think it would be right for me to oppose this change.	NC2
I would not feel badly about opposing this change.	NC3R
It would be irresponsible for me to resist this change	NC4
I would feel guilty about opposing this change.	NC5
I do not feel any obligation to support this change.	NC6R
Continuance Commitment	
I have no choice but to go along with this change.	CC1
I feel pressure to go along with this change.	CC2
I have too much at stake to resist this change.	CC3
It would be too costly for me to resist this change.	CC4
Resisting this change is not a viable option for me.	CC6

Herscovitch and Mayer (2002) reported a reliability Cronbach's alpha of .94 for affective, .94 for normative and .86 for continuance commitment. Affective and continuance commitment were unrelated ($r = -.05$, ns), although normative commitment had significant correlations with both affective ($r = .26$, $p < .01$) and continuance commitment ($r = .38$, $p < .01$).

Leadership:

Leadership was measured with the 27-item brief version of the MLQ (Tejeda, Scandura, & Pillai, 2001). Table 7 lists the instrument's constructs and their items. This instrument contains five transformational leadership subscales (charisma, idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration), and three transactional leadership subscales (contingent reward, active management-by-exception, and passive management-by-exception). It also contains the measures of laissez-faire leadership. Every item was rated on a five-point scale ranging from "not at all," through "once in a while," "sometimes," and "fairly often," to "frequently if not always."

Table 7: Measures of Leadership

Leadership Factors and their items	**Codes**
Charisma	
Displays extraordinary talent and competence in whatever he/she undertakes.	CHRSM1
His/her actions build my respect for him/her.	CHRSM2
Goes beyond his/her own self-interest for the good of our group.	CHRSM3

Leadership Factors and their items	Codes
Idealized influence	
Emphasizes the importance of having a collective sense of mission.	IDINFLC1
Clarifies the central purpose underlying our actions.	IDINFLC2
Specifies the importance of having a strong sense of purpose.	IDINFLC3
Inspirational motivation	
Talks enthusiastically about what needs to be accomplished.	INSPMT1
Arouses awareness on what is essential to consider.	INSPMT2
Articulates a compelling vision of the future.	INSPMT3
Intellectual stimulation	
Gets me to look at problems from many different angles.	INTLST1
Encourages me to express my ideas and opinions.	INTLST2
Suggests new ways of looking at how we do our jobs.	INTLST3
Individualized consideration	
Promotes self-development.	INDCSD2
Provides useful advice for my development.	INDCSD1
Teaches me how to identify the needs and capabilities of others.	INDCSD3
Contingent reward	
Makes sure that we receive appropriate rewards for achieving performance targets.	CNGRW1
Tells me what to do to be rewarded for my efforts.	CNGRW2
Provides his/her assistance in exchange for my effort.	CNGRW3

Leadership Factors and their items	Codes
Active management-by-exception	
Keeps track of my mistakes.	MBEA1
Searches for mistakes before commenting on my performance.	MBEA2
Directs his/her attention toward failure to meet standards.	MBEA3
Passive management-by-exception	
Problems must become chronic before he/she will take action.	MBEP1
Things have to go wrong for him/her to take action.	MBEP2
Fails to intervene until problems become serious.	MBEP3
Laissez-faire leadership	
Takes no action even when problems become chronic.	LSFR1
Fails to follow-up requests for assistance.	LSFR2
Delays responding to urgent questions.	LSFR3

In testing these 3-item scales for the leadership factors in four samples, Tejeda and collogues (2001) reported Cronbach's alphas above the .70 for all the scales with all four samples, except for one sample for active management-by-exception (.61) and one sample with laissez-faire (.66). Scales within transformational leadership had the largest internal consistency coefficients. They concluded that the evidence supports the presence of internal consistency with the majority of the samples they used to test their briefer version of the MLQ.

Change involvement

Based on a review of the literature, change involvement was conceptualized in this study as a latent variable composed of three factors 1) participation in the change

decision 2) communication during the change 3) freedom to express doubts about the change. The items used to measure them are provided in Table 8.

Table 8: Measures of Change Involvement

Change involvement factors and their items	**Codes**
Participation in Decision Making	
I have assisted in the problem identification that led to the change.	PDM1
I have participated with fellow faculty in the design of this change.	PDM2
The decision-makers have asked for my input into this change.	PDM3
The decision-makers have listened to my opinion on the change initiative.	PDM4
The change initiative included suggestions I provided.	PDM5
Communication	
I was kept informed adequately.	CMM1
The faculty interacted frequently.	CMM2
There were breakdowns in communication among faculty.	CMM3R
There were breakdowns in communication between faculty and administration.	CMM4R
Information was quickly shared.	CMM5
There were extensive formal and informal communications throughout the change.	CMM6
Freedom to Express Doubt	
Criticizing or providing information which challenges the feasibility of the change was encouraged.	FXD1
I sometimes get the feeling that others were not speaking up although they harbored serious doubts about the direction being taken.	FXD2R
Often I felt pressured to not "rock the boat" by speaking my mind about what's going on with this change.	FXD3R

Behavioral support

To assess compliance behavior and discretionary behavior, the 101-point behavioral continuum provided by Herscovitch and Meyer (2002) was used. Anchor points were labeled from left to right as active resistance (0 to 20), passive resistance (21 to 40), compliance (41 to 60), cooperation (61 to 80), and championing (81 to 100). Compliance behaviors scores were in the range from 0 to 60 and discretionary behavior scores were in the range from 61 to 100.

4.3.4. Pre-test

The sample questionnaire was pre-tested to ensure that it was readable, interpretable, and to explore any difficulties that could arise in the administration process with the sample. Two persons pre-tested it; one was a potential respondent, who used a paper and pencil version of the questionnaire, and the other was a graduate student who tested the Internet version. These two individuals provided comments which resulted in minor changes in the original instrument.

4.3.5. Data Analysis Methods

Structural equation modeling (SEM) was employed to test the hypotheses. Specifically, a two-step strategy recommended by Anderson and Gerbing (1988) using AMOS 5 was used. In the first step, a separate estimation of the measurement model using confirmatory factor analysis was performed before the simultaneous estimation of the structural model. This allowed for assessment of the reliability and validity of the measures. In the next step, a specification of the relationships among constructs was built

in a structural model where the overall fit was estimated and the path loading assessed for significance and strength.

Four separate models were constructed and tested as described in the previous chapter under concepts and definitions. The models were assessed by fit measures recommended by the following fit indices: chi-square, the comparative fit index (CFI), and the Root Mean Square Error of Approximation (RMSEA).

5. RESULTS

This chapter presents the results for the last phase of the study, phase 3, which involved answering the research questions posed for this dissertation and the testing of the hypotheses. The results of the earlier two phases of the study were included under the description of the methods in the previous chapter.

5.1. Response Rate

From the 1150 faculty members at the 24 schools sent the invitation to participate, 190 submitted phase 3 Internet surveys, approximately a 17% response rate. Table 9 shows descriptive statistics for the response frequency per school, which ranged from 3 to 19, with a mean of 7.92 responses per school (S.D. = 4.66).

Table 9: Phase 3 Response Distribution

Number of schools	**Sum of Responses**	**Mean Response**	**Standard Deviation**	**Minimum**	**Maximum**
24	190	7.92	4.66	3	19

Table 10 lists the number of responses with their frequencies. The most common number of responses (the mode) was 5, which came from 6 schools.

Table 10: Frequency of Number of Responses

N Responses	3	4	5	6	7	9	10	11	14	15	17	19	**Total**
Frequency (N Schools)	2	3	6	2	3	1	1	1	2	1	1	1	24
Sum of Responses	6	12	30	12	21	9	10	11	28	15	17	19	190

5.2. Sample Description

The gender distribution of the faculty members is shown in Table 11.

Table 11: Gender of the Participants

Gender	**Frequency**	**Relative Frequency**	**Valid Relative Frequency**	**Population Data**
Female	90	47.4%	50.3%	40.8%
Male	89	46.8%	49.7%	59.2%
Total	179	94.2%	100%	100%
Missing	11	5.8%		
Total	190	100%		

Half of the sample was composed of females and half of males. These proportions differ from the typical population of faculty members at schools of pharmacy in the US, which generally consists of about 60% males and 40% females. The difference in gender distribution between the sample and the population was found to be significant (Chi-square = 6.39, df = 1, $p < 0.05$), which indicates a response bias.

Table 12 displays the age distribution of the sample. Age data were collected as categories of 5-year intervals.

Table 12: Age Distribution of the Sample

Age Group	Frequency	Relative Frequency	Valid Relative Frequency	Grouped for Comparison	Population Data
25-30	24	12.6%	13.8%	13.8%	5.3%
31-35	34	17.9%	19.5%	28.7%	24.2%
36-40	16	8.4%	9.2%		
41-45	18	9.5%	10.3%	25.8%	28%
46-50	27	14.2%	15.5%		
51-55	18	9.5%	10.3%	22.4%	28.3%
56-60	21	11.1%	12.1%		
61-65	11	5.8%	6.3%	9.2%	14.2%
Over 65	5	2.6%	2.9%		
Total	174	91.6%	100%	100%	100%
Missing	16	8.4%			
Total	190	100%			

All age groups were represented in the sample; however some groups had different proportions from that of the typical population. The youngest age group (30 or below) was represented more strongly in the sample (13.8%) than in the general population (5.3%), and the older age groups (fifties and above) were in lower than expected proportions in the sample (31.6%) than in the population as a whole (42.5%), while the age groups in the middle (the thirties and forties) were generally closer to the population than other age groups. This difference in age distribution was found to be statistically significant (Chi-square = 27.92, df = 4, $p < 0.05$), again indicating a response bias. The sample of faculty members who participated in this study was generally composed of younger faculty than would generally be found in the population of faculty members in US schools of pharmacy.

The measures of central tendency for the number of years a person has been a faculty member in a school of pharmacy are displayed in Table 13. The average was about 12 and half years with about an 11 year standard deviation. The mode was two years; reflecting the skewed nature of data, as shown in Figure 4.

Table 13: Years as a Faculty Member

N	Mean	Standard Deviation	Median	Mode	Minimum	Maximum
172	12.4	10.8	9.0	2	0	41

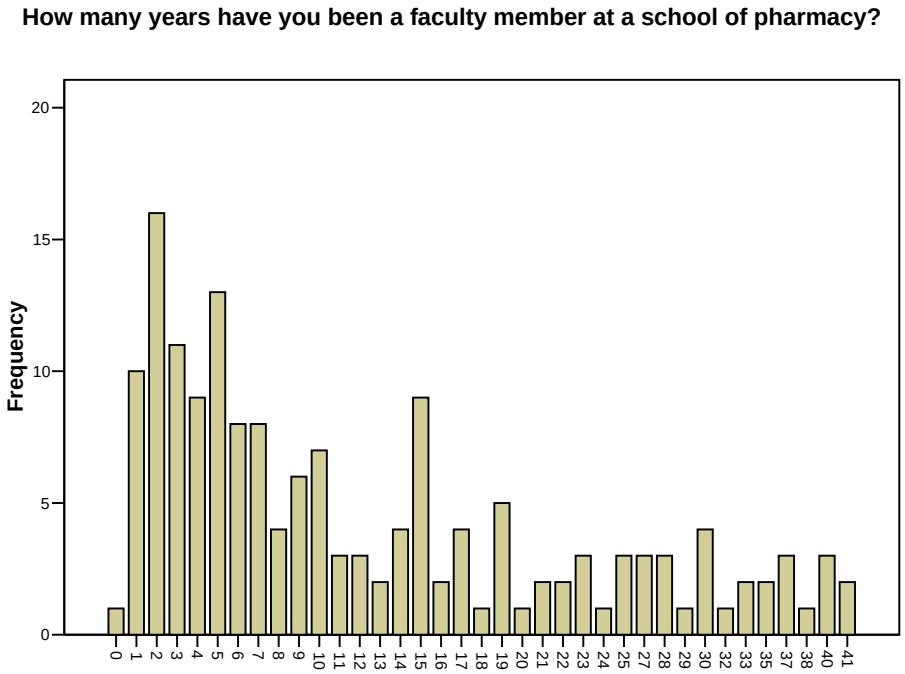


Figure 4: Years as Faculty Member

Table 14 shows the distribution of academic disciplines by gender and a comparison with population data.

Table 14: Academic Discipline by Gender, Compared to the Population as a Whole

Academic Discipline	Frequency	Relative Frequency	Valid Relative Frequency	Population Data
Pharmacy Practice	112	58.9%	63.3%	50.8%
Male	(41)		(23.7%)	22.7%
Female	(68)		(39.3%)	28.1%
Biological Sciences	19	10%	10.7%	14.8%
Male	(14)		(8.1%)	11.4%
Female	(5)		(2.9%)	3.5%
Social/Adm. Sciences	18	9.5%	10.2%	8.5%
Male	(14)		(8.1%)	5.8%
Female	(4)		(2.3%)	2.7%
Pharmaceutics	11	5.8%	6.2%	11.9%
Male	(7)		(4.0%)	9.3%
Female	(3)		(1.7%)	2.6%
Chemistry	9	4.7%	5.1%	11.8%
Male	(8)		(4.6%)	10.1%
Female	(1)		(0.6%)	1.7%
Continuing Education	1	0.5%	0.6%	0.8%
Libraries	1	0.5%	0.6%	0.8%
Others	6	3.2%	3.4%	0.6%
Total	177	93.2%	100%	100%
Missing	13	6.8%		
Total	190	100%		

The most noteworthy finding was the over representation of pharmacy practice faculty, especially females, in the sample (59% in the sample vs. 51% in the population) and the under representation of faculty from biological sciences (10% in the sample vs. 15% in the population), pharmaceutics (6% in the sample vs. 12% in the population) and chemistry (5% in the sample vs. 12% in the population). Faculty members from the

social and administrative discipline were represented in the sample relatively closely to the population as a whole (9.5% in the sample vs. 8.5% in the population). Chi square analysis of these groups (without gender specification), resulted in significant difference (Chi-square = 37.73, df = 7, $p < 0.05$).

Other descriptive data collected included whether respondents were in tenure track positions and whether they held an administrative position. Tables 15 and 16 display these data, respectively. As shown in Table 15, in the sample more people were in a tenure track position (53.3%) than non-tenure (46.7%). In the population as a whole, people in tenure track also outnumbered those in non-tenure track positions, but with a greater gap than in the sample (58% tenure vs. 42% non-tenure). However, this difference between the sample and the population was found to be not significant (Chi-square = 1.53, df = 1, which is not significance at the .05 level). .

Table 15: Distribution of Tenure and Non-tenure Track Compared to the Population

Tenure Track	**Frequency**	**Relative Frequency**	**Valid Relative Frequency**	**Population Data**
Yes	97	51.1%	53.3%	57.9%
No	85	44.7%	46.7%	42.1%
Total	182	95.8%	100%	100%
Missing	8	4.2%		
	190	100%		

Finally, Table 16 shows the distribution of faculty members who hold an administrative position versus those who do not. Only about 21% reported being in an administrative position where other faculty members report directly to them. Similar population data were not found to compare with the sample.

Table 16: Distribution of Faculty Members with Administrative Positions

Hold Administrative Position	**Frequency**	**Relative Frequency**	**Valid Relative Frequency**
No	145	76.3%	78.4%
Yes	40	21.1%	21.6%
Total	185	97.4%	100%
Missing	5	2.6%	
	190	100%	

Exploring correlations between demographic variable from one side and the various scales entering hypotheses testing found the statically significant correlations listed in Table 17.

Table 17: Statistically Significant Correlations between Demographics and Study Scales

	Age	**Tenure Track** **0 = No** **1 = Yes**	**Administrative Position** **0 = No** **1 = Yes**
Affective Commitment		-.20*	
Normative Commitment			
Continuance Commitment			
Participation in Decision making			
Communication		-.23**	
Freedom to Express Doubt		-.15*	
Charisma			.16*
Inspirational Motivation		-.17*	
Intellectual Stimulation			17*
Individualized Consideration			.25**
Contingent Reward			.23**
Passive Management by Exception		.19*	-.16*
Laissez-faire			-.21**
Compliance Behavior	-.16*	-.19*	
Discretionary Behavior			.17*

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Gender and number of years as a faculty member did not correlate significantly with any of the scale measures; therefore, they were not included in Table 17. Age was only correlated with compliance behavior ($r = -.16$, $p < .05$). Younger faculty members scored higher in compliance behavior than older faculty members. Holding a tenure track position had a significant positive correlation with a leader's passive management by exception behaviors ($r = .19$, $p < .05$), but had significant negative correlations with five variables. A tenure track position was negatively correlated with affective commitment

($r = -.20$, $p < .05$), perception of communication intensity ($r = -.23$, $p < .01$), perception of freedom to express doubt ($r = -15$, $p < .05$), compliance behavior ($r = -.19$, $p < .05$), and with leader's inspirational motivation ($r = -.17$, $p < .05$).

Being in an administrative position had significant positive correlations with charisma ($r = .16$, $p < .05$), intellectual stimulation ($r = 17$, $p < .05$), individualized consideration ($r = .25$, $p < .01$), contingent reward ($r = .23$, $p < .01$), and discretionary behavior ($r = .17$, $p < .05$). However, administrative position had significant negative correlations with passive management by exception ($r = -.16$, $p < .05$) and perception of a laissez-faire type leader ($r = -.21$, $p < .01$).

Since academic discipline contained 8 nominal categories, the correlation analysis can be considered meaningless, and therefore was not included in Table 17. To investigate the effect of academic discipline a series of one-way analysis of variance (ANOVA) tests were conducted for each of the scale variables in Table 17.

As a function of academic discipline, significant differences were found in the scores of effective commitment ($F (5, 160) = 3.03$, $p < .05$), continuance commitment ($F (5, 160) = 2.96$, $p < .05$), compliance behavior ($F (5, 157) = 2.57$, $p < .05$), and discretionary behavior ($F (5, 157) = 2.75$, $p < .05$). The Scheffe and the Bonferroni post-hoc tests revealed only one significant difference: with continuance commitment, values for biological sciences faculty were significantly higher than faculty from the social and administrative sciences discipline. No other specific post-hoc contrasts were significant.

5.3. Missing Data

Before hypotheses testing, missing value analysis using SPSS was conducted to examine the data for patterns of missing data. The focus of the analysis was on two

issues. The first was on frequently missed items, which may indicate that the question concerned was confusing. The second focus was on an individual respondent's skipping of a large portion of a measurement scale. If a participant missed more than one third of the items of a scale, he or she was considered to miss the whole scale value.

Ten cases were deleted from the 190 participant as they were deemed to have skipped either the three commitment scales or several of the leadership scales. Among the180 submissions remaining, 148 cases (82.2%) had no missing item values, and 175 cases (97.2%) had no missing scale values. There were no consistencies in missing a particular scale value among the five who missed a scale.

The top three most frequently missed items were all from the management by exception-active scale: "keeps track of my mistakes," "directs his/her attention toward failure to meet standards" (both missing by 5 cases), and "searches for mistakes before commenting on my performance" (missing by 4 cases). Only one other item was missed by 4 cases, and this belonged to the laissez-faire scale: "takes no action even when problems become chronic." All other items were missing in 3 or fewer cases; 33 items had no missing values.

Based on the above, and on the fact that 10 cases had been deleted earlier for missing multiple scale values, it was concluded that there was insufficient evidence to declare any of the items or scales to be problematic and to justify deletion.

5.4. Score Reliability

Table 18 contains the descriptive statistics for all the variables included in the analysis and Cronbach's alpha reliability results for each measure. A coefficient alpha of 0.7 or greater generally indicates an acceptable reliability.

Table 18: Descriptive Statistics for All Measures

Scale	**Cronbach's Alpha (if item deleted)**	**Mean**	**SD**	**Skew**
Affective Commitment	.956	3.72	1.007	-0.83
AC1	(.953)	3.82	1.075	-0.85
AC2	(.944)	3.77	1.084	-0.87
AC3R	(.944)	3.78	1.159	-0.89
AC4	(.945)	3.75	1.046	-0.86
AC5R	(.952)	3.61	1.105	-0.76
AC6R	(.950)	3.60	1.120	-0.80
Normative Commitment	.786	3.51	0.742	-0.33
NC1	(.778)	3.98	0.858	-1.03
NC2	(.740)	3.25	1.121	-0.32
NC3R	(.745)	3.66	1.109	-0.34
NC4	(.738)	3.35	1.158	-0.39
NC5	(.779)	2.92	1.180	-0.13
NC6R	(.735)	3.92	0.973	-1.06
Continuance Commitment	.860	2.88	0.956	-0.01
CC1	(.839)	2.77	1.233	0.24
CC2	(.836)	2.96	1.223	-0.10
CC3	(.818)	2.75	1.157	0.26
CC4	(.834)	2.86	1.168	0.05
CC6	(.827)	3.11	1.159	-0.21
Participation in Decision Making	.907	3.12	1.019	-0.19
PDM1	(.915)	2.94	1.142	-0.03
PDM2	(.891)	3.24	1.247	-0.26
PDM3	(.875)	3.26	1.282	-0.46
PDM4	(.876)	3.17	1.200	-0.28
PDM5	(.871)	2.92	1.098	-0.06
Communication	.850	2.96	.81884	-.179
CMM1	(.802)	3.19	1.157	-.310
CMM2	(.832)	3.11	1.111	-.384
CMM3R	(.846)	2.88	1.015	.152

Scale	**Cronbach's Alpha (if item deleted)**	**Mean**	**SD**	**Skew**
CMM4R	(.854)	2.78	1.135	.157
CMM5	(.810)	2.84	1.021	-.097
CMM6	(.804)	2.99	1.068	-.241
Freedom to Express Doubt	.788	2.9702	.94959	-.190
FXD1	(.764)	2.88	1.143	-.087
FXD2R	(.680)	2.62	1.171	.439
FXD3R	(.689)	3.41	1.092	-.425
Charisma	.916	3.6130	1.15747	-.639
CHRSM1	(.896)	3.73	1.162	-.749
CHRSM2	(.841)	3.64	1.245	-.669
CHRSM3	(.901)	3.47	1.339	-.493
Idealized Influnce	.892	3.60	1.11344	-.733
IDINFLC1	(.850)	3.64	1.236	-.822
IDINFLC2	(.852)	3.47	1.304	-.493
IDINFLC3	(.837)	3.68	1.144	-.740
Inspirational Motivation	.850	3.7037	1.05344	-.673
INSPMT1	(.766)	4.05	1.100	-1.14
INSPMT2	(.805)	3.35	1.257	-.449
INSPMT3	(.804)	3.71	1.239	-.663
Intellectual Stimulation	.860	3.2528	1.21386	-.330
INTLST1	(.746)	3.14	1.247	-.164
INTLST2	(.803)	3.36	1.352	-.396
INTLST3	(.853)	3.43	1.177	-.448
Individualized Consideration	.842	3.1657	1.11498	-.056
INDCSD1	(.858)	3.76	1.140	-.754
INDCSD2	(.692)	3.11	1.416	-.117
INDCSD3	(.763)	2.63	1.271	.224
Contingent Reward	.837	2.9148	1.05740	-.017
CNGRW1	(.753)	2.74	1.171	.089
CNGRW2	(.787)	2.69	1.213	.145
CNGRW3	(.781)	3.30	1.275	-.355

Scale	Cronbach's Alpha (if item deleted)	Mean	SD	Skew
Active Management by Exception	.49	2.4296	.85783	.741
MBEA1	(-.052*)	2.11	1.152	.835
MBEA2	(.033)	1.80	1.147	1.387
MBEA3	(.861)	3.34	1.178	-.439
Passive Management by Exception	.918	2.2148	1.08464	.702
MBEP1	(.839)	2.24	1.217	.685
MBEP2	(.918)	2.19	1.142	.646
MBEP3	(.884)	2.21	1.148	.630
Laissez-faire or Non-leadership	.757	2.10	.89078	.844
LSFR1	(.712)	2.22	1.112	.787
LSFR2	(.637)	2.01	1.060	.786
LSFR3	(.676)	2.07	1.101	.847

*The value is negative due to a negative average covariance among items. This violates reliability model assumptions.

All of the measured scores showed acceptable reliability coefficients except for one: active management by exception. Deleting one item from the scale (MBEA3: "directs his/her attention toward failure to meet standards") improved the Cronbach's alpha level from 0.49 to 0.86. The subsequent analyses for hypotheses testing used this new 2-item measure for active management by exception; "keeps track of my mistakes" (MBEA1), and "searches for mistakes before commenting on my performance" (MBEA2).

Table 19 displays the correlation among the measures based on 180 participants.

Table 19: Correlations among Variables Included in Hypotheses Testing

	Measure	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	Affective Commitment	1							
2	Normative Commitment	.56**	1						
3	Continuance Commitment	-.34**	.20**	1					
4	Participation in Decision Making	.60**	.42**	-.27**	1				
5	Communication	.53**	.35**	-.25**	.78**	1			
6	Freedom to Express Doubt	.65**	.28**	-.52**	.66**	.66**	1		
7	Charisma	.57**	.35**	-.25**	.46**	.48**	.56**	1	
8	Idealized Influnce	.50**	.29**	-.24**	.48**	.49**	.53**	.83**	1
9	Inspirational Motivation	.51**	.33**	-.25**	.45**	.50**	.55**	.86**	.89**
10	Intellectual Stimulation	.57**	.34**	-.27**	.53**	.54**	.63**	.83**	.84**
11	Individualized Consideration	.47**	.32**	-.22**	.50**	.49**	.55**	.78**	.79**
12	Contingent Reward	.46**	.36**	-.18*	.48**	.56**	.55**	.71**	.72**
13	Active MBE	-.18*	-.22**	.12	-.19**	-.16*	-.21**	-.27**	-.14
14	Active MBE 2-item	-.34**	-.34**	.16*	-.33**	-.30**	-.37**	-.40**	-.34**
15	Passive MBE	-.55**	-.28**	.25**	-.47**	-.55**	-.54**	-.70**	-.65**
16	Laissez-faire	-.48**	-.30**	.26**	-.46**	-.51**	-.53**	-.69**	-.66**
17	Behavioral Support	.78**	.61**	-.17*	.63**	.50**	.56**	.52**	.47**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 19 (continued)

	Measure	9	10	11	12	13	14	15	16
9	Inspirational Motivation	1							
10	Intellectual Stimulation	.82**	1						
11	Individualized Consideration	.78**	.84**	1					
12	Contingent Reward	.73**	.81**	.81*	1				
13	Active MBE	-.23**	-.17*	-.09	-.08	1			
14	Active MBE 2-item	-.38**	-.33**	-.28**	-.26**	.88**	1		
15	Passive MBE	-.64**	-.66**	-.59**	-.58**	.20**	.33*	1	
16	Laissez-faire	-.65**	-.68**	-.61**	-.59**	.28*	.42**	.83*	1
17	Behavioral Support	.51**	.53**	.50**	.49*	-.29**	-.42*	-.42**	-.43*

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

5.5. Measurement Models

For specification of the measurement model using CFA, it was necessary to use data without missing values in order for AMOS to produce modification indexes. These missing values were replaced by the mean of the corresponding series for this stage. However, when going on to work with the full model, the original data for the 180 cases, including any missing values, was used.

Confirmatory factor analyses were performed to verify the dimensionality of the scales to be used in hypotheses testing. For leadership, the hypothesized original Bass's (1985) specification factor structure was tested first. AMOS was unsuccessful in the minimization process and was unable to estimate the parameters of the model. When this occurs, it is usually a sign that the model fits the data very poorly, either because the

model is wrong or because the sample size is too small (AMOS output). Therefore, this original factor structure specification was rejected.

The second specification attempted was Avolio's (2004) specification of the full leadership model as a hierarchy of four high level factors and 12 lower level factors, as shown in Figure 5. This specification was also rejected for the same reason as above (AMOS was unable to estimate the parameters).

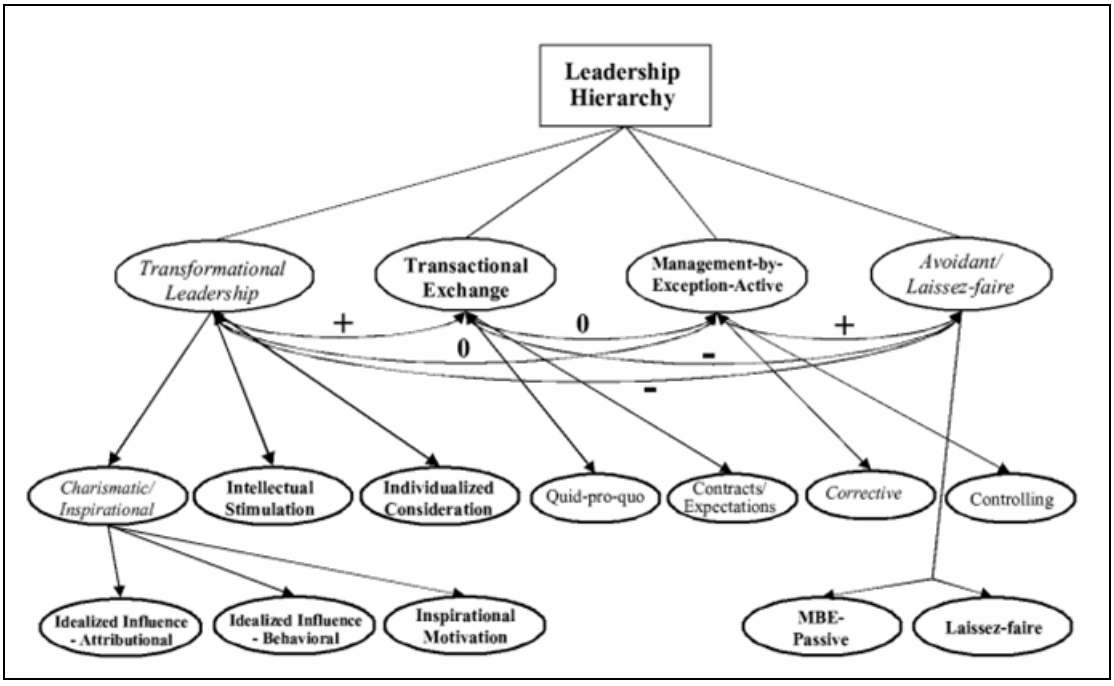


Figure 5: Avolio's (2004) Specification of the Leadership Constructs

Another variant of Avolio's hierarchy model was tried as a first-order CFA. The lower latent variables were deleted and their measured indicators were regressed directly to the four main factors. This model was also rejected because minimization was unsuccessful and parameters could not be estimated.

Using previous empirical investigation of the factor structure reported by Avolio (2004), as well as the modification indexes provided by AMOS, a series of CFAs was

conducted until a well fitted model was obtained. The final model for leadership was specified as in Figure 6. Transformational leadership factors (charisma, idealized influnce, inspirational motivation, intellectual stimulation, and individualized considerations) were indistinguishable and produced a single factor. Including all of these items to represent transformational leadership would decrease its efficiency and make the model more sensitive to sample size. Hence, only 5 items were used to represent the transformational leadership factor, as shown in the Figure 6. As for the transactional leadership, 3 factors were distinguishable as proposed by theory, although they did not all load on one factor. Active management-by-exception and contingent reward each formed a separate factor while passive management by exception loaded best on the laissez-faire factor. When the leadership factors were specified this way, a well fitted model resulted, with Chi-square (88, N = 180) = 166.848, p < .000, CFI = 0.958, RMSEA = .071 (90% CI = 0.054, 0.087). Figure 6 displays the standardized estimates for this model.

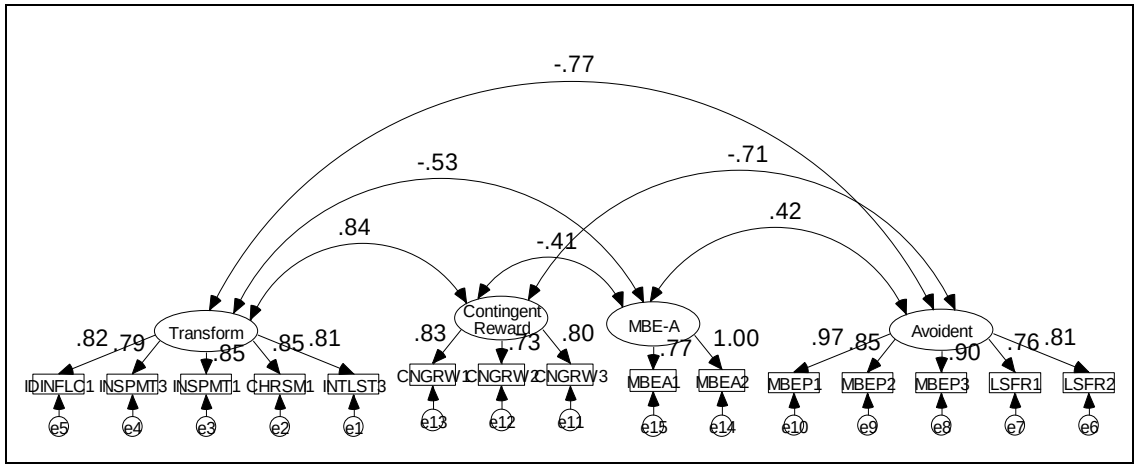


Figure 6: The Final Measurement Model of the Leadership Constructs

Similarly for the change involvement construct, a series of CFAs were conducted in order to validate the measurement model. The proposed model of one latent variable (change involvement) composed of three factors (participation in decision making, communication, and freedom to express doubts) was rejected for poor fit. Two distinct factors were distinguishable: one of which combined items from participation in decision making and communication, and the other factor contained the items for the freedom to express doubt construct. This was also rejected for poor fit. The final change involvement construct was composed of only one factor that contained five items, three from participation in decision making, and two from communication. Table 20 lists the correlation among the measures based on the specified measurement models.

Table 20: Correlations among Variables after the Specification of the Measurement Models

	Measure	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	Affective Commitment	1							
2	Normative Commitment	.56**	1						
3	Continuance Commitment	-.34**	.20**	1					
4	Transformational Leadership	.50**	.32**	-.25**	1				
5	Contingent Reward	.46**	.36**	-.18*	.71**	1			
6	Active MBE	-.34**	-.34**	.16*	-.42**	-.26**	1		
7	Avoidant Behaviors	-.53**	-.29**	.25**	-.68**	-.60**	.36**	1	
8	Change Involvement	.59**	.43**	-.22**	.45**	.50**	-.30**	-.48**	1
9	Behavioral Support	.78**	.61**	-.17*	.50**	.49**	-.42**	-.43**	.61**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

5.6. Hypothesis Testing

Four structural equations models were used to test the hypotheses of the study. The first three models examined whether leadership dimensions and change involvement accounted for variance in affective commitment (Model 1A), normative commitment (Model 1B), or continuance commitment (Model 1C). Each of the dimensions of leadership (transformational, contingent reward, active management by exception, avoidant) in these three models is specified to have direct effects on commitment in addition to indirect effects through the mediating variable change involvement. The fourth model (Model 2) examined the effect of the three dimensions of commitment on change leader satisfaction, both directly and indirectly through the mediating variables compliance and discretionary behaviors.

Figures 7, 8, 9, and 10 present brief versions of Models 1A, 1B, 1C, and 2, respectively, which contain only the paths between the latent variables. The full models with their indicators and error terms are included in the appendixes (Appendices M, N, O and P). The AMOS text outputs for the parameters estimates and fit indexes are also included in these Appendices.

5.6.1. Hypotheses accounting for variability in Change Involvement and Affective Commitment

Leadership dimension paths to affective commitment and the mediating effect of change involvement were tested by the structural equation Model 1A, as illustrated in Figure 7. This model had a good fit: Chi-square ($df = 261$, $N = 180$) = 363.176, $p < .000$, CFI = 0.971, RMSEA = 0.047 (90% CI = 0.035, 0.058). Standardized parameter estimates for Model 1A are shown in Figure 7. Affective commitment was predicted by

change involvement (Beta = .42, p < .001) and by avoidant behaviors (Beta = -.22, p < .05). Change involvement was predicted by contingent reward (Beta = .49, p < .01), by active management by exception (Beta = -.17, p < .05), and by avoidant behaviors (Beta = -.26, p < .05), but not by transformation leadership.

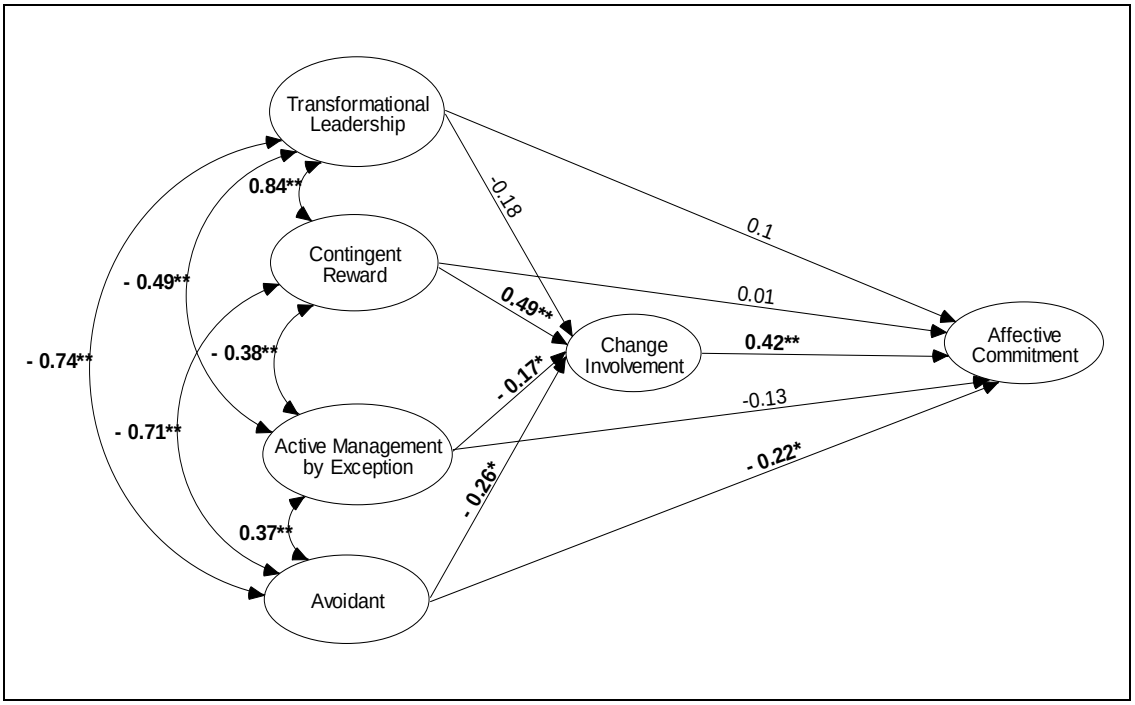


Figure 7: Model 1A, Simplified by Removing the Indicators and the Error Terms.

Statistically significant paths are in bold: ** p < 0.01, * p < 0.05.

The hypotheses tested by Model 1A are listed below, each followed by its results:

- H5a: Transactional leadership on the part of a change leader will be negatively associated with affective commitment.

After re-specification of the measurement model of the leadership dimensions (explained above), transactional leadership was divided in the new model by two factors;

contingent reward and active management by exception. In Model 1A, both of the direct paths from these two factors to affective commitment failed to achieve significance ($p = .95$ for contingent reward, and $p = .053$ for active MBE); thus hypothesis H5a was not supported.

- H6a: Transformational leadership on the part of a change leader will be positively associated with affective commitment.

The direct path from transformational to affective commitment was not significant. Hypothesis 6a was therefore not supported ($p = .52$).

- H7a: Laissez-faire or non-leadership on the part of a change leader will be negatively associated with affective commitment.

After the re-specification of the measurement model, laissez-faire was represented by avoidant behaviors (which incorporated passive MBE). The direct path from avoidant to affective commitment was significant and negatively associated (Beta = -.22, $p < 0.05$); thus hypothesis 7a was supported.

- H8: Transactional leadership on the part of a change leader will be positively associated with faculty change involvement.

Both of the paths from the factors representing transactional leadership to change involvement were significant, however they were in the opposite direction. Contingent reward was positively associated (Beta = .49, $p < 0.01$), but active MBE was negatively associated (Beta = -.26, $p < .05$). Because of this conflict between these two factors, both of which supposedly represent transactional leadership, hypothesis 8 cannot be supported.

- H9: Transformational leadership on the part of a change leader will be positively associated with faculty change involvement.

The path between transformational leadership and change involvement did not achieve significance ($p = .33$). Therefore, hypothesis H9 was not supported.

- H10: Laissez-faire or non-leadership on the part of a change leader will not be associated with faculty change involvement.

The path between avoidant behaviors and change involvement was significant (Beta = -.26, $p < .05$). However, H10 stated that the path should not be significant (no association). Therefore, H10 cannot be supported.

- H11a: Faculty change involvement will be positively associated with affective commitment.

Significance was achieved within the direct path from change involvement to affective commitment (Beta = -.42, $p < .001$). Hypothesis 11a was supported.

5.6.2. Hypotheses accounting for variability in Normative Commitment

Model 1B, illustrated in Figure 8, shows the effects of leadership dimensions and change involvement on normative commitment to organizational change.

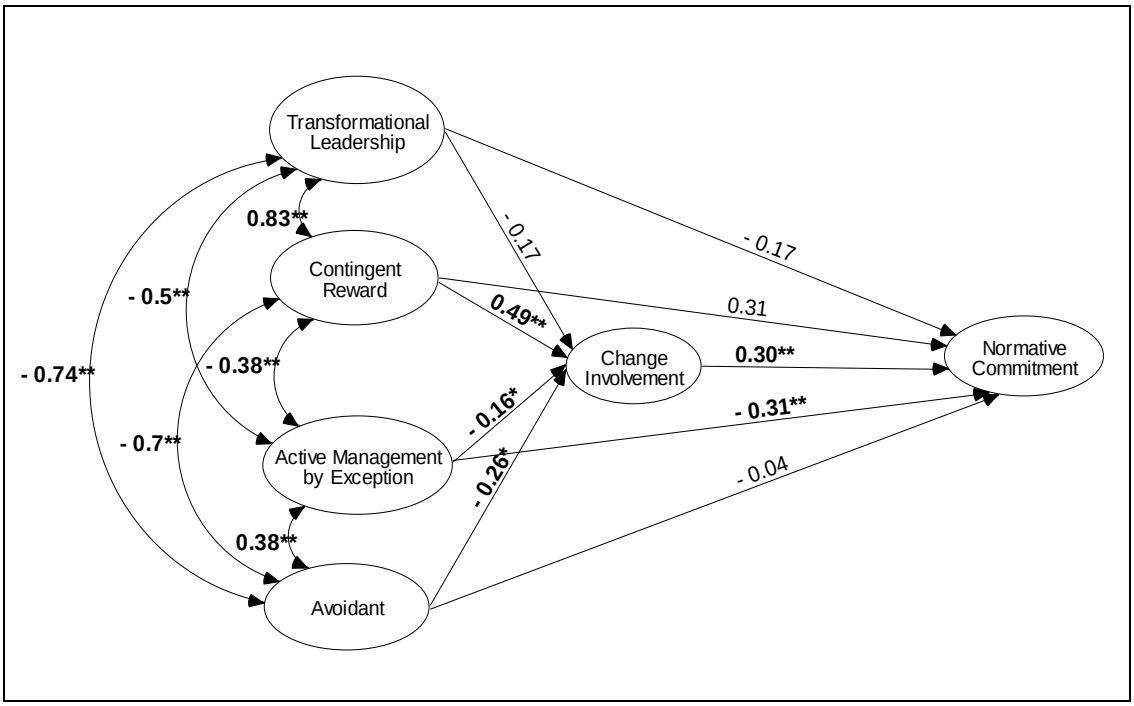


Figure 8: Model 1B Accounting for Variance of Normative Commitment.
Statistically significant paths are in bold: ** $p < 0.01$, * $p < 0.05$.

Model 1B had a good fit to the data: Chi-square (261, N = 180) = 410.374, $p < .000$, CFI = 0.946, RMSEA = .057 (90% CI = .046, .067). The standardized parameter estimates for Model 1B are shown in Figure 8, and the following are the hypotheses tested within it:

- H5b: Transactional leadership on the part of a change leader will be negatively associated with normative commitment

The path between contingent reward and normative commitment did not reach statistical significance (Beta = .31, p = .131), but active MBE had a statistically significant direct path to normative commitment (Beta = -.31, $p < .05$). Since transactional leadership is represented by these two constructs in the model, hypothesis

H5b can only be partially supported by active MBE, with a statistically significant relationship to normative commitment.

- H6b: Transformational leadership on the part of a change leader will be positively associated with normative commitment.

The direct path between transformational leadership and normative commitment in Model 1B did not reach significance. Hypothesis H6b was therefore not supported.

- H7b: Laissez-faire or non-leadership on the part of a change leader will be negatively associated with normative commitment.

The direct path between avoidant behaviors (the new construct in place of laissez faire) and normative commitment was not significant. Therefore, hypothesis H7b was not supported.

- H11b: Faculty change involvement will be positively associated with normative commitment.

Change involvement had statistically significant direct path to normative commitment, therefore, hypothesis H11b was supported.

5.6.3. Hypotheses Accounting for Variability in Continuance Commitment

Figure 9 displays the structural equation model (Model 1C) used to test hypotheses accounting for variability in continuance commitment. The model fit the data well; Chi-square (261, N = 180) = 434.566, $p < .000$, CFI = .941, RMSEA = .061 (90% CI = .061, .040). The standardized parameter estimates for Model 1B are shown in Figure 9.

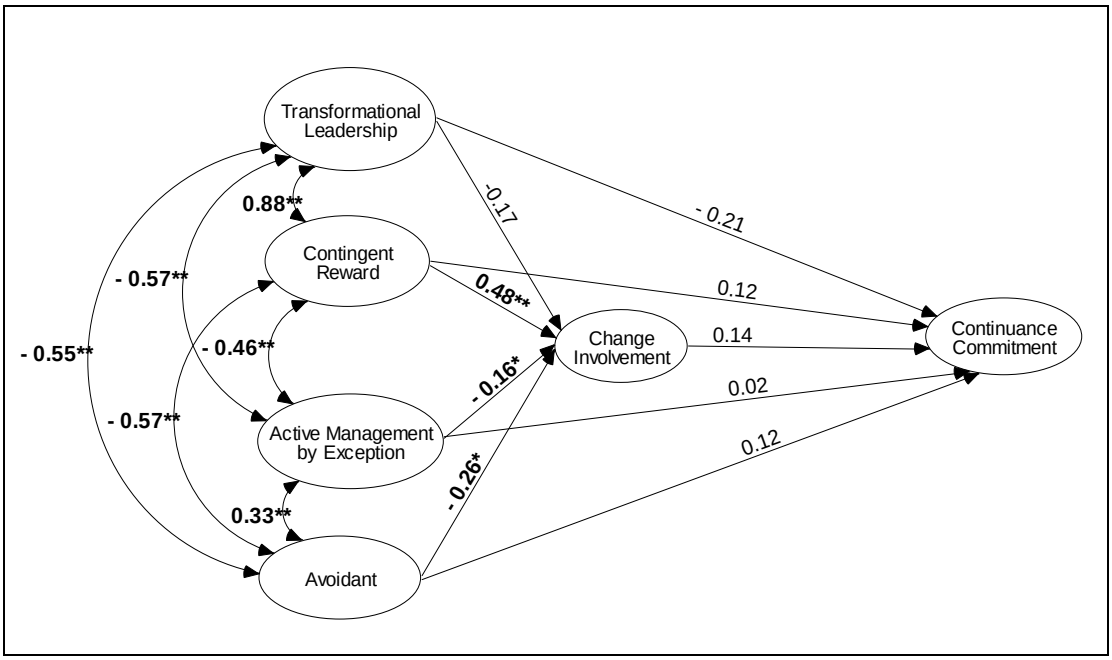


Figure 9: Model 1C Accounting for Variance of Continuance Commitment.

Statistically significant paths are in bold: ** $p < 0.01$, * $p < 0.05$.

The hypotheses tested in Model 1C were as follows:

- H5c: Transactional leadership on the part of a change leader will be positively associated with continuance commitment.

Both of the direct paths from contingent reward and active MBE (representing transactional leadership) were not statistically significant; therefore, hypothesis H5c was not supported.

- H6c: Transformational leadership on the part of a change leader will be negatively associated with continuance commitment.

The direct path between transformational leadership and normative commitment failed to achieve significance. Hypothesis H6c was therefore not supported.

- H7c: Laissez-faire or non-leadership on the part of a change leader will be negatively associated with continuance commitment.

Avoidant behaviors direct path to continuance commitment was not significant; therefore, hypothesis H7c was not supported.

- H11c: Faculty change involvement will be negatively associated with continuance commitment.

The direct path between change involvement and continuance commitment failed to achieve significance. Hypothesis H11c was therefore not supported.

5.6.3. Hypotheses Accounting for Variability in Faculty Behavior and Leader's Satisfaction

Model 2 (Figure 10) was used to test hypotheses that relate commitment to behavior and to leader's satisfaction. Model 2 had a good fit to the data: Chi-square (122, N = 180) = 227.951, $p < .000$, CFI = .949, RMSEA = .070 (90% CI = .056, .084.). The standardized parameter estimates for Model 2 are shown in Figure 10.

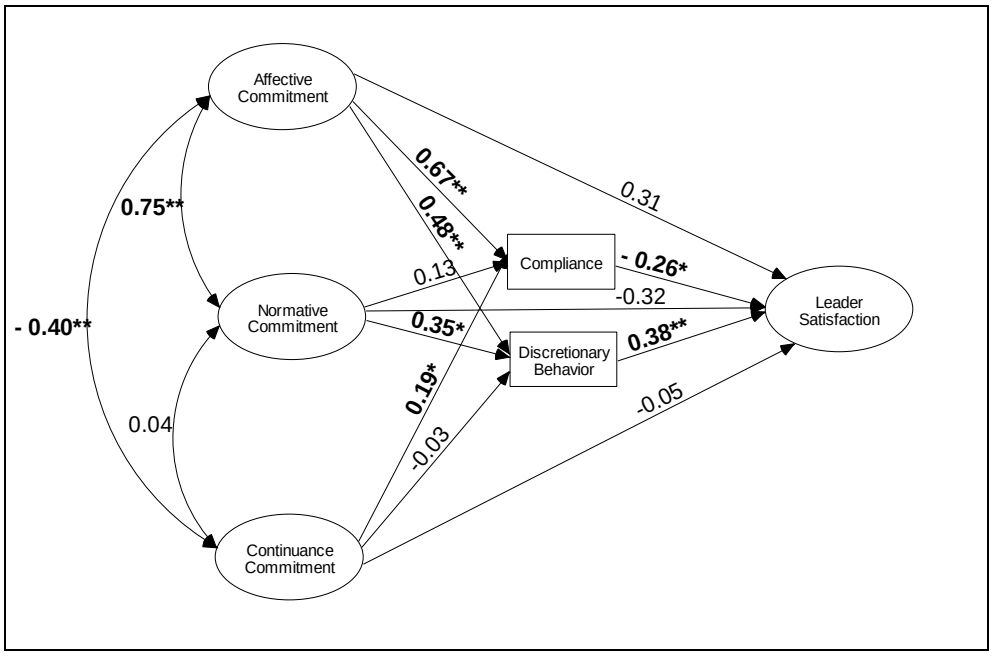


Figure 10: Model 2 Accounting for Variance for Supportive Behavior and Leader's Satisfaction.

Statistically significant paths are in bold: ** $p < 0.01$, * $p < 0.05$.

The hypotheses that were tested using Model 2 were as follows:

- H1a: A faculty member's affective commitment to organizational change is positively associated with compliance behavior related to the change.

The path between affective commitment and compliance behavior was significant (Beta = .67, p <.001), therefore, hypothesis H1a was supported by the data.

- H1b: A faculty member's affective commitment to organizational change is positively associated with discretionary behavior related to the change.

Significance was also achieved in the direct path between affective commitment and discretionary behavior was significant (Beta = .48, p <.001). Hypothesis H1b was therefore supported.

- H2a: A faculty member's normative commitment to organizational change is positively associated with compliance behavior related to the change.

The path between normative commitment and compliance was not significant (Beta = .13, p = .366). Hypothesis H2a was therefore not supported by the data.

- H2b: A faculty member's normative commitment to organizational change is positively associated with discretionary behavior related to the change.

Normative commitment had a significant direct path to discretionary behavior (Beta = .35, p < .05); therefore, hypothesis H2b was supported.

- H3a: A faculty member's continuance commitment to organizational change is positively associated with compliance behavior related to the change.

Continuance commitment had a significant path to compliance behavior (beta = .19, p < .05). Hypothesis H3a was therefore supported.

- H3b: A faculty member's continuance commitment to organizational change is negatively associated with discretionary behavior related to the change.

The path between continuance commitment and discretionary behavior was not significant (Beta = -.03, p = .752). Hypothesis H3b was not supported by the data.

- H4: A faculty member's commitment to organizational change is positively associated with a change leader's satisfaction with what was accomplished from the change.

None of the paths from the dimensions of commitment to organizational change to leader's satisfaction reached significance. Therefore, hypothesis H4 was not

supported. The effects on leader's satisfaction were found through the mediating effects of behaviors; compliance behavior had significant negative path to leaders satisfaction (Beta = -.26, $p < .05$), while discretionary behavior had positive significant path to leader's satisfaction (Beta = .38, $p < .01$). However, there were no specific hypotheses stated earlier for these two direct paths.

6. DISCUSSION

This chapter discusses the findings of the study and its limitations. It concludes with a section that describes the practical applications for pharmacy schools, the implications for theory, and suggestions for future research.

6.1. General Findings

This study was conducted to answer four research questions and to test 22 hypotheses on the relationships between leadership behaviors, change involvement, commitment to organizational change, behavioral support for change, and change leader satisfaction. Table 21 summarizes the study's findings by listing the independent variable, the dependent variable, the hypothesized relationship and whether the structural equation modeling analysis supported the hypothesis for each.

Table 21: Summary of Hypotheses Testing Findings

Hypothesis	**Independent Variable**	**Dependent Variable**	**Hypothesized Relationship**	**Finding**
H1a	Affective commitment	Compliance behavior	Positive	Supported
H1b	Affective commitment	Discretionary behavior	Positive	Supported
H2a	Normative commitment	Compliance behavior	Positive	Not supported
H2b	Normative commitment	Discretionary behavior	Positive	Supported
H3a	Continuance commitment	Compliance behavior	Positive	Supported
H3b	Continuance commitment	Discretionary behavior	Negative	Not supported
H4	Commitment to organizational change	Change leader's satisfaction	Positive	Not supported
H5a	Transactional Leadership	Affective commitment	Negative	Not supported
H5b	Transactional Leadership	Normative commitment	Negative	Partially supported
H5c	Transactional Leadership	Continuance commitment	Positive	Not supported
H6a	Transformational Leadership	Affective commitment	Positive	Not supported
H6b	Transformational Leadership	Normative commitment	Positive	Not supported
H6c	Transformational Leadership	Continuance commitment	Negative	Not supported
H7a	Laissez-faire Leadership	Affective commitment	Negative	Supported
H7b	Laissez-faire Leadership	Normative commitment	Negative	Not supported
H7c	Laissez-faire Leadership	Continuance commitment	Negative	Not supported
H8	Transactional Leadership	Change involvement	Positive	Not supported
H9	Transformational Leadership	Change involvement	Positive	Not supported

Hypothesis	Independent Variable	Dependent Variable	Hypothesized Relationship	Finding
H10	Laissez-faire Leadership	Change involvement	No relationship	Not supported
H11a	Change involvement	Affective commitment	Positive	Supported
H11b	Change involvement	Normative commitment	Negative	Not supported
H11c	Change involvement	Continuance commitment	Negative	Not supported

The following discusses the findings related to each of the research questions addressed by the study in context of the past research, along with the implications for future research.

6.1.1. Research Question 1

Many studies have found transformational leadership and transactional leadership (especially the contingent reward component) to be good predictors of performance, both at the organizational and at the individual levels (Lowe et al., 1996). Numerous authors have argued for the utility of transformational leadership in driving change (e.g., Nadler & Tushman, 1990), even in pharmacy academic literature (Wells, 2003). However, no studies examining the effect of these leadership dimensions on commitment to organizational change was found; therefore the first research question was posed: How do behaviors of a change leader affect a faculty member's commitment to organizational change?

The direct paths between each of the leadership dimensions and the commitment components were non-significant except in two situations. First, avoidant type behaviors related negatively to affective commitment. Change leaders with avoidant behaviors,

those who were absent when needed or waited for problems to arise before taking action, were found to hinder faculty members' affective commitment to organizational change. The faculty members' belief in the value of the change decreased as they perceived the change leader behaving in an avoidant manner.

The second significant direct path, which was also negative, was between active management by exception (MBE) to normative commitment. Active MBE leaders, those who were perceived as searching for mistakes in subordinates in order to correct them, were found to hinder the development of normative commitment. That is the faculty members in this sample felt less obligated to support a change in cases where the leader showed more of these behaviors.

The direct path between transactional leadership contingent reward was not significant, although it was strongly related to change involvement (explaining about 25% of the variance for change involvement), which in turn was positively related to both affective and normative commitments. This means transactional contingent reward behaviors (e.g., rewarding subordinates for achieving performance targets, clearly informing them what needs to be done to be rewarded) predicted affective and normative commitments, though indirectly through involving faculty members in the change.

No role of transformational leadership was found. Even when alternative structural equation models were explored, whether by respecification of paths, by removing the mediating variable change involvement, or even by removing the highly correlated contingent reward variable from the model, paths from transformational leadership to the commitment components failed to achieve significance. Therefore, it

seems clear that in this study transformational leadership does not relate to faculty commitment to change.

The absence of a significant relationship between transformational leadership and commitment to change is an even more important finding in view of the present study's use of data from a single source, which is expected to exaggerate the relationship between perceptions of the behaviors of a change leader and attitudes toward the change. In a meta analytic review of research on this model, Lowe et al. (1996) found that when subordinates rated both the leaders' behaviors and the outcomes, the correlations were higher than if they came from different sources. They commented that this could be due to mono-method bias in the self-report measures.

One of the reasons why this study's finding about transformational leadership was not consistent with previous research may be that the earlier work did not treat transformational leadership as a process variable that relates subordinates' attitude toward a specific change, but rather treated it as a context variable affecting general work attitudes or outcomes. According to Pettigrew's (1987) model, discussed in the introduction, organizational change can be understood as an interaction of content, context, and process variables, in which leader's behavior can be a context variable if not linked directly to the processes during a specific change. Unlike previous work, this study treated transformational leadership behaviors as a process variable and asked participants to rate these behaviors in relation to a specific change. Scholars of organizational change have noted that despite the considerable amount of empirical research on transformational leadership that has identified strong positive relationships to various individual and organizational outcomes, and despite the writings of theorists

about the effect of transformational leadership on change, there is lack of empirical evidence on whether these leaders' behaviors relate to subordinates' positive attitudes toward the change (Almaraz, 1994; Groves, 2005).

Two previous studies have attempted to bridge this gap in the literature, but neither treated leadership behaviors as a process variable linked to a specific organizational change. The first reported a positive relationship between transformational leadership and commitment to organizational change, although commitment was conceptualized differently, as a composite of personal goals, capacity beliefs and context beliefs (Yu, Leithwood, & Jantzi, 2002). Furthermore, this study was conducted in a different culture, Hong Kong, with a different population, teachers in K-12 schools. The other study was published recently by Groves (2005) and found a similar positive relationship between ratings of leaders as charismatic and followers' openness and acceptance of organizational change. A weakness in Groves's work, however, is that he relied on the leaders' inclusion of followers in the study, which might have introduced leaders' biases by including only those who were likely to evaluate the change and the leaders positively.

Most importantly, these two earlier studies did not address the need for relating transformational leader's behaviors during the change to attitude toward that specific change, but rather examined the respondents' general attitude towards new initiatives, without specifying what the exact initiatives were (Yu, Leithwood, & Jantzi, 2002), or to unidentified changes occurring during an elapsed year (Grove, 2005). In contrast, the present study explicitly made this connection, and this could be the reason why the results are not in line with previous work. Any relationship between transformational

leadership behaviors and commitment to organizational change may have been attenuated in this study by treating leadership behaviors as a process variable in the implementation of a specific change.

A second reason why no significant relationship between transformational leadership and commitment was found in this study is that the transformational model of leadership assumes that people everywhere are attracted to the same types of leader's behaviors, and that these should therefore be universally effective (Den Hartog, House, Hanges, Ruiz-Quintanilla, & Dorfman, 1999; Beyer, 1999). These researchers noted that different situations may make different leaders' behaviors "more or less attractive, persuasive, and effective because potential followers may be more or less receptive to that type of leader" (Beyer, 1999, p. 310). Bess and Goldman (2001) have noted that in higher education, professors are usually more skeptical and value their autonomy, which causes them to be less "open" to leaders with charisma. They noted further that:

> Because transformational leadership depends on peer support for significant organizational change, the diversity of faculty interests and orientations in the typical department usually presents problems for leaders. Despite putative common academic subject matter and disciplinary backgrounds, faculty diverge in both intellectual preferences and personal goals. Since as Bass (1985) notes, the "arousal" process in transformational leadership requires the use of appealing "symbols, images, and vision of a better state of affairs" (p. 66), it would take an extraordinarily broadly educated and informed chairperson to communicate effectively to each faculty member. (Bess & Goldman, 2001, p. 434)

Birnbaum (1992) conducted a five-year research study on the leadership of university presidents and provided further insights that might explain the non-significant finding in this study. He found transformational leadership to be an anomaly in higher education that led only to disruption instead of positive outcomes. He posited that the goals and values of academic institutions are produced by their history, culture, and the socialization process of their members, and are therefore not likely to respond to a strong transformational leader. He reported that the good leaders in higher education were the transactional type that acknowledged the values that were already adhered to by faculty, and were able through transactions to move the institution towards achieving them.

In view of these observations, subordinate receptivity to leaders' transformational behaviors can vary across contexts, and will not necessarily be universally endorsed, especially in higher education. Thus, the finding of non significance in relation to transformational leadership in the present study is not necessarily inconsistent with theory; pharmacy educators may simply react less favorably to transformational leadership behaviors. In terms of transactional leadership contingent reward, although it has non significant paths to affective and to normative commitment when tested simultaneously with other dimensions of leadership, it was strongly associated with change involvement, which in turn predicted the commitment components. This means it related positively to affective commitment, though indirectly through the mediating effect of change involvement. Therefore, in light of Birnbaum's (1992) assertion that good leaders in higher education are of the transactional type, rather than the transformational type, the results of the present study provide additional empirical support.

Another reason why there was no support for transformational leadership effect could be simply due to the fact that all the changes had been almost completed at the time of data collection for this study and, therefore, within this late phase of implementation the transformational leadership behaviors were not as important as they would had been in an earlier stage of the change.

Finally, these results can be considered to be consistent with other scholars of organizational change who have minimized the significance of the role of leadership and argued that although it is important, it is only one of several factors that feature in the process of organizational change (e.g., Pettigrew, 1987). Transformational leadership did not relate to commitment in this study, although transactional leadership related indirectly, and other less emphasized leaders' behaviors in the literature, namely active MBE and avoidant behaviors, related directly.

6.1.2. Research Question 2

Employee participation in decision making improves employee attitudes and performance, as suggested by several meta-analyses (Cotton, Vollrath, Froggatt, Lengnick-Hall, & Jennings, 1988; Sagie, 1994). Scholars of organizational change argue for the involvement of subordinates as a main process ingredient to facilitate employee commitment to the change (Armenakis, Harris & Field, 2001). Accordingly, this study posed the second research question: How does involvement in change affect a faculty member's commitment to organizational change?

This study found change involvement to be strongly associated with two of the components of commitment to organizational change, affective and normative commitment, but not with continuance commitment. This finding is consistent with

earlier studies that found participation in decision making, democratic decision making, or involvement contribute to employees' positive attitudes toward change. For example, Coyle-Shapiro (1999) found employee involvement to be positively related to their assessment of the benefits of TQM, a concept that relates to affective commitment. Sagie and associates found positive relationships between participation in change decisions and acceptance of change in both a simulated experiment (Sagie, Ellzur, & Koslowsky, 1990) and a field study (Sagie & Koslowsky, 1996).

Several mechanisms have been proposed to account for the relationship between individual involvement and positive attitudes. For example, participation in decision making has been reported to be associated with reduced uncertainty, increased perceived influence and decreased ambiguity, with the latter also being found to reduce emotional strain (Jackson, 1983). Sagie and Koslowsky (1996) found an individual's sense of control acted as mediator in the relationship between participation in decision making and change acceptance.

Other mechanisms that may explain the processes through which change involvement generates commitment to organizational change were offered by Armenakis, Harris and Field's (2001) model of institutionalizing change. This model posits that participation and communication (among other strategies) are effective in leading to commitment when they result in employees' comprehension of the five components of the change message, which consists of: (1) discrepancy, "is change really necessary?," (2) appropriateness, "is the proposed change an appropriate solution to the discrepancy," (3) self-efficacy, "can we successfully implement the change?," (4) principal support, "are the leaders committed to the successful implementation?," and (5) personal benefit,

"what's in it for me?" Change involvement could facilitate self-discovery and learning about the problem facing the organization, hence leading to an understanding of the discrepancy, the first component of the change message they proposed. Involvement can also facilitate learning about what improvements are expected if this change is implemented, and therefore help fulfill the second component of the change message, appropriateness. The third component, self-efficacy, can be enhanced by involvement through generating a feeling that one has a say in the change and also through being exposed to the details needed to develop competencies to carry out the change. Participation also allows an opportunity for observing the leaders and how committed they are to change implementation, i.e., principal support. The likelihood of including incentives that are motivating can increase with involvement, and thus fulfils the fifth component, personal benefit (Armenakis, Harris, & Field, 2001).

6.1.3. Research Question 3

Research by Herscovitch and Meyer (2002) found compliance behavior to be correlated positively with all three dimensions of commitment to organizational change, namely affective, normative, and continuance, but cooperation and championing (discretionary) behavior correlated positively only with the affective and normative dimensions. To verify whether these relationships hold in the pharmacy academic sample studied here, the third research question was posed: How does faculty members' commitment to change affect their support for change initiatives in pharmacy schools?

The SEM analysis depicted in Model 2 (Figure 11, Ch. 5), shows, as hypothesized and in line with Herscovitch and Meyer's findings, discretionary behavior was predicted by both affective and normative commitment, but not by continuance commitment. That

is faculty members' belief in the value of the change (affective commitment) and their sense of obligation to support the change (normative commitment) was positively associated with their expending the effort to further the change, being ready to make some sacrifices, and demonstrating enthusiasm for a change by going above and beyond what is required (examples of discretionary behavior). Continuance commitment to the change, a willingness to support the change in order to avoid costs associated with failure to do so, was not associated with discretionary behavior.

Also consistent with previous work, compliance behavior was predicted by affective and continuance commitment. However, in contrast to Herscovitch and Meyer (2002) findings, compliance was not predicted by normative commitment to the change. A possible reason for the non significant path between normative commitment and compliance is that the method used for measuring compliance and discretionary behavior might have been invalid. The 101-point scale that measured behavioral support was split into two separate scales, compliance and discretionary, by assigning scores from 0 to 60 into the new compliance variable, and assigning scores from 61 to 100 into the discretionary variable. Cases with scores above 60 in the original behavioral scale received a 60 on the compliance scale (the maximum on this new scale), while cases with scores below 61, received a zero in the discretionary behavior scale (the minimum on this new scale). This method of splitting one variable into two was not based on established methods and so the validly could not be verified; therefore, some doubt arose concerning the findings associated with Model 2.

For exploratory purposes, Model 2 was modified by replacing the two proposed scales (compliance and discretionary behaviors) with the original intact 101-point

behavioral support scale. Although this will not allow the related hypotheses to be tested, it will allow for the exploration of the simultaneous effect of the commitment dimensions on behavior more validly. Figure 11 illustrates the variables and the standardized parameter estimates for the paths between them. The modification improved the fit indexes over the original Model (see Appendix Q for details).

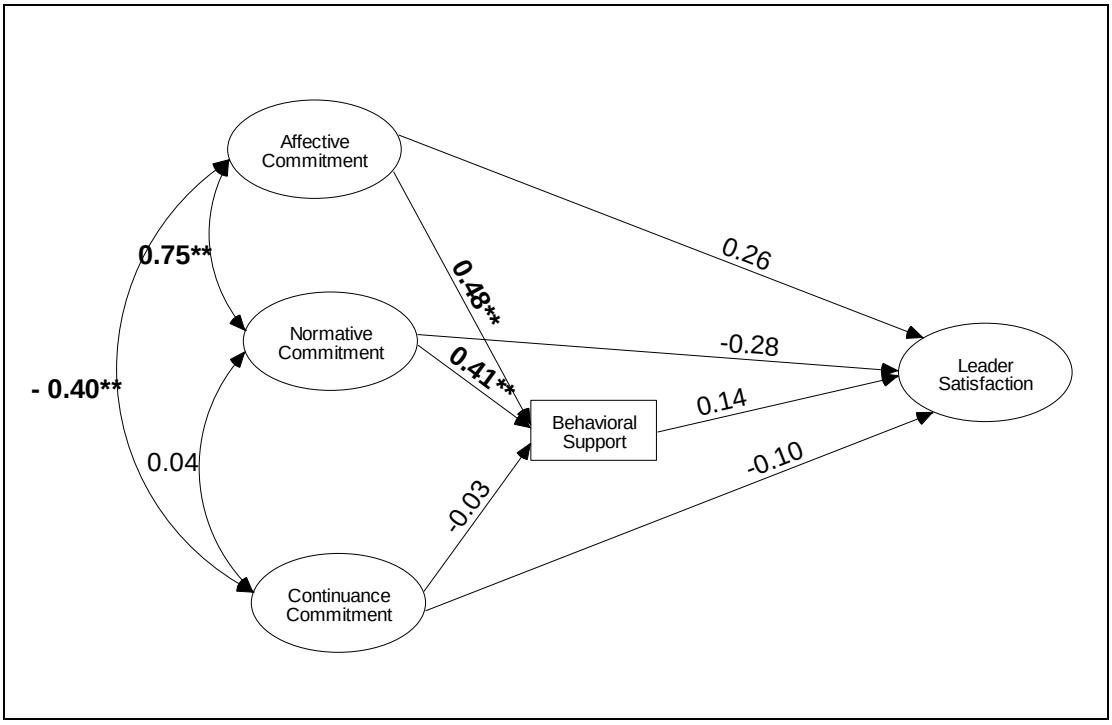


Figure 11: Exploratory Modification for Model 2 Accounting for Variance for Behavioral Support and Leader's Satisfaction.

Statistically significant paths are in bold: ** $p < 0.01$

The exploratory model showed both affective and normative commitments to be strongly associated with behavioral support, but not continuance commitment. As affective commitment to change (intention to support the change based on belief in the inherit value of the change) or normative commitment (intention to support based on a sense of obligation to reciprocate) increase, the behavioral support for the change

increases, but as continuance commitment (intention to support the change to avoid costs) increases, the behavioral support remains unchanged. Although the modified model no longer discriminates between discretionary and compliance behavior, it is still consistent with previous work in that it emphasizes the importance of affective and normative commitment in predicting behavioral support in general, and question the value of continuance commitment.

6.1.4. Research Question 4

How does faculty members' commitment and their behavioral support affect the satisfaction of a change leader with change accomplished?

None of the commitment components had statistically significant paths to change leader satisfaction, in either the original or the modified versions of Model 2. The possible reasons for not finding such a relationship include a weakness in measurement, or an attempt to connect variables with weak theoretical bases.

This weakness in measurement relates to a problem with the narrowness of the range of responses on the two items that made up the leader satisfaction score. Examination of the responses on these two items revealed means of 4.11 and 4.06 with standard deviations of about 0.8 for both. These high mean values with low variances may indicate problems with the validity of these two items. These two items were constructed specifically for the present study and their validity has not been sufficiently established.

The other reason for not finding a statistically significant relationship between the commitment components and leader's satisfaction is that this relationship may not be based on a strong theoretical foundation. Commitment of faculty may not be sufficient to

make a change leader satisfied if he or she were faced with setbacks due to other factors, such as insufficient resources, unavailability of skills, or inadequate planning. Another issue relates to the expectations of a change leader, and how they might differ from faculty members' expectations. Through an informal discussion, a change leader told the principal investigator that a "good transformational leader" is never satisfied, regardless of the outcome.

To summarize, the results of this study suggest that affective and normative commitments to organizational change may be best predicted by the degree of employee involvement in the change, rather than by the transformational behaviors of the change leader. Transactional contingent reward behaviors strongly predicted change involvement, and indirectly predicted affective and normative commitments. In addition, affective commitment was predicted by avoidant behaviors of the change leader, and normative commitment was predicted by the leader's active management by exception behaviors. Transformational leadership did not predict any commitment component. Continuance commitment was not predicted by any of the independent variables examined. In terms of the outcomes of commitment, compliance and discretionary behavior were both strongly predicted by the level of the affective commitment. Normative commitment predicted discretionary behavior, while continuance commitment predicted compliance behavior.

6.2. Limitations

"The ideal of science is the controlled experiment" (Kerlinger & Lee, 2000, p.467). An important limitation of this study is its nonexperimental cross-sectional design. The principal investigator did not manipulate and control any of the independent

variables, nor did he assign participants to treatment and control groups. Therefore, this design can not generate confidence that the relationships studied here are descriptive of the independent variables affecting dependent variables. For example, one could ask: is the demonstrated relationship really between change involvement and affective commitment? There are other variables that correlate with change involvement (e.g., being a member of the committee that implemented a change) that my produce the same or a stronger effect on change involvement. Although the study attempted to hypothesize causality on the basis of theory, and utilized a suitable analysis method, namely structural equation modeling, to infer causality, because of the reduced control in this nonexperimental design, the probability that the independent variable is related to the dependent variable is less than in an experimental design (Kerlinger & Lee, 2000).

Another related limitation to the above is the potential of response bias, a selection problem that threatens internal validity (Campbell and Stanley, 1963). This threat is likely to occur whenever the researcher does not implement random selection and assignment of participants. In this study, the self-selection of change leaders and faculty members, as epitomized by the relatively low response rate (11% for the first phase, 44% for the second, and 17% for the third), raises the possibility that the participants differed from nonparticipants in certain important characteristics. If that is the case, then this may account for the difference in the dependent variables and present rival hypotheses.

Several statistical tests were conducted in an attempt to detect whether the sample was in fact different from the population as a whole. Some statistically significant differences were found between the participants and the general population of pharmacy

faculty on some of demographic variables collected. However, when these demographics were correlated with the measured variables of the study, few significant relationships were revealed. Being in an administrative position tended to make a faculty member rate the change leader more favorably, while being a faculty member in a tenure track position tended to rate the leader less favorably, in some aspects, and to have a lower affective commitment to the change. Continuance commitment was associated more often with faculty from the biological sciences discipline than those from the social and administrative discipline. Based on these few instances where statistically significant correlations between demographics and study variables were found, it is clearly possible that a response bias has occurred, thus presenting a serious threat to the internal validity of the study.

Besides its effect on internal validity, the selection problem or response bias presents difficulties for the generalizability of the finding to the population of interest. Kerlinger and Lee (2000) refer to this problem as a threat to the external validity and discusses three concepts in relation to it: sample generalizability, ecological representativeness, and variable representativeness. Sample generalizability in a study asks the question to what population the finding of this study can be generalized? One of the intentions of this dissertation was to provide practical recommendations on change management for pharmacy schools in the US, but in view of the low response rate and the evidence of response bias, these recommendations should be applied cautiously as the finding might not be applicable to the whole population of schools, or faculty members within schools.

Ecological representativeness refers to the social setting in which the research study is conducted. For example, the geographical location of the participants may limit the external validity to only this location. In this study, the 24 schools included in the final phase represented every region of the continental United States; hence there is little concern for that aspect. However, there are other aspects of ecology, namely the function of the instrument and the process of survey administration, that it was not possible to control for. What results would have been found if the participants had filled out a paper form of the survey instead of Internet format? What if they had received the invitation e-mails from a person with a different gender, race, or ethnicity?

Variable representativeness refers to questioning the assumption that variables in the study are constant. For example, the intensity of affective commitment to a relatively minor organizational change that is tactical in nature may not be the same as the affective commitment to a strategic change that suggests a whole new direction for the school. When we talk of affective commitment to organizational change, what kind of organizational change do we mean? Most changes included in the study involve changes in the production processes (changes in curriculum, methods of teaching, etc.), but what if a future organizational change were to involve a merger of two departments, institutional downsizing by closing certain departments, changes in the administrative structure of the school, and so forth? Would the findings of the study still be generalizable? While the study's findings might be used to provide some guidance for those conducting such change events, its external validity cannot be extended to cover such changes.

Another limitation of the study is the use of a single source for measuring the dependent and independent variables, which may result in what Crampton and Wagner (1994) called percept-percept inflation of the relationship. With the exception of leaders' satisfaction, which was based on change leader response, all other measures were based on self-reports from faculty members. However, the measurement model specification using confirmatory factor analysis resulted in measures that were clearly distinct from one another. Also, the absence of statistically significant relationships between transformational leadership and the components of commitment or change involvement should minimize the concerns over threats from single source bias in this study.

One of the limitations also is the decision to use change leader's satisfaction as an outcome variable. This may have introduced a bias toward evaluating the change more positively by the leader since the change leader is interested in the success of the change.

An additional limitation to the study was due to the decision to include only a dean or associate/assistant dean as the leader of the change, and therefore excluding the instances were a leader was a department head or a faculty member with no administrative position. This decision was made because the theoretical framework for this study contains behaviors of a change leader that assume hierarchical situation between a leader and a follower. A change leader at an equal organizational level with a follower, or from a different department where the follower is not accountable to, would have made some of the leaders behaviors not applicable. Since many responses in the first exploratory phase of the study provided names of change leaders with no administrative positions, as would be expected in an academic setting, the decision not to include them posed a limitation for this study.

6.3. Implications

6.3.1. Practical Implications

The findings of this dissertation have practical implications for pharmacy schools concerned with change and developing a commitment to change. The study had several statistically significant relationships with practical applications.

Pharmacy schools that are interested in implementing change must be concerned with two types of commitment to organizational change. The first of these is affective commitment, which is the intention to support a change based on a belief in its benefits. The second is normative commitment, the intention to support a change based on a sense of obligation to support it. Affective and normative commitment to organizational change were both found to predict faculty members' discretionary behaviors toward the change. These behaviors are exemplified by expending effort to further the change, going along with the spirit of the change, and being ready to make some sacrifices. They also include championing, which consists of demonstrating enthusiasm for a change by going above and beyond what is formally required and promoting the change to others. Affective and normative commitment, along with their combined effect on discretionary behavior is expected to help in the implementation of a change.

To foster these two types of commitment, pharmacy schools need to involve faculty members in the change. Based on the results of this study, perception of the level of involvement in the change was found to be the best predictor of faculty members' affective and normative commitment. Specifically, change involvement includes: (1) ensuring participation in the change decision, (2) increasing the intensity of

communication during the change, and (3) allowing ample opportunities to freely express opinions and doubts about the change.

This study found transformational leadership to not relate to commitment or to the degree of subordinate involvement, a finding contrary to that of other research in different work settings or to the recommendations from the business press that claim transformational leadership to be universally effective. The change leaders who were most closely associated with faculty perception of their involvement and their commitment were those who behaved in a transactional manner. These transactional type leaders acknowledged the values that were already adhered to by faculty and were thus able to secure faculty commitment by involving them through clarifying what needed to be done to be rewarded, and making sure the faculty received appropriate rewards for their support.

Also, in order to increase the probability of commitment in pharmacy faculty, change leaders should recognize and avoid two groups of counterproductive behaviors, namely avoidant type and active management by exception (MBE). Change leaders who were perceived as closely monitoring the faculty in order to identify problems or were keeping track of mistakes (active MBE) tended to be related to lower levels of normative commitment. The faculty members felt less obligated to support a change initiated by this type of change leader. Avoidant behaviors are those that are characterized by the absence of leadership, such as avoiding making decisions, failing to intervene until problems become serious, and delaying responses for urgent questions. These behaviors are generally detrimental to the development of affective commitment toward the proposed change.

These findings can be applied in the academic pharmacy setting in several ways. First, for a school that is contemplating the implementation of a change, it is recommended that the change leader should be prepared to expend time and effort in making sure that every faculty member is adequately involved with the change. This should extend beyond the typical committee membership that is commonly utilized in the academic setting. In this regard, Aremankis, Harris, and Mossholder (1993) recommend involving employees using oral communication, such as speeches and informal discussions, and written communication, such as newsletters and memos. They also recommend several participation strategies, including formalized strategic planning activities, which can potentially involve all the faculty members, rather than a limited number of committee members. This can be accomplished by circulating a draft of the change initiative to all faculty members requesting input, followed by revision of the draft and re-circulation. Aremankis, Harris, and Mossholder (1993) suggest that participation can be accomplished by designing experiential learning exercises and vicarious learning. The later can be achieved by arranging for a representative group of faculty members to visit another school that already has the proposed change in place, allowing them to observe others applying the new techniques and hear others talk about their successes. The last method of participation they recommend is called enactive mastery, which constitutes taking small incremental steps rather than full implementation in a single step.

Another way the findings of this study can be useful in academic pharmacy setting is in the selection of the leader who will be in charge of the change. A dean or associate/assistant dean with a track record of contingent reward behaviors would be

most suited to leading a change. A history of behaviors such as rewarding subordinates for achieving performance targets, clearly informing them what needs to be done to be rewarded, and providing exchange opportunities are indicative of contingent reward behaviors. Individuals who are less suitable to lead a change are those with behaviors characterized by following subordinates' mistakes and failures (active MBE) or by the absence of action when problems arise (avoidant behaviors). These behaviors were found to be detrimental to the involvement of followers and to be related negatively to commitment to change.

These aspects of leaders' behavior could also be incorporated in the training of individuals for the task of leading faculty through a change. Schools of pharmacy may want to consider a new focus on training deans and other faculty members in administrative positions to exhibit contingent reward behaviors and to minimize corrective and avoidant behaviors in order to successfully motivate faculty members to achieve a proposed change. Similarly, the AACP could benefit by incorporating these aspects in their leadership development programs.

6.3.2. Implications for Theory and Research

The findings of this study present a challenge to the long-standing theoretical assumption that transformational leadership behaviors result in positive attitudes toward change. The speculation made here is that once transformational behavior is treated as a process variable, which is linked directly to processes during the change and the effect of which is related to a specific change, this relationship became non-significant. It would be valuable to know whether these results can be replicated in other types of organizations or with cultures different from that in the pharmacy academic.

Consistent with previous research, this study has demonstrated that involvement in the change is associated with higher levels of affective and normative commitment to organizational change. However, the new contributions made by this study comes from the finding that the likelihood of involvement and subordinates' affective and normative commitment are enhanced by transactional contingent reward behaviors, but dimensioned by active MBE and avoidant behaviors. Future research could incorporate the relationships found to be significant in this study into a more general theory of organizational change.

.

7. REFERENCES

Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology, 63*(1), 1-18.

Almaraz, J. (1994). Quality management and the process of change. *Journal of Organizational Change Management, 7*(2), 6-14.

American Council on Pharmaceutical Education. (1993). *Substantive Change Policies and Procedures*. Retrieved June 10, 2005, from http://www.acpe-accredit.org/pdf/changes.pdf

Anderson, J. C., & Gerbing, D. (1988). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin, 103*(May), 411-423.

Andrews, J. C., Durvasula, S., & Akhter, S. H. (1990). A framework for conceptualizing and measuring the involvement construct in advertising research., *Journal of Advertising* (Vol. 19, pp. 27): M.E. Sharpe Inc.

Armenakis, A. A., & Bedeian, A. G. (1999). Organizational change: a review of theory and research in the 1990s. *Journal of Management, 25*(3), 293-315.

Armenakis, A. A., Harris, S. G., & Field, H. S. (2001). Paradigms in organizational change: Change agent and change target perspectives. In R. T. Golembiewski (Ed.), *Handbook of organizational behavior* (2nd ed., pp. 631-658). New York: Marcel Dekker.

Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993). Creating Readiness for Organizational Change. *Human Relations, 46*(6), 681-704.

Avolio, B. J. (2004). Examining the Full Range Model of Leadership: Looking Back to Transform Forward. In D. V. Day, S. J. Zaccaro & S. M. Halpin (Eds.), *Leader Development for Transforming Organizations : Growing Leaders for Tomorrow*. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Avolio, B. J., & Bass, B. M. (2002). *Developing potential across a full range of leadership : cases on transactional and transformational leadership*. Mahwah, N.J.: Lawrence Erlbaum Associates.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York Free Press: London.

Bass, B. M., & Avolio, B. J. (1994). *Improving organizational effectiveness through transformational leadership*. Thousand Oaks: Sage Publications.

Becker, T., Billings, R., Eveleth, D., & Gilbert, N. (1996). Foci and bases of employee commitment: Implications for job performance. *Academy of Management Journal, 39*, 464-482.

Becker, T. E. (1992). Foci and Bases of Commitment: Are they distinctions worth making?, *Academy of Management Journal* (Vol. 35, pp. 232): Academy of Management.
Bennis, W., & Nanus, B. (1985). *Leaders: The Strategies for Taking Charge*. New York: Harper and Row.
Bess, J. L., & Goldman, P. (2001). Leadership ambiguity in universities and K-12 schools and the limits of contemporary leadership theory. *The Leadership Quarterly, 12*(4), 419-450.
Beyer, J. M. (1999). Taming and promoting charisma to change organizations. *The Leadership Quarterly, 10*(2), 307-330.
Birnbaum, R. (1992). *How academic leadership works: understanding success and failure in the college presidency* (1st ed.): Jossey-Bass.
Blau, P. M. (1964). *Exchange and power in social life*. New York: J. Wiley.
Bryman, A. (1993). Charismatic leadership in business organizations: Some neglected issues. *Leadership Quarterly, 4*(3/4), 289-304.
Burns, J. M. (1978). *Leadership* (1st ed.). New York: Harper & Row.
Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.
Carlson, D. S. P., Pamela L. (1995). Institutionalization of organizational ethics through transformational leadership, *Journal of Business Ethics* (Vol. 14, pp. 829).
Coch, L., & French, J. R. P., Jr. (1948). Overcoming resistance to change. *Human Relations, 1*, 512-532.
Coetsee, L. (1999). From resistance to commitment. *Public Administration Quarterly, 23*(2), 204-222.
Conger, J. A. (1999). Charismatic and transformational leadership in organizations: An insider's perspective on these developing streams of research. *Leadership Quarterly, 10*(2), 145-179.
Conner, D. R., & Patterson, R. B. (1982). Building Commitment to Organizational Change. *Training and Development Journal, April*, 18-30.
Cotton, J. L., Vollrath, D. A., Froggatt, K. L., Lengnick-Hall, M. L., & Jennings, K. R. (1988). Employee Participation: Diverse Forms and Different Outcomes., *Academy of Management Review* (Vol. 13, pp. 8): Academy of Management.
Coyle-Shapiro, M. (1999). Employee Participation and Assessment of an Organizational Change Intervention: A Three-Wave Study of Total Quality Management. *Journal of Applied Behavioral Sciences, 35*(4), 439-456.
Crampton, S. M., & Wagner, J. A. (1994). Percept Percept Inflation in Microorganizational Research - an Investigation of Prevalence and Effect. *Journal of Applied Psychology, 79*(1), 67-76.
Cummings, T. G., & Worley, C. G. (1997). *Organization development and change* (6th ed.). Cincinnati, Ohio: South-Western College Pub.
Dansereau, F., Graen, G., & Haga, W. J. (1975). A vertical dyad linkage approach to leadership within formal organizations: A longitudinal investigation of the role making process. *Organizational Behavior & Human Decision Processes, 13*(1), 46-78.
Den Hartog, D. N., House, R. J., Hanges, P. J., Ruiz-Quintanilla, S. A., & Dorfman, P. W. (1999). Culture specific and cross-culturally generalizable implicit leadership

theories: Are attributes of charismatic/transformational leadership universally endorsed? *The Leadership Quarterly, 10*(2), 219-256.
Dent, E. B., & Goldberg, S. G. (1999). Challenging "Resistance to Change". *Journal of applied Behavioral Sciences, 35*(1), 25-41.
Groves, K. S. (2005). Linking Leader Skills, Follower Attitudes, and Contextual Variables via an Integrated Model of Charismatic Leadership., *Journal of Management* (Vol. 31, pp. 255-277): Elsevier Science Publishing Company, Inc.
Herscovitch, L., & Meyer, J. P. (2002). Commitment to organizational change: Extension of a three-component model. *Journal of Applied Psychology, 87*(3), 474-487.
House, R. J. (1977). A 1976 theory of charismatic leadership. In J. G. Hunt & L. L. Larson (Eds.), *Leadership : the cutting edge : a symposium held at Southern Illinois University, Carbondale* (pp. 189-207). Carbondale: Southern Illinois University Press.
House, R. J. (1996). Path-goal theory of leadership: Lessons, legacy, and a reformulated theory. *The Leadership Quarterly, 7*(3), 323-352.
House, R. J., & Aditya, R. N. (1997). The social scientific study of leadership: Quo Vadis?, *Journal of Management* (Vol. 23, pp. 409): Elsevier Science Publishing Company, Inc.
Jackson, S. E. (1983). Participation in decision making as a strategy for reducing jobrelated strain. *Journal of Applied Psychology, 68*(1), 3–19.
Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of behavioral research* (4th ed.). Belmont, Calif.: Wadsworth.
Klein, K. J., & Sorra, J. S. (1996). The challenge of innovation implementation. *Academy of Management Review, 21*(4), 1055-1080.
Klein, S. M. (1996). A management communication strategy for change. *Journal of Organizational Change Management, 9*(2), 32-46.
Kuhnert, K. W. (1994). Transforming leadership: Developing people through delegation. In B. M. Bass & B. J. Avolio (Eds.), *Improving organizational effectiveness through transformational leadership* (pp. 10-25). Thousand Oaks: Sage Publications.
Lawrence, P. R. (1969). How to deal with resistance to change. *Harvard Business Review, 47*(1), 4-6.
Lewin, K. (1951). *Field theory in social science; selected theoretical papers* ([1st] ed.). New York: Harper.
Lin, Y. A., Altiere, R. J., Harris, W. T., Sims, P. J., Ganther, J. M., Meyer, M. M., et al. (2003). Leadership: The nexus between challenge an opportunity. Reports of the 2002-03 academic affairs, professional affairs, and research and graduate affairs committees. *American Journal of Pharmaceutical Education, 67*(3), S05 (17 pages).
Lovelace, K., Shapiro, D. L., & Weingart, L. R. (2001). Maximizing cross-functional new product teams' innovativeness and constraint adherence: A conflict communication perspective, *Academy of Management Journal* (Vol. 44, pp. 779): Academy of Management.
Lowe, K. B., Kroeck, K. G., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MLQ literature. *Leadership Quarterly, 7*(3), 385-425.

Meyer, J. P., & Herscovitch, L. (2001). Commitment in the workplace: Toward a general model. *Human Resource Management Review, 11*(3), 299-326.
Meyer, J. P., & Allen, N. J. (1984). A three-component conceptualization of organizational commitment. *Human Resource Management Review, 1*(61-89).
Meyer, J. P., Paunonen, S. V., Gellatly, I. R., Goffin, R. D., & et al. (1989). Organizational commitment and job performance: It's the nature of the commitment that counts. *Journal of Applied Psychology, 74*(1), 152-156.
Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior, 61*(1), 20-52.
Mitchell, D. E., & Tucker, S. (1992). Leadership as a way of thinking., *Educational Leadership* (Vol. 49, pp. 30): Association for Supervision & Curriculum Development.
Nadler, D. A., & Tushman, M. L. (1990). Beyond the Charismatic Leader: Leadership and Organizational Change., *California Management Review* (Vol. 32, pp. 77): California Management Review.
Nicholson, N., Schuler, R. S., & Van de Ven, A. H. (1998). *The Blackwell encyclopedic dictionary of organizational behavior*, from http://www.netLibrary.com/urlapi.asp?action=summary&v=1&bookid=48684Availability
Pettigrew, A. M. (1987). Context and Action in the Transformation of the Firm, *Journal of Management Studies* (Vol. 24, pp. 649-670): Blackwell Publishing Limited.
Pettigrew, A. M., Woodman, R. W., & Cameron, K. S. (2001). Studying organizational change and development: Challenges for future research. *Academy of Management Journal, 44*(4), 697.
Piderit, S. K. (2000). Rethinking resistance and recognizing ambivalence: A multidimensional view of attitudes toward an organizational change, *Academy of Management Review* (Vol. 25, pp. 783): Academy of Management.
Reichers, A. E. (1986). Conflict and organizational commitments. *Journal of Applied Psychology, 71*(3), 508-514.
Sagie, A. (1994). Participative decision making and performance: A moderator analysis., *Journal of Applied Behavioral Science* (Vol. 30, pp. 227): NTL Institute for Behavioral Sciences.
Sagie, A. (1997). Leader direction and employee participation in decision making: contradictory or compatible practices? *Applied Psychology: An International Review, 46*(4), 387-416.
Sagie, A., Ellzur, D., & Koslowsky, M. (1990). Effect on Participation in Strategic and Tactical Decisions on Acceptance of Planned Change., *Journal of Social Psychology* (Vol. 130, pp. 459-465): Heldref Publications.
Sagie, A., & Koslowsky, M. (1996). Decision type, organisational control and acceptance of change. An integrative approach to participative decision-making. *Applied Psychology: An International Review, 54*, 85-92.
Shadur, M. A., Kienzle, R., & Rodwell, J. J. (1999). The relationship between organizational climate and employee perceptions of involvement. *Group & Organization Management, 24*(4), 479-503.

Sosik, J. J., & Dionne, S. D. (1997). Leadership styles and Deming's behavior factors. *Journal of Business & Psychology, 11*(4), 447-462.
Strebel, P. (1996). Why do employees resist change? *Harvard Business Review, 74*(3), 86-92.
Tejeda, M. J., Scandura, T. A., & Pillai, R. (2001). The MLQ revisited - Psychometric properties and recommendations. *Leadership Quarterly, 12*(1), 31-52.
The Commission to Implement Change in Pharmaceutical Education. (1993). Papers from the Commission to Implement Change in Pharmaceutical Education. *American Journal of Pharmaceutical Education, 57*, 366-399.
Thompson, J. A., & Van de Ven, A. H. (2002). Commitment Shift during Organizational Upheaval: Physicians' Transitions from Private Practitioner to Employee. *Journal of Vocational Behavior, 60*(3), 382-404.
Tichy, N., & Ulrich, D. (1984). SMR Forum; the leadership challenge - a call for the transformational leader. *Sloan Management Review, Fall*, 59-68.
Van de Ven, A. H., & Chu, Y. (1989). A psychometric assessment of the Minnesota Innovation Survey. In A. H. Van de Ven, H. L. Angle & M. S. Poole (Eds.), *Research on the management of innovation : the Minnesota studies* (pp. 55-103). New York Harper & Row: Grand Rapids.
Waheedi, M., & Armenakis, A. A. (2003). *Organizational Assessment of a Pharmacy School: An Internet Survey of Employee's Opinions about the Strengths and Weakness*. Auburn, AL: Auburn University.
Waldman, D. A. R., Gabriel G. House, Robert J. Puranam, Phanish. (2001). Does leadership matter? CEO leadership attributes and profitability under conditions of perceived environmental uncertainty, *Academy of Management Journal* (Vol. 44, pp. 134): Academy of Management.
Wanberg, C. R., & Banas, J. T. (2000). Predictors and Outcomes of Openness to Changes in a Reorganizing Workplace., *Journal of Applied Psychology* (Vol. 85, pp. 132-142): American Psychological Association.
Weber, M., Henderson, A. M., & Parsons, T., tr & ed. (1947). *The theory of social and economic organization* (1st American ed.). New York: Oxford University Press.
Wells, B. G. (2003). Why leadership? It's all about patient's. *American Journal of Pharmaceutical Education, 67*(4), 104-108.
Yammarino, F. J. (1994). Indirect leadership: Transformational leadership at a distance. In B. M. Bass & B. J. Avolio (Eds.), *Improving organizational effectiveness through transformational leadership* (pp. 26-47). Thousand Oaks: Sage Publications.
Yanchick, V. A. (2005). Greater Implementation of Competency Guidelines in the Pharmacy Curriculum Needed. *American Journal of Pharmaceutical Education, 69*(2), 247-248.
Yu, H., Leithwood, K., & Jantzi, D. (2002). The effects of transformational leadership on teachers' commitment to change in Hong Kong. *Journal of Educational Administration, 40*(4/5), 368.
Yukl, G. A. (1989). *Leadership in organizations* (2nd ed.). Englewood Cliffs, N.J.: Prentice Hall.
Zander, A. (1950). Resistance to change--its analysis and prevention. *Advanced Management Journal, 15*(1), 9-11.

8. APPENDICES

Appendix A: Invitation E-mail to Participate in the Phase 1 of the Study

From: AU Pharmacy Care Systems
To: **(e-mail address of recipient)**
Date: 12/8/2004 9:50:25 AM
Subject: A Study of Commitment to Change in AACP Member Schools

Commitment to Change in Pharmacy Schools: Does Change Leadership Matter?

As a faculty member in a U.S. school of pharmacy, you are an important contact for a study examining faculty commitment to change in pharmacy schools. You are invited to participate in this research study designed to elicit your opinion of change in your pharmacy school and factors affecting commitment to change. The objective of the study is to examine factors affecting commitment to change which may help pharmacy schools make better decisions on managing future change. This study is being conducted by Mohammad Waheedi, a doctoral student, under the supervision of Dr. Bruce A. Berger, professor and head of the Department of Pharmacy Systems, Auburn University. You received this letter because you are part of the registry of the American Association of Colleges of Pharmacy.

This research will have two phases.
1) An exploratory phase that will identify specific changes that occurred in your school and identify the change leader; and
2) An explanatory phase that connects change factors occurring during the change and the strengths of commitment faculty have, and connects the types of commitment to outcomes of successful change.

You are invited to participate in the first exploratory phase. You will receive a follow-up in about two months regarding the second phase of the study. Participating in this phase does not oblige you to participate in the second phase, and vice versa.

If you choose to participate, please click on the following hyperlink that should take you to the survey Web site. This survey should take less than 10 minutes to complete.

http://www.pharmacy.auburn.edu/survey/687605

(If your e-mail program doesn't recognize Web addresses: copy the above address and paste it into your Web browser, then click Go or press Enter on your keyboard)

Your responses to the survey will be completely anonymous. No names or IP addresses will be collected by the database. In fact, no one will be able to tell whether you participated. This study is being conducted by a doctoral student in partial fulfillment for a doctoral degree requirement. Information collected through your participation will be published in a professional journal, and/or presented at a professional meeting. If so, no person's or school's name will be included.

There are no foreseeable risks with your participation. By participating in this study today, you will benefit later by the study 's results that should lead to the improvement of your approach to change implementation, and thus help you achieve high levels of commitment among your colleagues. Your decision whether or not to participate will not jeopardize your future relations with Auburn University or the Department of Pharmacy Care Systems.

If you have any questions we invite you to call or send us an e-mail. Call me, Mohammad Waheedi, the director of this project, at 334-844-8310 (waheemo@auburn.edu). Or you may call the supervisor of my dissertation Dr. Bruce A. Berger at 334-844-8302 (bergeba@auburn.edu).

For more information regarding your rights as a research participant you may contact the Office of Human Subjects Research by phone or e-mail. The people to contact there are Executive Director E.N. "Chip" Burson (334) 844-5966 (bursoen@auburn.edu) or IRB Chair Dr. Peter Grandjean at (334) 844-1462 (grandpw@auburn.edu) .

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO. THIS LETTER IS YOURS TO KEEP.

Mohammad Waheedi, R.Ph., M.S.
Doctoral student
Auburn University
334-844-8310 Work
334-844-8307 Fax
334-663-5123 Cell
waheemo@auburn.edu

Bruce A. Berger, Ph.D.
Head and Professor of
Pharmacy Care Systems
128 Miller Hall
Auburn University, AL 36849-5506
334-844-8302 Office
334-844-8307 Fax
334-444-3160 Cell
bergeba@auburn.edu

Appendix B: The Phase 1 Survey

Phase 1 Survey

The purpose of this exploratory phase is to identify changes that occurred in each pharmacy school and identify the change leader connected with the change. The focus of this study is "substantive change." ACPE defines substantive change as "any change in the established mission or goals of the institution; the addition or deletion of courses, pathways or programs that represent a significant departure in either content or method of delivery, from those that were offered during the program's previous accreditation cycle (e.g., a non-traditional doctor of pharmacy program, development of a joint delivery of program agreement, etc.); a substantial change in enrollment; a substantial change in the number of clock or credit hours required for successful completion of the program; a significant change in the length of the program; the establishment of an additional geographic location at which the program is offered; and any other changes that the Dean feels require notification of ACPE."

A list of potential changes is included below. Please click on the appropriate response for each change. In addition, there is an open box below where you may add any change that fits the definition above AND you believe has affected the way you do your work OR is of a concern to you personally. For each change you provide, please include the name of the primary change leader.

Did one of the following changes take place within your school during the past **THREE YEARS**?

					% Change Completed	This change affected the way I do my job	This change is of concern to me	This change doesn't matter to me	Name a main leader for this change
1.	Conversion from five year B.S. to six year Pharm. D.	Yes	No	I don't know	(drop down menu)	(Scale)	(Scale)	(Scale)	(Text)
2.	Implementation of problem-based learning in place of traditional lectures.	Yes	No	I don't know	(drop down menu)	(Scale)	(Scale)	(Scale)	(Text)
3.	Major change(s) in curriculum	Yes	No	I don't know	(drop down menu)	(Scale)	(Scale)	(Scale)	(Text)
4.	Change(s) in program length	Yes	No	I don't know	(drop down menu)	(Scale)	(Scale)	(Scale)	(Text)
5.	Establishing a distance learning site for a traditional Pharm. D. program	Yes	No	I don't know	(drop down menu)	(Scale)	(Scale)	(Scale)	(Text)
6.	Change in the established mission or goals of the institution	Yes	No	I don't know	(drop down menu)	(Scale)	(Scale)	(Scale)	(Text)
7.	Changes in	Yes	No	I don't	(drop down	(Scale)	(Scale)	(Scale)	(Text)

					% Change Completed	This change affected the way I do my job	This change is of concern to me	This change doesn't matter to me	Name a main leader for this change
	admission standards			know	menu)				
8.	Implementation of dress code (professional attire)	Yes	No	I don't know	(drop down menu)	(Scale)	(Scale)	(Scale)	(Text)
9.	Establishing a post-baccalaureate Pharm. D. program	Yes	No	I don't know	(drop down menu)	(Scale)	(Scale)	(Scale)	(Text)

Are there any other significant changes that have occurred in the last 3 years at your school which were of concern to you OR affected the way you do your work? If so:

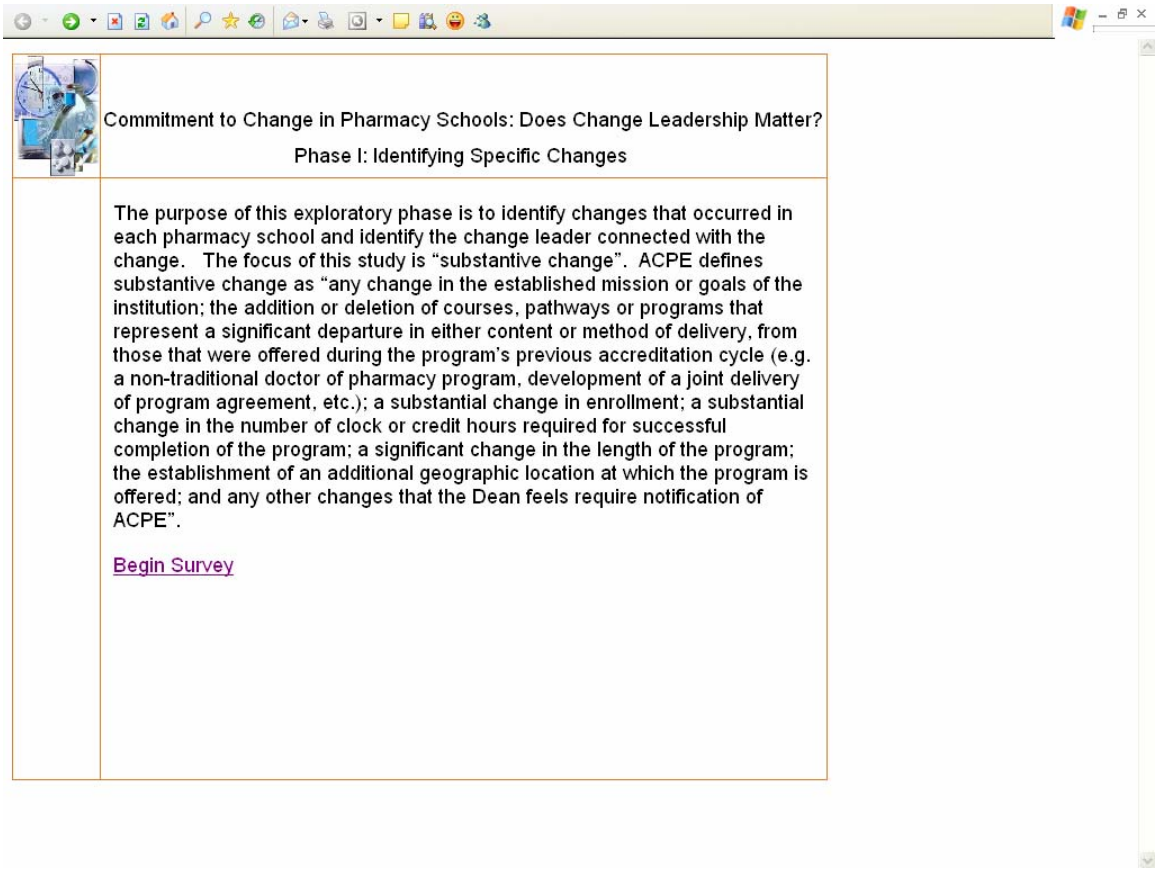
List one change which was of concern to you OR affected the way you do your work

Who was the main leader for this change?

List another change which was of concern to you OR affected the way you do your work

Who was the main leader for this change?

Appendix C: Screenshots of the Phase 1 Internet Survey

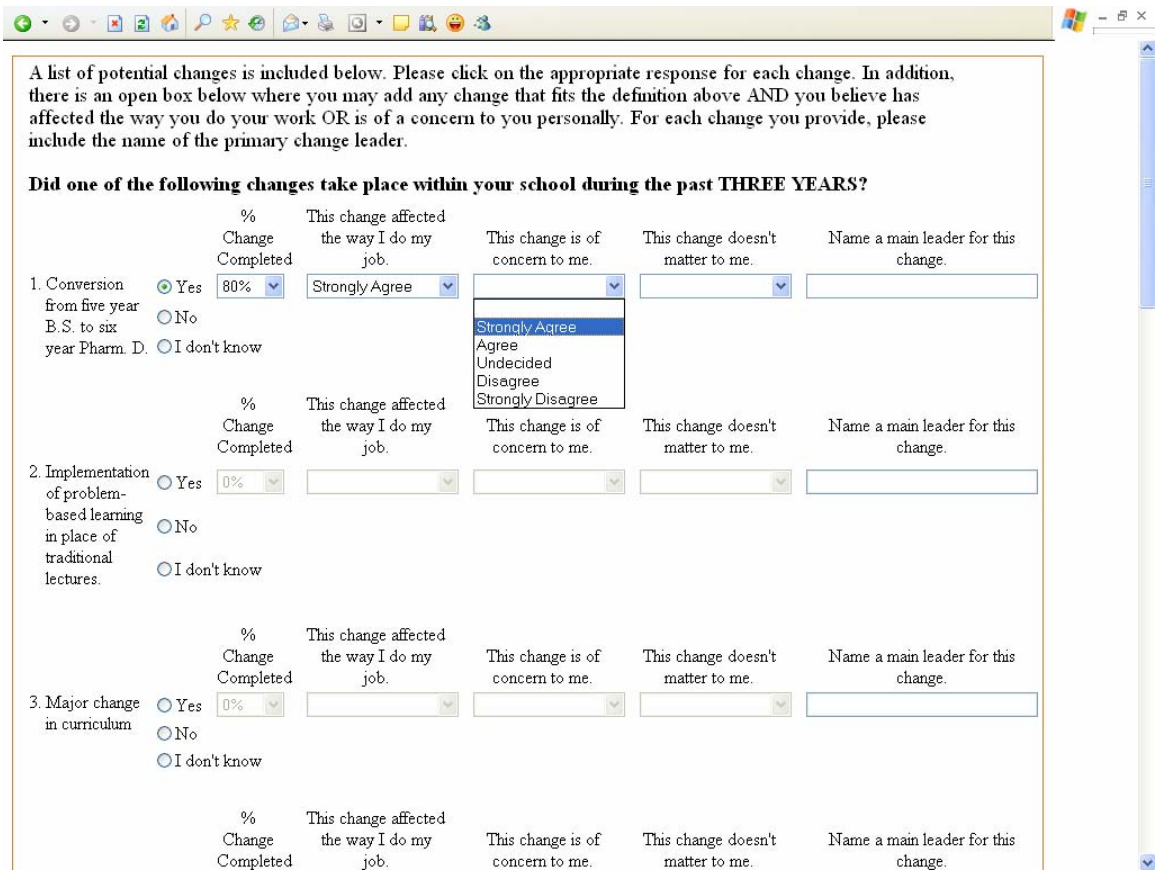


Commitment to Change in Pharmacy Schools: Does Change Leadership Matter?

Phase I: Identifying Specific Changes

The purpose of this exploratory phase is to identify changes that occurred in each pharmacy school and identify the change leader connected with the change. The focus of this study is "substantive change". ACPE defines substantive change as "any change in the established mission or goals of the institution; the addition or deletion of courses, pathways or programs that represent a significant departure in either content or method of delivery, from those that were offered during the program's previous accreditation cycle (e.g. a non-traditional doctor of pharmacy program, development of a joint delivery of program agreement, etc.); a substantial change in enrollment; a substantial change in the number of clock or credit hours required for successful completion of the program; a significant change in the length of the program; the establishment of an additional geographic location at which the program is offered; and any other changes that the Dean feels require notification of ACPE".

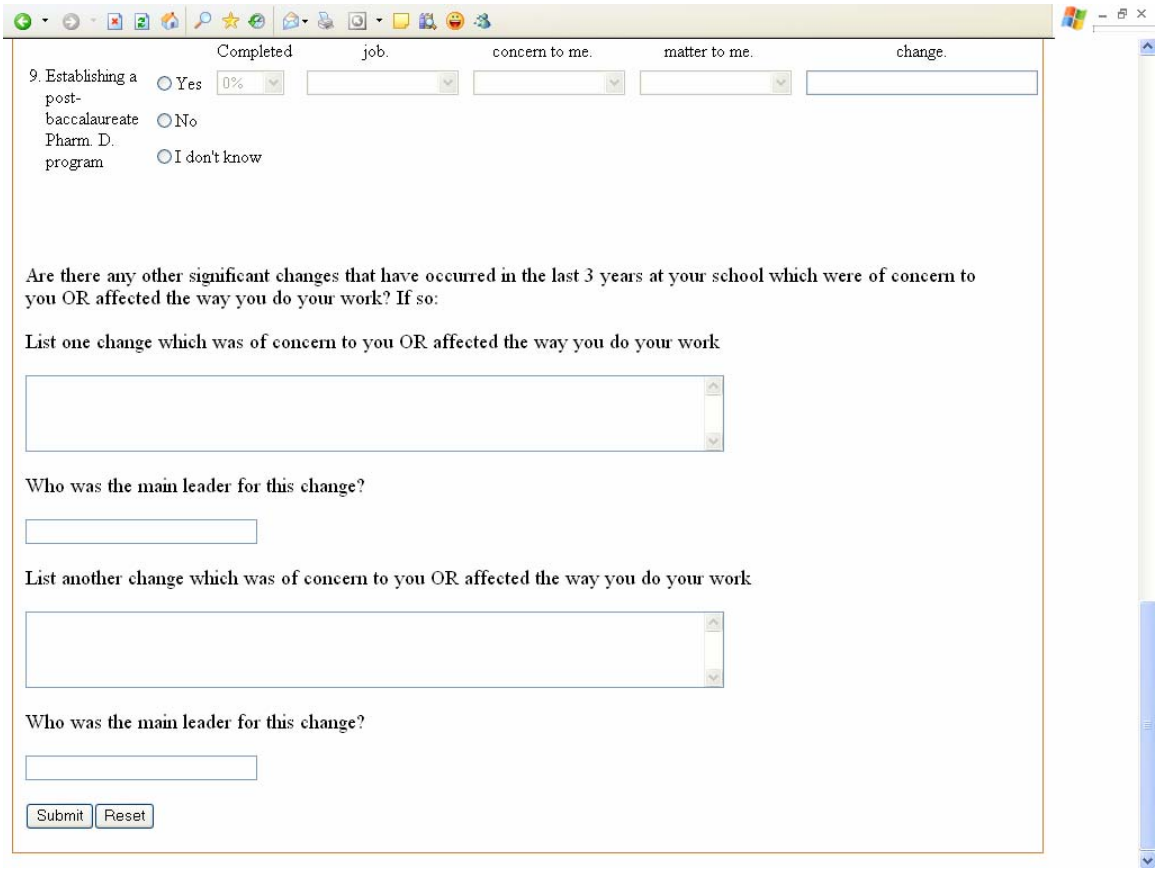
Begin Survey



A list of potential changes is included below. Please click on the appropriate response for each change. In addition, there is an open box below where you may add any change that fits the definition above AND you believe has affected the way you do your work OR is of a concern to you personally. For each change you provide, please include the name of the primary change leader.

Did one of the following changes take place within your school during the past THREE YEARS?

		% Change Completed	This change affected the way I do my job.	This change is of concern to me.	This change doesn't matter to me.	Name a main leader for this change.
1. Conversion from five year B.S. to six year Pharm. D.	(•) Yes ( ) No ( ) I don't know	80%	Strongly Agree	Strongly Agree Agree Undecided Disagree Strongly Disagree		
2. Implementation of problem-based learning in place of traditional lectures.	( ) Yes ( ) No ( ) I don't know	0%				
3. Major change in curriculum	( ) Yes ( ) No ( ) I don't know	0%				



		Completed	job.	concern to me.	matter to me.	change.
9. Establishing a post-baccalaureate Pharm. D. program	○ Yes ○ No ○ I don't know	0%				

Are there any other significant changes that have occurred in the last 3 years at your school which were of concern to you OR affected the way you do your work? If so:

List one change which was of concern to you OR affected the way you do your work

Who was the main leader for this change?

List another change which was of concern to you OR affected the way you do your work

Who was the main leader for this change?

Submit Reset

Appendix D: Follow-up E-mail to Non-respondent Schools

From: Bruce Berger
To: albert.wertheimer@temple.edu; b-bryant@onu.edu; bennie.french@swosu.edu; david.forbes@umontana.edu; dphammer@u.washington.edu; druginfo@uwyo.edu; dsarnoff@pacific.edu; gbrazeau@buffalo.edu; hodgefj@musc.edu; jlcolaiz@rci.rutgers.edu; mary.gurney@sdstate.edu; mdeyoung@usn.edu; michelle.easton@hampton.edu; raymond.jang@uc.edu; wmccormick@uh.edu
Date: 12/15/2004 3:36:26 PM
Subject: Change Survey

About one week ago one of my doctoral students (Mohammad Waheedi) sent an e-mail to AACP faculty at your School of Pharmacy. The purpose of the e-mail was to request their participation in an important survey that examines major changes in U.S. schools of pharmacy. The survey instrument takes less than 10 minutes to complete. No one from you school has responded. We have reason to believe that the e-mail message was not received due to possible spam blockages, etc.

We would greatly appreciate it if you could let me know if the e-mail was received or not. If it was not received could you please supply the name and phone number or e-mail address of the IT person at your school that might help us get the e-mail through? This would be most appreciated.

Thanks and Happy Holidays!

Bruce

Bruce A. Berger, PhD
Head and Professor of
Pharmacy Care Systems
128 Miller Hall
Auburn University, AL 36849-5506
334-844-8302 Office
334-844-8307 Fax
334-444-3160 Cell

Appendix E: Reminder E-mail for Phase 1

From: AU Pharmacy Care Systems
To: **(e-mail address of recipient)**
Date: 12/16/2004 12:10:05 PM
Subject: Reminder: First Phase of a Study of Commitment to Change in AACP Member Schools

Dear faculty member,

Recently you were sent an invitation to participate in an anonymous questionnaire asking your opinion about change in pharmacy schools. For those who have responded, thank you very much. Your response contributes to results that accurately represent the opinions of faculty members of the U.S. schools of pharmacy and would be greatly appreciated.

As a reminder, no names or IP addresses will be collected by the database, so the responses will be completely anonymous. I would be happy to answer any questions you may have.

The survey will take less than 10 minutes to complete. By clicking on the Web address below the survey will appear on your computer screen. Once you have completed your responses to the questions, please click on the SUBMIT button to submit your responses.

http://www.pharmacy.auburn.edu/survey/755109

(If your e-mail program doesn't recognize Web addresses: copy the above address and paste it into your Web browser, then click Go or press Enter on your keyboard)

Thanking you in anticipation.

Sincerely,

Mohammad Waheedi, R.Ph., M.S.
Doctoral student
Auburn University
334-844-8310 Work
334-844-8307 Fax
334-663-5123 Cell
waheemo@auburn.edu

Bruce A. Berger, Ph.D.
Head and Professor of
Pharmacy Care Systems
128 Miller Hall
Auburn University, AL 36849-5506
334-844-8302 Office
334-844-8307 Fax
334-444-3160 Cell
bergeba@auburn.edu

Appendix F: Sample Invitation E-mail to Participate in Phase 2

From: Mohammad Waheedi
To: **(e-mail address of recipient)**
Date: 3/10/2005 7:38:56 AM
Subject: Change and Leadership Study: Establishing a Distance Learning Site

Dear (name of recipient),

We initiated a study to identify changes in pharmacy schools and to identify change leaders so we can examine faculty members' commitment to change and factors affecting their commitment. Phase I of this research has been completed and within your school you have been identified as a leader of **establishing a distance learning site for a traditional Pharm. D. program.**

Your assistance in this second phase would be greatly appreciated. For the faculty members at your school to participate in the second phase, we need your approval. A questionnaire that will be sent to faculty members is attached to this e-mail for you to review and see if you approve the collection of this data from your colleagues. You are invited to participate in the leader satisfaction part of the second phase which should take about five minutes.

Please take a look at the attached documents; first, open the document with the name facutly_survey and read it to get a feel for the types of questions your colleagues will be receiving. Then please read the document with the name Informed_Consent and decide whether to participate and allow other faculty members at your school to participate OR to not participate but allow other faculty members to participate.

All information will be treated in the strictest confidence and no names will be used. Your school will be given a code number and all responses will be identified only by this code number. We will publish only group data, from which no schools or individuals could be identified.

Thanking you in anticipation.

Mohammad Waheedi, R.Ph., M.S.
Doctoral student
Auburn University
334-844-8310 Work
334-844-8307 Fax
334-663-5123 Cell
waheemo@auburn.edu

Bruce A. Berger, Ph.D.
Head and Professor of
Pharmacy Care Systems
128 Miller Hall
Auburn University, AL 36849-5506
334-844-8302 Office
334-844-8307 Fax
334-444-3160 Cell
bergeba@auburn.edu

Appendix G: Sample Informed Consent Letter Attached to E-mail Invitations in Phase 2

Informed Consent for Change Leader

Commitment to Change in Pharmacy Schools: Does Change Leadership Matter?

The first phase of this study has been already completed and faculty members from your school have identified you as the change leader for **establishing a distance learning site for a traditional Pharm. D. program.** You are invited to participate in this research study, which is designed to examine factors affecting commitment to change which may help pharmacy schools make better decisions on managing future change. This study is being conducted by Mohammad Waheedi, a doctoral student, under the supervision of Dr. Bruce A. Berger, professor and head of the Department of Pharmacy Systems, Auburn University.

Please take a look at the attached questionnaire (faculty_survey.doc), which will be sent to faculty members at your school. If you decide to participate in this research study, you may do so by choosing one of the following options:

A. To fill out the leader satisfaction survey of the second phase, which takes about five minutes to complete AND allow other faculty members to fill out their survey.
OR
B. To not fill out the leader's survey BUT allow other faculty members to fill out their survey.

Your participation in this research is vital in making the results representative of change leaders among pharmacy faculty. The data collected from you and the faculty members will be stored anonymously. Once this data collection phase is completed, your name and your school name will be replaced with a code. There will be no way for the researcher or anyone reading the report of the study to link any data to your name, nor to the school where you work.

This study is being conducted by a doctoral student in partial fulfillment for a doctoral degree requirement. Information collected through your participation will be published in a professional journal, and/or presented at a professional meeting. If so, no person's or school's name will be included.

There are no foreseeable risks with your participation. By participating in this study today you will benefit later by receiving a copy of an executive summary of the results of the study, which may provide you with insights for improving your approach to change implementation, and thus help you achieve high levels of commitment among your colleagues. Your decision whether or not to participate will not jeopardize your future relations with Auburn University or the Department of Pharmacy Care Systems.

If you have any questions we invite you to call us or send us an e-mail. Call me, Mohammad Waheedi, the director of this project, at 334-844-8310 (waheemo@auburn.edu). Or you may call the supervisor of my dissertation Dr. Bruce A. Berger at 334-844-8302 (bergeba@auburn.edu).

For more information regarding your rights as a research participant you may contact the Office of Human Subjects Research by phone or e-mail. The people to contact there are Executive Director E.N. "Chip" Burson (334) 844-5966 (bursoen@auburn.edu) or IRB Chair Dr. Peter Grandjean at (334) 844-1462 (grandpw@auburn.edu) .

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. By clicking on the following link you will be taken to the survey website where you see the Change Leader Survey and you will have three options:

A. To participate AND allow other faculty members to participate. OR
B. To not participate BUT allow other faculty members to participate.
C. To not participate AND to not allow other faculty members to participate.

http://www.pharmacy.auburn.edu/survey/374598/changeleader.asp

Hold Ctrl + click on the above link
(If that fails to connect you to the Web site: copy the above address and paste it into your Web browser, then click Go or press Enter on your keyboard)

If you choose not to participate, faculty members at your school will not receive the attached faculty survey.

Mohammad Waheedi, R.Ph., M.S.
Project Director
Auburn University
Auburn University

Bruce A. Berger, Ph.D.
Professor and Head
Pharmacy Care Systems,

Appendix H: The Phase 2 Internet Survey

BY CLICKING HERE I AGREE TO PARTICIPATE AND ALLOW OTHER FACULTY MEMBERS AT MY PHARMACY SCHOOL TO PARTICIPATE	I Agree to Participate AND Allow Others to Participate
BY CLICKING HERE I DECLINE TO PARTICIPATE BUT ALLOW OTHER FACULTY MEMBERS AT MY PHARMACY SCHOOL TO PARTICIPATE	I Decline to Participate BUT Allow Others to Participate
I DO NOT WISH TO PARTICIPATE AND DO NOT AUTHORIZE OTHERS IN THIS PHARMACY SCHOOL TO PARTICIPATE	Do not use any Data Collected from this Pharmacy School

The purpose of this survey is to confirm your status as a main change leader, to establish the degree of your satisfaction in relation to change completion, and to collect any further information or thoughts you may have.

1. Are you a primary leader for conversion from five year B.S. to six year Pharm. D.?

☐ Yes ☐ No

2. What percentage of the goals for this change was accomplished? --

3. How satisfied are you with how much (quantity) was accomplished?

☐ Very Unsatisfied ☐ Unsatisfied ☐ Neutral ☐ Satisfied ☐ Very Satisfied

4. How satisfied are you with the quality of what was accomplished?

☐ Very Unsatisfied ☐ Unsatisfied ☐ Neutral ☐ Satisfied ☐ Very Satisfied

Optional: Anything important we need to know?

Was there any factor(s) or event(s) that increased/decreased the commitment of the faculty members to this change in a significant way?

Submit

Appendix I: Information Letter E-mail for Phase 3 Internet Survey

From: Mohammad Waheedi
To: Care Systems, AU Pharmacy
Date: 3/24/2005 7:59:53 AM
Subject: Leadership and Change Study: (Name of change leader) and Establishing a Distance Learning Site

Dear faculty member,

If you responded in Phase I of this study, thank you very much. There was an excellent response from the faculty members at the University of (Name of School) College of Pharmacy. Now we are beginning Phase II. The objective of this phase is to examine factors affecting commitment to change which may help pharmacy schools make better decisions on managing future change. This study is being conducted by Mohammad Waheedi, a doctoral student, under the supervision of Dr. Bruce A. Berger, professor and head of the Department of Pharmacy Systems, Auburn University. We are contacting you only because the change leader at your school has consented to participate in this project.

The first phase of the study has been completed, and faculty members from your school have identified several changes. The following particular change was mentioned with the highest frequency. Therefore, it was selected for this second phase of the research:

Establishing a distance learning site for a traditional Pharm. D. program

In addition, faculty members at your school suggested the following person as a leader of that change:

(Name and job title of change leader)

You are invited to participate in the second phase. If you choose to participate, please click on the following hyperlink that should take you to the survey Web site. Please refer to the above particular change and change leader in filling out the survey. This survey should take about 15 minutes to complete. Your participation will make the results more representative of pharmacy faculty members, and would be greatly appreciated. The change leader at your school has seen the questions and has approved collecting this data.

http://www.pharmacy.auburn.edu/survey/738409/phase2.asp

(If your e-mail program doesn't recognize Web addresses: copy the above address and paste it into your Web browser, then click Go or press Enter on your keyboard)

Your responses to the survey will be completely anonymous. No names or IP addresses will be collected by the database. In fact, no one will be able to tell whether you participated. Also, we guarantee the confidentiality of all information related to the change leader at your school. Once this data collection phase is completed, the change leader's name and your school name will be replaced with a code. There will be no way for the researcher or anyone reading the report of the study to link any data to the change leader's name or to his or her school.

This study is being conducted by a doctoral student in partial fulfillment for a doctoral degree requirement. Information collected through your participation will be published in a professional journal, and/or presented at a professional meeting. If so, no person's or school's name will be included.

There are no foreseeable risks with your participation. By participating in this study today, you will benefit later by the results of the study that should lead to the improvement of your approach to change implementation, and thus help you achieve high levels of commitment among your

colleagues. Your decision whether or not to participate will not jeopardize your future relations with Auburn University or the Department of Pharmacy Care Systems.

If you have any questions we invite you to call us or send us an e-mail. Call me, Mohammad Waheedi, the director of this project, at 334-844-8310 (waheemo@auburn.edu). Or you may call the supervisor of my dissertation Dr. Bruce A. Berger at 334-844-8302 (bergeba@auburn.edu).

For more information regarding your rights as a research participant you may contact the Office of Human Subjects Research by phone or e-mail. The people to contact there are Executive Director E.N. "Chip" Burson (334) 844-5966 (bursoen@auburn.edu) or IRB Chair Dr. Peter Grandjean at (334) 844-1462 (grandpw@auburn.edu) .

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO. THIS LETTER IS YOURS TO KEEP.

Mohammad Waheedi, R.Ph., M.S.
Doctoral student
Auburn University
334-844-8310 Work
334-844-8307 Fax
334-663-5123 Cell
waheemo@auburn.edu

Bruce A. Berger, Ph.D.
Head and Professor of
Pharmacy Care Systems
128 Miller Hall
Auburn University, AL 36849-5506
334-844-8302 Office
334-844-8307 Fax
334-444-3160 Cell
bergeba@auburn.edu

Appendix J: Reminder E-mail for Phase 3

From: Mohammad Waheedi
To: **(e-mail address of recipient)**
Date: 4/7/2005 8:03:26 AM
Subject: Reminder: Last Phase of a Study of Change and Leadership (Assistant Dean … and Problem-based Learning)

Reminder: Last Phase of a Study of Change and Leadership (Assistant Dean … and Problem-based Learning)

Dear faculty member,

Recently you were sent an invitation to participate in an anonymous questionnaire asking your opinion about change in pharmacy schools. For those who have responded, thank you very much. Your response contributes to results that accurately represent the opinions of faculty members of the U.S. schools of pharmacy and would be greatly appreciated.

As a reminder, no names or IP addresses will be collected by the database, so the responses will be completely anonymous. I would be happy to answer any questions you may have.

The survey will take about 10 minutes to complete. By clicking on the Web address below the survey will appear on your computer screen. Once you have completed your responses to the questions, please click on the SUBMIT button to submit your responses.

http://www.pharmacy.auburn.edu/survey/925219/phase2.asp

(If your e-mail program doesn't recognize Web addresses: copy the above address and paste it into your Web browser, then click Go or press Enter on your keyboard)

Thanking you in anticipation.

Sincerely,

Mohammad Waheedi, R.Ph., M.S.
Doctoral student
Auburn University
334-844-8310 Work
334-844-8307 Fax
334-663-5123 Cell
waheemo@auburn.edu

Bruce A. Berger, Ph.D.
Head and Professor of
Pharmacy Care Systems
128 Miller Hall
Auburn University, AL 36849-5506
334-844-8302 Office
334-844-8307 Fax
334-444-3160 Cell
bergeba@auburn.edu

Appendix K: Phase 3 Faculty Questionnaire

Consider the following specific change when answering questions 1 to 32:
(The specific change for a school was inserted here)

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

		SDA	DA	N	A	SA
1.	I feel a sense of duty to work toward this change.	1	2	3	4	5
2.	I believe in the value of this change.	1	2	3	4	5
3.	I do not feel any obligation to support this change.	1	2	3	4	5
4.	I would not feel badly about opposing this change.	1	2	3	4	5
5.	I think that administration is making a mistake by introducing this change.	1	2	3	4	5
6.	I would feel guilty about opposing this change.	1	2	3	4	5
7.	It would be too costly for me to resist this change.	1	2	3	4	5
8.	This change is good for this organization.	1	2	3	4	5
9.	I do not think it would be right for me to oppose this change.	1	2	3	4	5
10.	Resisting this change is not a viable option for me.	1	2	3	4	5
11.	I feel pressure to go along with this change.	1	2	3	4	5
12.	This change is not necessary.	1	2	3	4	5
13.	I have too much at stake to resist this change.	1	2	3	4	5
14.	This change serves an important purpose.	1	2	3	4	5
15.	It would be irresponsible for me to resist this change	1	2	3	4	5
16.	I have no choice but to go along with this change.	1	2	3	4	5
17.	Things would be better without this change.	1	2	3	4	5

For item 18 below, rate your behavioral response to the change initiative. On the following continuum click on the point that best matches the actions you took in response to the change initiative.

Consider the following definitions when providing your answer:

0 to 20: Active Resistance: demonstrating opposition in response to change by engaging in overt behaviors that are intended to ensure that the change fails.

21 to 40: Passive Resistance: demonstrating opposition in response to change by engaging in covert or subtle behaviors aimed at preventing the success of the change.

41 to 60: Compliance: demonstrating minimum support for change by going along with the change, but doing so reluctantly.

61 to 80: Cooperation: demonstrating support for change by exerting effort when it comes to the change, going along with the spirit of the change, and being prepared to make modest sacrifices.

81 to 100: Championing: demonstrating extreme enthusiasm for change by going above and beyond what is formally required to ensure the success of the change in promoting the change to others.

18. In relation to the change initiative, my actions can be best characterized as:

Active Resistance	Passive Resistance	Compliance	Cooperation	Championing
0	20	40	60	80 100

Processes in Implementing Change

The following questions include processes that may be present or absent throughout the planning and the implementation. In relation to the change initiative of question, please indicate your level of agreement:

		SDA	DA	N	A	SA
19.	The decision-makers have asked for my input into this change.	1	2	3	4	5
20.	The decision-makers have listened to my opinion on the change initiative.	1	2	3	4	5
21.	I have participated with fellow faculty in the design of this change.	1	2	3	4	5
22.	There were breakdowns in communication between faculty and administration.	1	2	3	4	5
23.	Criticizing or providing information which challenges the feasibility of the change was encouraged.	1	2	3	4	5
24.	There were breakdowns in communication among faculty.	1	2	3	4	5
25.	I sometimes get the feeling that others were not speaking up although they harbored serious doubts about the direction being taken.	1	2	3	4	5
26	I have assisted in the problem identification that led to the change.	1	2	3	4	5
27.	I was kept informed adequately.	1	2	3	4	5
28.	The change initiative included suggestions I provided.	1	2	3	4	5
29.	The faculty interacted frequently.	1	2	3	4	5
30.	There were extensive formal and informal communications throughout the change.	1	2	3	4	5
31.	Information was quickly shared.	1	2	3	4	5
32.	Often I felt pressured not "rock the boat" by speaking my mind about what's going on with this change.	1	2	3	4	5

Leadership Questions

The following statements are descriptive of the identified change leader at your school:

(Name of the change leader inserted here)

Please indicate how frequently this change leader displays the behaviors described below throughout the planning and the implementation of the change.

.

1	2	3	4	5
Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always

		Not at all	Once in a while	Sometimes	Fairly often	Frequently if not always
33.	His/her actions build my respect for him/her.	1	2	3	4	5
34.	Promotes self-development.	1	2	3	4	5
35.	Specifies the importance of having a strong sense of purpose.	1	2	3	4	5
36.	Takes no action even when problems become chronic.	1	2	3	4	5
37.	Directs his/her attention toward failure to meet standards.	1	2	3	4	5
38.	Fails to intervene until problems become serious.	1	2	3	4	5
39.	Displays extraordinary talent and competence in whatever he/she undertakes.	1	2	3	4	5
40.	Things have to go wrong for him/her to take action.	1	2	3	4	5
41.	Suggests new ways of looking at how we do our jobs.	1	2	3	4	5
42.	Fails to follow-up requests for assistance.	1	2	3	4	5
43.	Problems must become chronic before he/she will take action.	1	2	3	4	5
44.	Emphasizes the importance of having a collective sense of mission.	1	2	3	4	5
45.	Gets me to look at problems from many different angles.	1	2	3	4	5
46.	Makes sure that we receive appropriate rewards for achieving performance targets.	1	2	3	4	5
47.	Goes beyond his/her own self-interest for the good of our group.	1	2	3	4	5
48.	Articulates a compelling vision of the future.	1	2	3	4	5
49.	Delays responding to urgent questions.	1	2	3	4	5
50.	Provides his/her assistance in exchange for my effort.	1	2	3	4	5
51.	Tells me what to do to be rewarded for my efforts.	1	2	3	4	5
52.	Talks enthusiastically about what needs to be accomplished.	1	2	3	4	5
53.	Provides useful advice for my development.	1	2	3	4	5
54.	Encourages me to express my ideas and opinions.	1	2	3	4	5
55.	Keeps track of my mistakes.	1	2	3	4	5

		Not at all	Once in a while	Sometimes	Fairly often	Frequently if not always
56.	Searches for mistakes before commenting on my performance.	1	2	3	4	5
57.	Teaches me how to identify the needs and capabilities of others.	1	2	3	4	5
58.	Arouses awareness on what is essential to consider.	1	2	3	4	5
59.	Clarifies the central purpose underlying our actions.	1	2	3	4	5

Demographic Questions

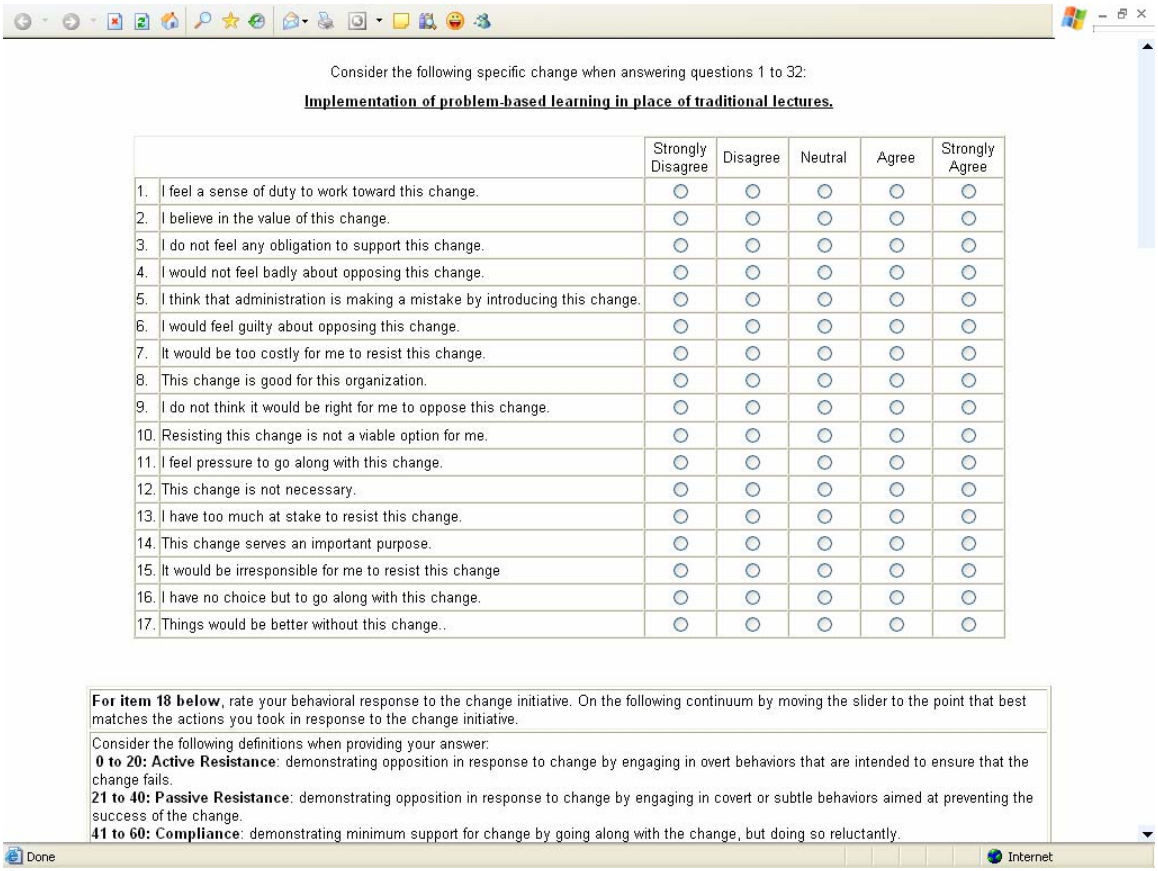
60.	How many years have you been a faculty member at a school of pharmacy?	(Text box)
61.	What is your academic field?	(Drop down menu with academic fields)
62.	Do you hold an administrative position where other faculty members report to you?	Yes or No
63.	What is your gender?	Female or Male
64.	Please indicate the range in which your age falls.	(Drop down menu with age ranges)
65.	Are you in a tenure track position?	Yes or No

Optional: Anything important we need to know?

Was there any external factor(s) or event(s) that affected the change process or its implementation in a significant way?

Thank you very much!

Appendix L: Screenshots of the Phase 3 Internet Survey



Consider the following specific change when answering questions 1 to 32:

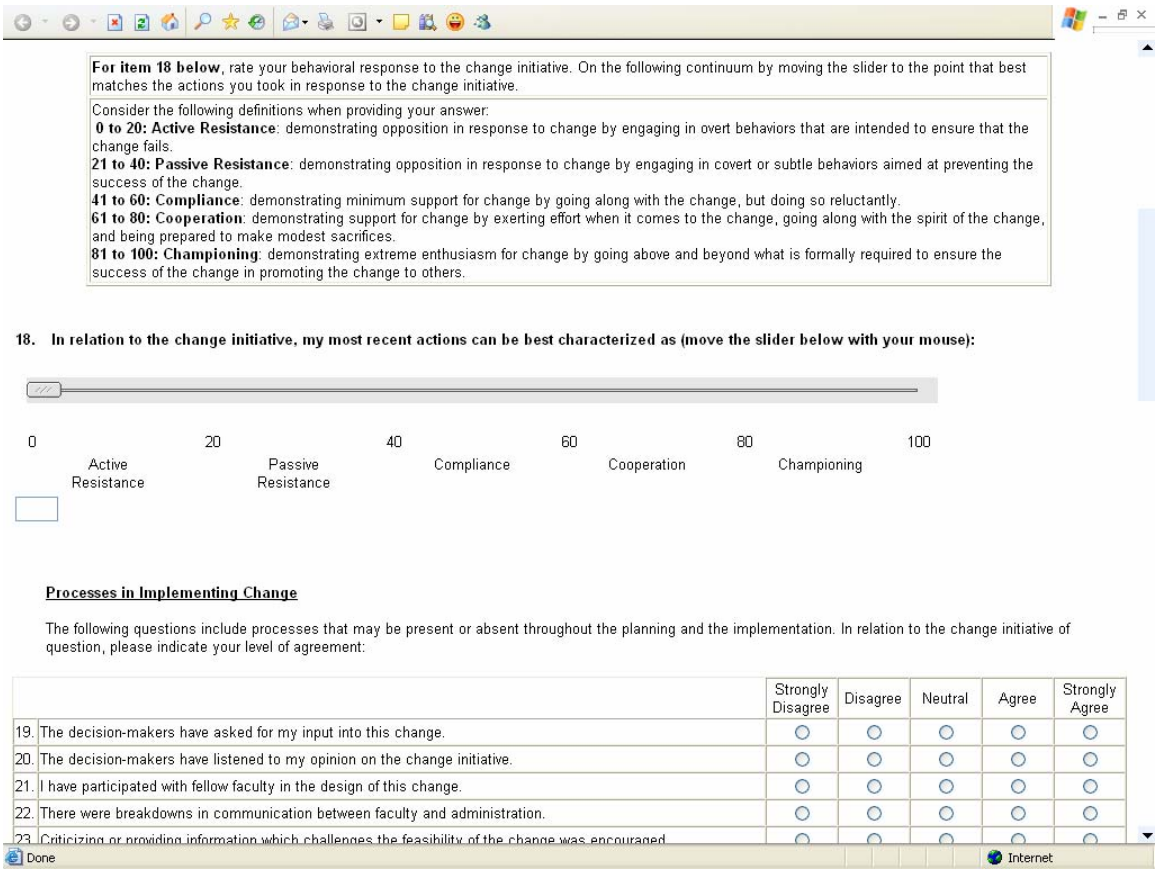
Implementation of problem-based learning in place of traditional lectures.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I feel a sense of duty to work toward this change.	○	○	○	○	○
2.	I believe in the value of this change.	○	○	○	○	○
3.	I do not feel any obligation to support this change.	○	○	○	○	○
4.	I would not feel badly about opposing this change.	○	○	○	○	○
5.	I think that administration is making a mistake by introducing this change.	○	○	○	○	○
6.	I would feel guilty about opposing this change.	○	○	○	○	○
7.	It would be too costly for me to resist this change.	○	○	○	○	○
8.	This change is good for this organization.	○	○	○	○	○
9.	I do not think it would be right for me to oppose this change.	○	○	○	○	○
10.	Resisting this change is not a viable option for me.	○	○	○	○	○
11.	I feel pressure to go along with this change.	○	○	○	○	○
12.	This change is not necessary.	○	○	○	○	○
13.	I have too much at stake to resist this change.	○	○	○	○	○
14.	This change serves an important purpose.	○	○	○	○	○
15.	It would be irresponsible for me to resist this change	○	○	○	○	○
16.	I have no choice but to go along with this change.	○	○	○	○	○
17.	Things would be better without this change..	○	○	○	○	○

For item 18 below, rate your behavioral response to the change initiative. On the following continuum by moving the slider to the point that best matches the actions you took in response to the change initiative.

Consider the following definitions when providing your answer:
0 to 20: Active Resistance: demonstrating opposition in response to change by engaging in overt behaviors that are intended to ensure that the change fails.
21 to 40: Passive Resistance: demonstrating opposition in response to change by engaging in covert or subtle behaviors aimed at preventing the success of the change.
41 to 60: Compliance: demonstrating minimum support for change by going along with the change, but doing so reluctantly.

Done Internet



For item 18 below, rate your behavioral response to the change initiative. On the following continuum by moving the slider to the point that best matches the actions you took in response to the change initiative.

Consider the following definitions when providing your answer:
0 to 20: Active Resistance: demonstrating opposition in response to change by engaging in overt behaviors that are intended to ensure that the change fails.
21 to 40: Passive Resistance: demonstrating opposition in response to change by engaging in covert or subtle behaviors aimed at preventing the success of the change.
41 to 60: Compliance: demonstrating minimum support for change by going along with the change, but doing so reluctantly.
61 to 80: Cooperation: demonstrating support for change by exerting effort when it comes to the change, going along with the spirit of the change, and being prepared to make modest sacrifices.
81 to 100: Championing: demonstrating extreme enthusiasm for change by going above and beyond what is formally required to ensure the success of the change in promoting the change to others.

18. In relation to the change initiative, my most recent actions can be best characterized as (move the slider below with your mouse):

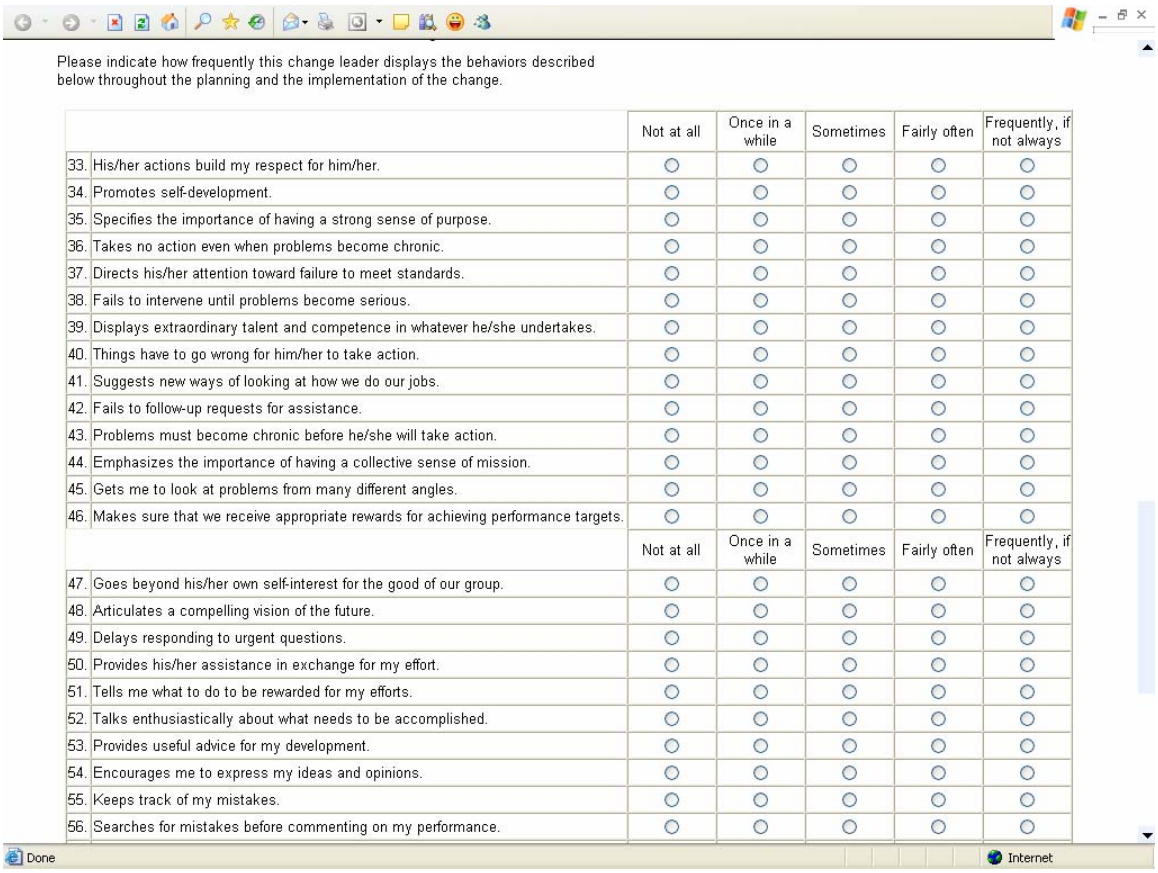
0 Active Resistance | 20 Passive Resistance | 40 Compliance | 60 Cooperation | 80 Championing | 100

Processes in Implementing Change

The following questions include processes that may be present or absent throughout the planning and the implementation. In relation to the change initiative of question, please indicate your level of agreement:

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
19.	The decision-makers have asked for my input into this change.	○	○	○	○	○
20.	The decision-makers have listened to my opinion on the change initiative.	○	○	○	○	○
21.	I have participated with fellow faculty in the design of this change.	○	○	○	○	○
22.	There were breakdowns in communication between faculty and administration.	○	○	○	○	○
23.	Criticizing or providing information which challenges the feasibility of the change was encouraged.	○	○	○	○	○

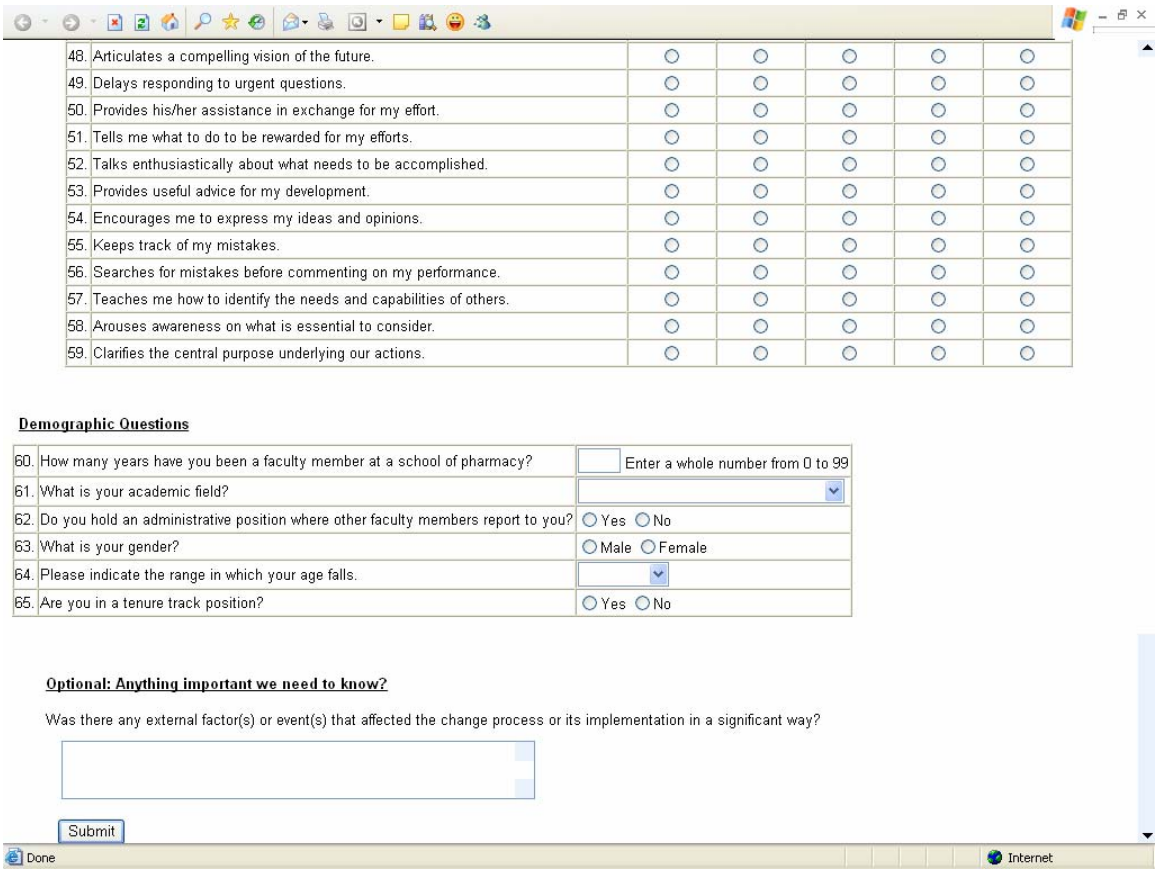
Done | Internet



Please indicate how frequently this change leader displays the behaviors described below throughout the planning and the implementation of the change.

		Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
33.	His/her actions build my respect for him/her.	○	○	○	○	○
34.	Promotes self-development.	○	○	○	○	○
35.	Specifies the importance of having a strong sense of purpose.	○	○	○	○	○
36.	Takes no action even when problems become chronic.	○	○	○	○	○
37.	Directs his/her attention toward failure to meet standards.	○	○	○	○	○
38.	Fails to intervene until problems become serious.	○	○	○	○	○
39.	Displays extraordinary talent and competence in whatever he/she undertakes.	○	○	○	○	○
40.	Things have to go wrong for him/her to take action.	○	○	○	○	○
41.	Suggests new ways of looking at how we do our jobs.	○	○	○	○	○
42.	Fails to follow-up requests for assistance.	○	○	○	○	○
43.	Problems must become chronic before he/she will take action.	○	○	○	○	○
44.	Emphasizes the importance of having a collective sense of mission.	○	○	○	○	○
45.	Gets me to look at problems from many different angles.	○	○	○	○	○
46.	Makes sure that we receive appropriate rewards for achieving performance targets.	○	○	○	○	○
		Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
47.	Goes beyond his/her own self-interest for the good of our group.	○	○	○	○	○
48.	Articulates a compelling vision of the future.	○	○	○	○	○
49.	Delays responding to urgent questions.	○	○	○	○	○
50.	Provides his/her assistance in exchange for my effort.	○	○	○	○	○
51.	Tells me what to do to be rewarded for my efforts.	○	○	○	○	○
52.	Talks enthusiastically about what needs to be accomplished.	○	○	○	○	○
53.	Provides useful advice for my development.	○	○	○	○	○
54.	Encourages me to express my ideas and opinions.	○	○	○	○	○
55.	Keeps track of my mistakes.	○	○	○	○	○
56.	Searches for mistakes before commenting on my performance.	○	○	○	○	○

Done Internet



48.	Articulates a compelling vision of the future.	○	○	○	○	○
49.	Delays responding to urgent questions.	○	○	○	○	○
50.	Provides his/her assistance in exchange for my effort.	○	○	○	○	○
51.	Tells me what to do to be rewarded for my efforts.	○	○	○	○	○
52.	Talks enthusiastically about what needs to be accomplished.	○	○	○	○	○
53.	Provides useful advice for my development.	○	○	○	○	○
54.	Encourages me to express my ideas and opinions.	○	○	○	○	○
55.	Keeps track of my mistakes.	○	○	○	○	○
56.	Searches for mistakes before commenting on my performance.	○	○	○	○	○
57.	Teaches me how to identify the needs and capabilities of others.	○	○	○	○	○
58.	Arouses awareness on what is essential to consider.	○	○	○	○	○
59.	Clarifies the central purpose underlying our actions.	○	○	○	○	○

Demographic Questions

60.	How many years have you been a faculty member at a school of pharmacy?	Enter a whole number from 0 to 99
61.	What is your academic field?	
62.	Do you hold an administrative position where other faculty members report to you?	○ Yes ○ No
63.	What is your gender?	○ Male ○ Female
64.	Please indicate the range in which your age falls.	
65.	Are you in a tenure track position?	○ Yes ○ No

Optional: Anything important we need to know?

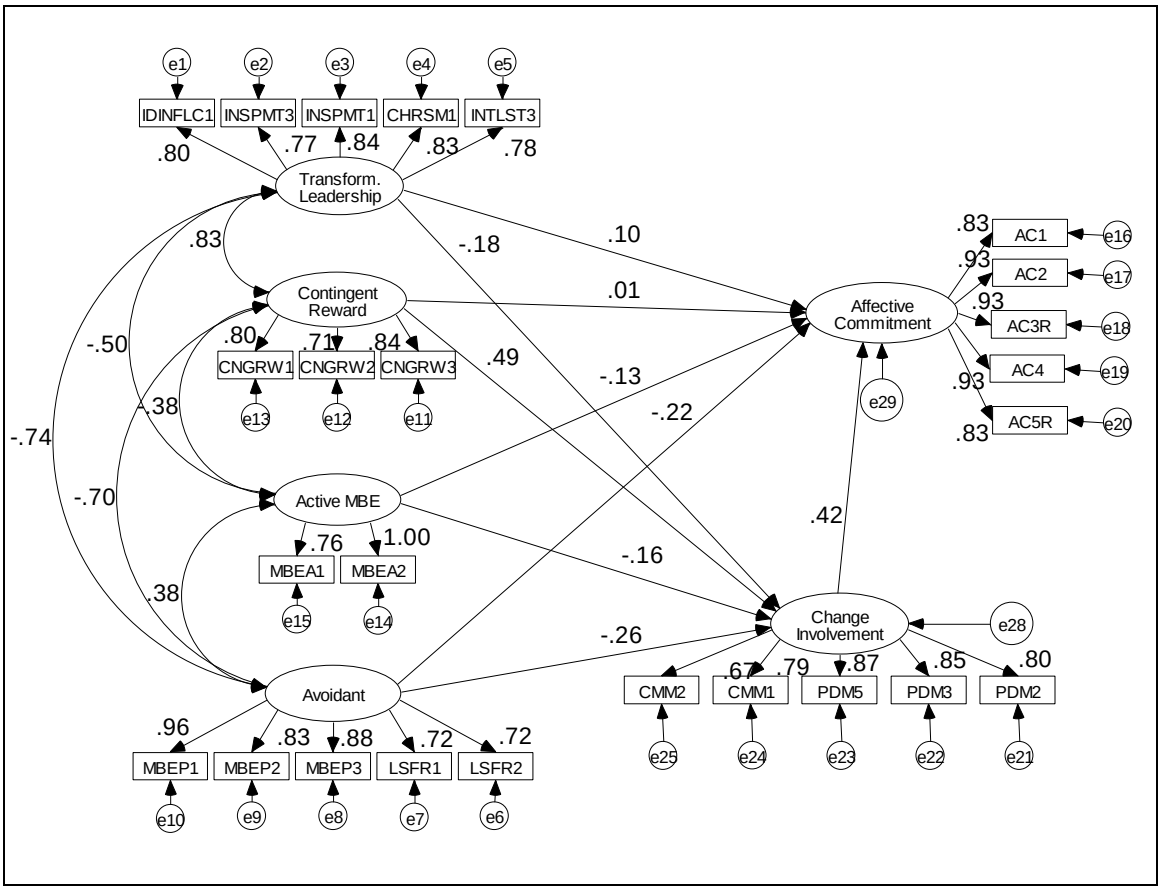
Was there any external factor(s) or event(s) that affected the change process or its implementation in a significant way?

Submit

Done

Internet

Appendix M: Structural Equation Modeling (SEM) Results for Leadership Effects on Affective Commitment



Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Change_Involvement	<---	Transform._Leadership	-.178	.183	-.968	.333
Change_Involvement	<---	Contingent_Reward	.453	.160	2.825	.005
Change_Involvement	<---	Active MBE	-.144	.069	-2.073	.038
Change_Involvement	<---	Avoidant	-.338	.144	-2.345	.019
Affective_Commitment	<---	Transform._Leadership	.092	.142	.648	.517
Affective_Commitment	<---	Contingent_Reward	.008	.128	.060	.952
Affective_Commitment	<---	Active MBE	-.106	.055	-1.938	.053
Affective_Commitment	<---	Avoidant	-.262	.114	-2.304	.021
Affective_Commitment	<---	Change_Involvement	.377	.077	4.879	***
IDINFLC1	<---	Transform._Leadership	1.000			
INSPMT3	<---	Transform._Leadership	.970	.085	11.430	***
INSPMT1	<---	Transform._Leadership	.938	.073	12.814	***

			Estimate	S.E.	C.R.	P
CHRSM1	<---	Transform._Leadership	.978	.078	12.602	***
INTLST3	<---	Transform._Leadership	.929	.080	11.561	***
LSFR2	<---	Avoidant	1.000			
LSFR1	<---	Avoidant	1.049	.109	9.611	***
MBEP3	<---	Avoidant	1.316	.111	11.801	***
MBEP2	<---	Avoidant	1.235	.111	11.105	***
MBEP1	<---	Avoidant	1.535	.119	12.923	***
CNGRW3	<---	Contingent_Reward	1.000			
CNGRW2	<---	Contingent_Reward	.808	.079	10.265	***
CNGRW1	<---	Contingent_Reward	.871	.073	11.861	***
MBEA2	<---	Active MBE	1.000			
MBEA1	<---	Active MBE	.775	.051	15.285	***
AC1	<---	Affective_Commitment	1.000			
AC2	<---	Affective_Commitment	1.130	.067	16.881	***
AC3R	<---	Affective_Commitment	1.215	.072	16.860	***
AC4	<---	Affective_Commitment	1.087	.065	16.688	***
AC5R	<---	Affective_Commitment	1.029	.074	13.873	***
PDM2	<---	Change_Involvement	1.000			
PDM3	<---	Change_Involvement	1.091	.085	12.813	***
PDM5	<---	Change_Involvement	.963	.072	13.317	***
CMM1	<---	Change_Involvement	.919	.079	11.708	***
CMM2	<---	Change_Involvement	.751	.079	9.553	***

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
Change_Involvement	<---	Transform._Leadership	-.176
Change_Involvement	<---	Contingent_Reward	.487
Change_Involvement	<---	Active MBE	-.165
Change_Involvement	<---	Avoidant	-.259
Affective_Commitment	<---	Transform._Leadership	.101
Affective_Commitment	<---	Contingent_Reward	.009
Affective_Commitment	<---	Active MBE	-.134
Affective_Commitment	<---	Avoidant	-.222
Affective_Commitment	<---	Change_Involvement	.417
IDINFLC1	<---	Transform._Leadership	.800
INSPMT3	<---	Transform._Leadership	.774
INSPMT1	<---	Transform._Leadership	.843
CHRSM1	<---	Transform._Leadership	.833
INTLST3	<---	Transform._Leadership	.781
LSFR2	<---	Avoidant	.722

			Estimate
LSFR1	<---	Avoidant	.724
MBEP3	<---	Avoidant	.877
MBEP2	<---	Avoidant	.827
MBEP1	<---	Avoidant	.965
CNGRW3	<---	Contingent_Reward	.845
CNGRW2	<---	Contingent_Reward	.715
CNGRW1	<---	Contingent_Reward	.799
MBEA2	<---	Active MBE	.996
MBEA1	<---	Active MBE	.760
AC1	<---	Affective_Commitment	.832
AC2	<---	Affective_Commitment	.933
AC3R	<---	Affective_Commitment	.934
AC4	<---	Affective_Commitment	.928
AC5R	<---	Affective_Commitment	.833
PDM2	<---	Change_Involvement	.801
PDM3	<---	Change_Involvement	.849
PDM5	<---	Change_Involvement	.875
CMM1	<---	Change_Involvement	.793
CMM2	<---	Change_Involvement	.675

Intercepts: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
IDINFLC1	3.644	.092	39.575	***
INSPMT3	3.711	.092	40.171	***
INSPMT1	4.050	.082	49.401	***
CHRSM1	3.728	.087	43.044	***
INTLST3	3.428	.088	39.066	***
LSFR2	2.006	.079	25.392	***
LSFR1	2.212	.083	26.630	***
MBEP3	2.211	.086	25.837	***
MBEP2	2.189	.085	25.708	***
MBEP1	2.244	.091	24.737	***
CNGRW3	3.307	.095	34.830	***
CNGRW2	2.696	.091	29.698	***
CNGRW1	2.746	.087	31.444	***
MBEA2	1.811	.086	21.006	***
MBEA1	2.126	.088	24.224	***
AC1	3.817	.081	47.169	***
AC2	3.767	.082	46.197	***
AC3R	3.764	.088	42.903	***
AC4	3.745	.079	47.464	***
AC5R	3.606	.083	43.340	***

PDM2	3.243	.093	34.899	***
PDM3	3.256	.096	34.067	***
PDM5	2.917	.082	35.643	***
CMM1	3.189	.086	36.981	***
CMM2	3.106	.083	37.498	***

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Active MBE	<-->	Contingent_Reward	-.463	.108	-4.282	***
Active MBE	<-->	Avoidant	.331	.076	4.381	***
Transform._Leadership	<-->	Contingent_Reward	.878	.126	6.962	***
Active MBE	<-->	Transform._Leadership	-.568	.103	-5.490	***
Avoidant	<-->	Contingent_Reward	-.568	.093	-6.116	***
Transform._Leadership	<-->	Avoidant	-.553	.088	-6.254	***

Correlations: (Group number 1 - Default model)

			Estimate
Active MBE	<-->	Contingent_Reward	-.379
Active MBE	<-->	Avoidant	.380
Transform._Leadership	<-->	Contingent_Reward	.832
Active MBE	<-->	Transform._Leadership	-.505
Avoidant	<-->	Contingent_Reward	-.696
Transform._Leadership	<-->	Avoidant	-.735

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
Transform._Leadership	.973	.154	6.317	***
Avoidant	.582	.105	5.525	***
Contingent_Reward	1.147	.173	6.625	***
Active MBE	1.301	.140	9.300	***
e28	.601	.103	5.845	***
e29	.397	.061	6.498	***
e14	.010			
e1	.546	.068	8.042	***
e2	.613	.074	8.275	***
e3	.348	.046	7.495	***
e4	.412	.054	7.653	***
e5	.538	.065	8.222	***
e6	.535	.060	8.974	***
e7	.581	.065	8.868	***
e8	.304	.039	7.781	***
e9	.410	.049	8.433	***
e10	.102	.029	3.585	***
e11	.460	.075	6.098	***
e12	.717	.089	8.060	***
e13	.493	.069	7.102	***
e15	.571	.062	9.211	***
e16	.361	.042	8.595	***

e17	.154	.023	6.810	***
e18	.176	.026	6.737	***
e19	.156	.022	7.015	***
e20	.380	.044	8.589	***
e21	.552	.070	7.866	***
e22	.457	.064	7.173	***
e23	.282	.043	6.577	***
e24	.495	.062	7.976	***
e25	.669	.077	8.736	***

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	89	363.176	261	.000	1.391
Saturated model	350	.000	0		
Independence model	25	3825.863	325	.000	11.772

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.905	.882	.971	.964	.971
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.803	.727	.780
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	102.176	55.980	156.415
Saturated model	.000	.000	.000
Independence model	3500.863	3305.333	3703.710

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	2.029	.571	.313	.874

Model	FMIN	F0	LO 90	HI 90
Saturated model	.000	.000	.000	.000
Independence model	21.374	19.558	18.466	20.691

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.047	.035	.058	.672
Independence model	.245	.238	.252	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	541.176	571.424		
Saturated model	700.000	818.954		
Independence model	3875.863	3884.360		

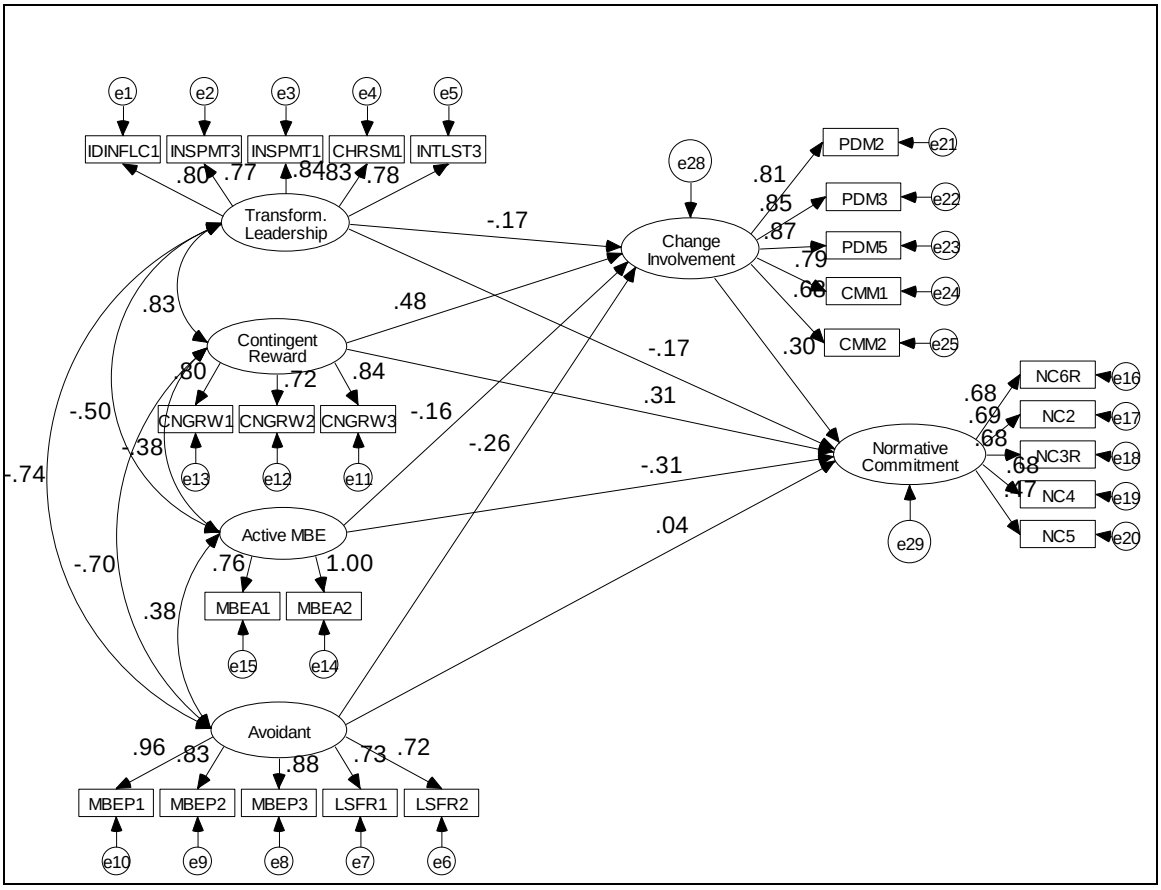
ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	3.023	2.765	3.326	3.192
Saturated model	3.911	3.911	3.911	4.575
Independence model	21.653	20.561	22.786	21.700

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	148	157
Independence model	18	19

Appendix N: SEM Results for Leadership Effects on Normative Commitment



Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Change_Involvement	<---	Transform._Leadership	-.176	.185	-.950	.342
Change_Involvement	<---	Contingent_Reward	.454	.161	2.812	.005
Change_Involvement	<---	Active MBE	-.143	.070	-2.051	.040
Change_Involvement	<---	Avoidant	-.342	.145	-2.348	.019
Normative_Commitment	<---	Transform._Leadership	-.111	.138	-.804	.421
Normative_Commitment	<---	Avoidant	.032	.108	.292	.770
Normative_Commitment	<---	Active MBE	-.178	.055	-3.253	.001
Normative_Commitment	<---	Contingent_Reward	.190	.126	1.509	.131
Normative_Commitment	<---	Change_Involvement	.196	.072	2.719	.007
IDINFLC1	<---	Transform._Leadership	1.000			
INSPMT3	<---	Transform._Leadership	.969	.085	11.433	***
INSPMT1	<---	Transform._Leadership	.936	.073	12.819	***
CHRSM1	<---	Transform._Leadership	.977	.078	12.597	***

			Estimate	S.E.	C.R.	P
INTLST3	<---	Transform._Leadership	.930	.080	11.598	***
LSFR2	<---	Avoidant	1.000			
LSFR1	<---	Avoidant	1.051	.109	9.640	***
MBEP3	<---	Avoidant	1.314	.111	11.800	***
MBEP2	<---	Avoidant	1.234	.111	11.112	***
MBEP1	<---	Avoidant	1.534	.119	12.930	***
CNGRW3	<---	Contingent_Reward	1.000			
CNGRW2	<---	Contingent_Reward	.808	.079	10.283	***
CNGRW1	<---	Contingent_Reward	.871	.073	11.887	***
MBEA2	<---	Active MBE	1.000			
MBEA1	<---	Active MBE	.776	.051	15.261	***
NC6R	<---	Normative_Commitment	1.000			
NC2	<---	Normative_Commitment	1.157	.155	7.457	***
NC3R	<---	Normative_Commitment	1.143	.153	7.446	***
NC4	<---	Normative_Commitment	1.179	.160	7.378	***
NC5	<---	Normative_Commitment	.842	.155	5.445	***
PDM2	<---	Change_Involvement	1.000			
PDM3	<---	Change_Involvement	1.085	.084	12.963	***
PDM5	<---	Change_Involvement	.946	.071	13.286	***
CMM1	<---	Change_Involvement	.913	.077	11.813	***
CMM2	<---	Change_Involvement	.749	.078	9.651	***

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
Change_Involvement	<---	Transform._Leadership	-.173
Change_Involvement	<---	Contingent_Reward	.485
Change_Involvement	<---	Active MBE	-.163
Change_Involvement	<---	Avoidant	-.260
Normative_Commitment	<---	Transform._Leadership	-.166
Normative_Commitment	<---	Avoidant	.036
Normative_Commitment	<---	Active MBE	-.307
Normative_Commitment	<---	Contingent_Reward	.308
Normative_Commitment	<---	Change_Involvement	.297
IDINFLC1	<---	Transform._Leadership	.801
INSPMT3	<---	Transform._Leadership	.773
INSPMT1	<---	Transform._Leadership	.843
CHRSM1	<---	Transform._Leadership	.832
INTLST3	<---	Transform._Leadership	.782
LSFR2	<---	Avoidant	.722
LSFR1	<---	Avoidant	.726

			Estimate
MBEP3	<---	Avoidant	.876
MBEP2	<---	Avoidant	.827
MBEP1	<---	Avoidant	.965
CNGRW3	<---	Contingent_Reward	.845
CNGRW2	<---	Contingent_Reward	.715
CNGRW1	<---	Contingent_Reward	.799
MBEA2	<---	Active MBE	.996
MBEA1	<---	Active MBE	.760
NC6R	<---	Normative_Commitment	.683
NC2	<---	Normative_Commitment	.686
NC3R	<---	Normative_Commitment	.684
NC4	<---	Normative_Commitment	.676
NC5	<---	Normative_Commitment	.474
PDM2	<---	Change_Involvement	.807
PDM3	<---	Change_Involvement	.851
PDM5	<---	Change_Involvement	.867
CMM1	<---	Change_Involvement	.793
CMM2	<---	Change_Involvement	.678

Intercepts: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
IDINFLC1	3.644	.092	39.575	***
INSPMT3	3.711	.092	40.171	***
INSPMT1	4.050	.082	49.401	***
CHRSM1	3.728	.087	43.044	***
INTLST3	3.428	.088	39.066	***
LSFR2	2.006	.079	25.392	***
LSFR1	2.212	.083	26.631	***
MBEP3	2.211	.086	25.837	***
MBEP2	2.189	.085	25.708	***
MBEP1	2.244	.091	24.737	***
CNGRW3	3.307	.095	34.832	***
CNGRW2	2.694	.091	29.704	***
CNGRW1	2.746	.087	31.445	***
MBEA2	1.810	.086	21.045	***
MBEA1	2.126	.088	24.249	***
NC6R	3.912	.073	53.805	***
NC2	3.251	.084	38.879	***
NC3R	3.661	.083	44.273	***
NC4	3.352	.086	38.789	***

	Estimate	S.E.	C.R.	P
NC5	2.918	.088	33.118	***
PDM2	3.243	.093	34.900	***
PDM3	3.256	.096	34.067	***
PDM5	2.917	.082	35.643	***
CMM1	3.189	.086	36.981	***
CMM2	3.106	.083	37.498	***

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Active MBE	<-->	Transform._Leadership	-.564	.103	-5.467	***
Active MBE	<-->	Contingent_Reward	-.459	.108	-4.260	***
Active MBE	<-->	Avoidant	.327	.075	4.343	***
Avoidant	<-->	Contingent_Reward	-.568	.093	-6.117	***
Transform._Leadership	<-->	Avoidant	-.554	.089	-6.258	***
Transform._Leadership	<-->	Contingent_Reward	.879	.126	6.964	***

Correlations: (Group number 1 - Default model)

			Estimate
Active MBE	<-->	Transform._Leadership	-.502
Active MBE	<-->	Contingent_Reward	-.377
Active MBE	<-->	Avoidant	.376
Avoidant	<-->	Contingent_Reward	-.695
Transform._Leadership	<-->	Avoidant	-.735
Transform._Leadership	<-->	Contingent_Reward	.832

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
Transform._Leadership	.974	.154	6.325	***
Avoidant	.583	.105	5.529	***
Contingent_Reward	1.146	.173	6.627	***
Active MBE	1.296	.139	9.301	***
e28	.612	.104	5.901	***
e29	.291	.066	4.386	***
e14	.010			
e1	.544	.068	8.031	***
e2	.614	.074	8.276	***
e3	.349	.047	7.498	***
e4	.414	.054	7.662	***
e5	.535	.065	8.207	***

	Estimate	S.E.	C.R.	P
e6	.534	.060	8.968	***
e7	.577	.065	8.858	***
e8	.306	.039	7.775	***
e9	.410	.049	8.422	***
e10	.103	.029	3.559	***
e11	.461	.075	6.136	***
e12	.715	.089	8.072	***
e13	.493	.069	7.125	***
e15	.570	.062	9.211	***
e16	.501	.068	7.409	***
e17	.660	.089	7.397	***
e18	.652	.088	7.436	***
e19	.722	.096	7.503	***
e20	1.072	.122	8.778	***
e21	.537	.069	7.743	***
e22	.452	.064	7.070	***
e23	.298	.044	6.704	***
e24	.493	.062	7.924	***
e25	.664	.076	8.702	***

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	89	410.374	261	.000	1.572
Saturated model	350	.000	0		
Independence model	25	3102.968	325	.000	9.548

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.868	.835	.947	.933	.946
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI

Model	PRATIO	PNFI	PCFI
Default model	.803	.697	.760
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	149.374	98.269	208.413
Saturated model	.000	.000	.000
Independence model	2777.968	2603.206	2960.100

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	2.293	.834	.549	1.164
Saturated model	.000	.000	.000	.000
Independence model	17.335	15.519	14.543	16.537

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.057	.046	.067	.150
Independence model	.219	.212	.226	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	588.374	618.622		
Saturated model	700.000	818.954		
Independence model	3152.968	3161.464		

ECVI

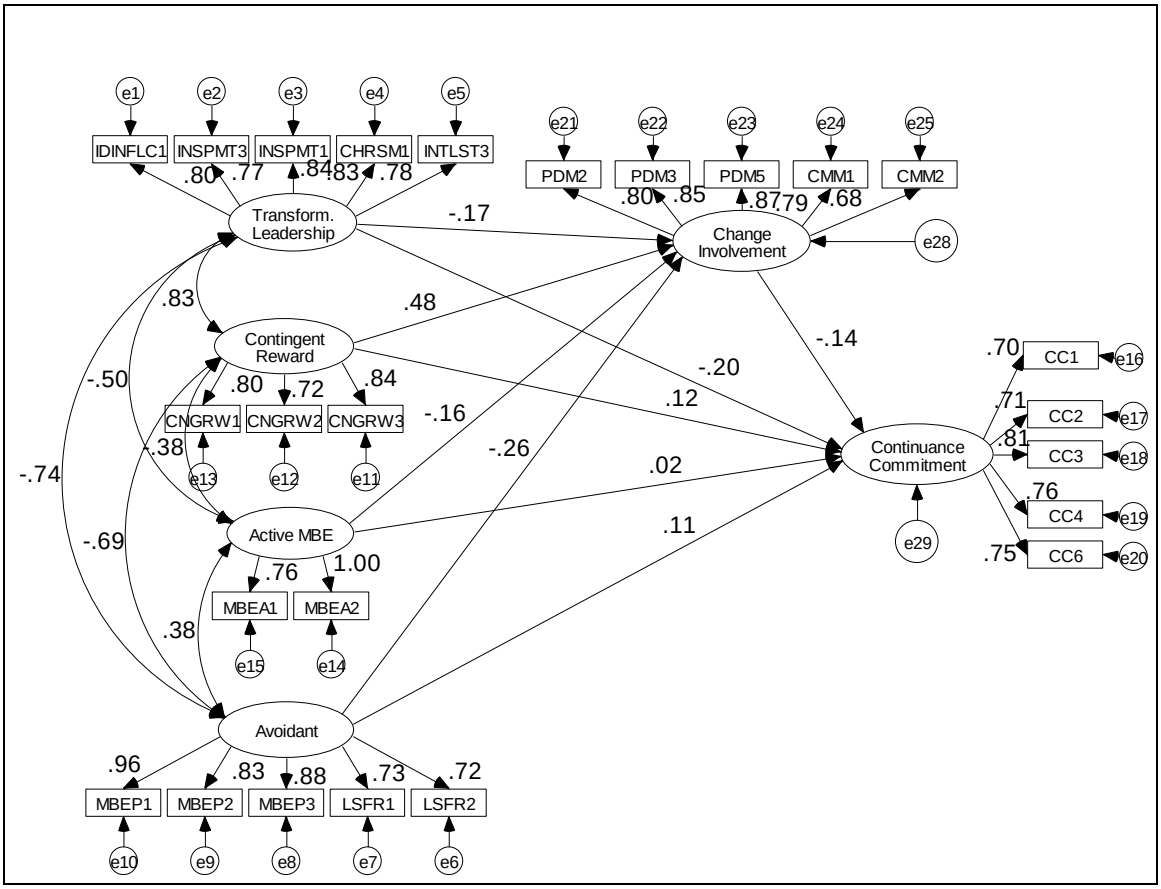
Model	ECVI	LO 90	HI 90	MECVI
Default model	3.287	3.002	3.617	3.456
Saturated model	3.911	3.911	3.911	4.575
Independence model	17.614	16.638	18.632	17.662

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	131	139

Model	HOELTER .05	HOELTER .01
Independence model	22	23

Appendix O: SEM Results for Leadership Effects on Continuance Commitment



Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Change_Involvement	<---	Transform._Leadership	-.173	.184	-.939	.348
Change_Involvement	<---	Contingent_Reward	.449	.161	2.785	.005
Change_Involvement	<---	Active MBE	-.143	.070	-2.063	.039
Change_Involvement	<---	Avoidant	-.341	.145	-2.358	.018
Continuance_Commitment	<---	Transform._Leadership	-.178	.189	-.942	.346
Continuance_Commitment	<---	Avoidant	.126	.148	.849	.396
Continuance_Commitment	<---	Active MBE	.013	.072	.176	.860
Continuance_Commitment	<---	Change_Involvement	-.117	.096	-1.221	.222
Continuance_Commitment	<---	Contingent_Reward	.098	.170	.574	.566
IDINFLC1	<---	Transform._Leadership	1.000			
INSPMT3	<---	Transform._Leadership	.967	.085	11.408	***
INSPMT1	<---	Transform._Leadership	.938	.073	12.835	***
CHRSM1	<---	Transform._Leadership	.976	.078	12.591	***
INTLST3	<---	Transform._Leadership	.931	.080	11.607	***

			Estimate	S.E.	C.R.	P
LSFR2	<---	Avoidant	1.000			
LSFR1	<---	Avoidant	1.051	.109	9.640	***
MBEP3	<---	Avoidant	1.313	.111	11.801	***
MBEP2	<---	Avoidant	1.234	.111	11.116	***
MBEP1	<---	Avoidant	1.534	.119	12.934	***
CNGRW3	<---	Contingent_Reward	1.000			
CNGRW2	<---	Contingent_Reward	.814	.079	10.261	***
CNGRW1	<---	Contingent_Reward	.878	.074	11.856	***
MBEA2	<---	Active MBE	1.000			
MBEA1	<---	Active MBE	.776	.051	15.283	***
CC1	<---	Continuance_Commitment	1.000			
CC2	<---	Continuance_Commitment	1.014	.119	8.556	***
CC3	<---	Continuance_Commitment	1.095	.115	9.565	***
CC4	<---	Continuance_Commitment	1.031	.114	9.040	***
CC6	<---	Continuance_Commitment	1.013	.113	8.927	***
PDM2	<---	Change_Involvement	1.000			
PDM3	<---	Change_Involvement	1.096	.085	12.926	***
PDM5	<---	Change_Involvement	.956	.072	13.230	***
CMM1	<---	Change_Involvement	.914	.078	11.646	***
CMM2	<---	Change_Involvement	.750	.079	9.555	***

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
Change_Involvement	<---	Transform._Leadership	-.171
Change_Involvement	<---	Contingent_Reward	.481
Change_Involvement	<---	Active MBE	-.164
Change_Involvement	<---	Avoidant	-.261
Continuance_Commitment	<---	Transform._Leadership	-.205
Continuance_Commitment	<---	Avoidant	.112
Continuance_Commitment	<---	Active MBE	.017
Continuance_Commitment	<---	Change_Involvement	-.136
Continuance_Commitment	<---	Contingent_Reward	.121
IDINFLC1	<---	Transform._Leadership	.801
INSPMT3	<---	Transform._Leadership	.772
INSPMT1	<---	Transform._Leadership	.843
CHRSM1	<---	Transform._Leadership	.832
INTLST3	<---	Transform._Leadership	.782
LSFR2	<---	Avoidant	.722
LSFR1	<---	Avoidant	.726
MBEP3	<---	Avoidant	.876

			Estimate
MBEP2	<---	Avoidant	.827
MBEP1	<---	Avoidant	.965
CNGRW3	<---	Contingent_Reward	.841
CNGRW2	<---	Contingent_Reward	.717
CNGRW1	<---	Contingent_Reward	.802
MBEA2	<---	Active MBE	.996
MBEA1	<---	Active MBE	.760
CC1	<---	Continuance_Commitment	.698
CC2	<---	Continuance_Commitment	.714
CC3	<---	Continuance_Commitment	.815
CC4	<---	Continuance_Commitment	.760
CC6	<---	Continuance_Commitment	.750
PDM2	<---	Change_Involvement	.803
PDM3	<---	Change_Involvement	.855
PDM5	<---	Change_Involvement	.871
CMM1	<---	Change_Involvement	.789
CMM2	<---	Change_Involvement	.675

Intercepts: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
IDINFLC1	3.644	.092	39.575	***
INSPMT3	3.711	.092	40.171	***
INSPMT1	4.050	.082	49.401	***
CHRSM1	3.728	.087	43.044	***
INTLST3	3.428	.088	39.066	***
LSFR2	2.006	.079	25.392	***
LSFR1	2.212	.083	26.632	***
MBEP3	2.211	.086	25.837	***
MBEP2	2.189	.085	25.708	***
MBEP1	2.244	.091	24.737	***
CNGRW3	3.307	.095	34.828	***
CNGRW2	2.695	.091	29.700	***
CNGRW1	2.746	.087	31.445	***
MBEA2	1.812	.086	21.021	***
MBEA1	2.127	.088	24.234	***
CC1	2.767	.092	30.101	***
CC2	2.956	.091	32.428	***
CC3	2.750	.086	31.880	***
CC4	2.856	.087	32.798	***
CC6	3.098	.087	35.701	***

	Estimate	S.E.	C.R.	P
PDM2	3.243	.093	34.899	***
PDM3	3.256	.096	34.067	***
PDM5	2.917	.082	35.643	***
CMM1	3.189	.086	36.981	***
CMM2	3.106	.083	37.498	***

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Active MBE	<-->	Transform._Leadership	-.568	.103	-5.487	***
Active MBE	<-->	Contingent_Reward	-.460	.108	-4.269	***
Active MBE	<-->	Avoidant	.330	.076	4.369	***
Avoidant	<-->	Contingent_Reward	-.565	.093	-6.102	***
Transform._Leadership	<-->	Avoidant	-.554	.089	-6.258	***
Transform._Leadership	<-->	Contingent_Reward	.875	.126	6.950	***

Correlations: (Group number 1 - Default model)

			Estimate
Active MBE	<-->	Transform._Leadership	-.505
Active MBE	<-->	Contingent_Reward	-.378
Active MBE	<-->	Avoidant	.379
Avoidant	<-->	Contingent_Reward	-.695
Transform._Leadership	<-->	Avoidant	-.735
Transform._Leadership	<-->	Contingent_Reward	.832

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
Transform._Leadership	.974	.154	6.323	***
Avoidant	.583	.105	5.530	***
Contingent_Reward	1.136	.173	6.580	***
Active MBE	1.300	.140	9.299	***
e28	.606	.103	5.862	***
e29	.669	.134	5.003	***
e14	.010			
e1	.544	.068	8.038	***
e2	.617	.074	8.289	***
e3	.347	.046	7.490	***
e4	.414	.054	7.671	***
e5	.534	.065	8.207	***
e6	.534	.060	8.968	***

	Estimate	S.E.	C.R.	P
e7	.578	.065	8.858	***
e8	.306	.039	7.778	***
e9	.410	.049	8.422	***
e10	.103	.029	3.563	***
e11	.470	.076	6.186	***
e12	.712	.089	8.038	***
e13	.486	.069	7.039	***
e15	.571	.062	9.211	***
e16	.776	.096	8.089	***
e17	.729	.092	7.956	***
e18	.448	.068	6.579	***
e19	.574	.077	7.469	***
e20	.588	.078	7.572	***
e21	.549	.070	7.796	***
e22	.440	.063	6.971	***
e23	.290	.044	6.593	***
e24	.501	.063	7.962	***
e25	.668	.077	8.712	***

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	89	434.566	261	.000	1.665
Saturated model	350	.000	0		
Independence model	25	3254.903	325	.000	10.015

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.866	.834	.942	.926	.941
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.803	.696	.756
Saturated model	.000	.000	.000

Model	PRATIO	PNFI	PCFI
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	173.566	120.112	234.914
Saturated model	.000	.000	.000
Independence model	2929.903	2750.576	3116.583

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	2.428	.970	.671	1.312
Saturated model	.000	.000	.000	.000
Independence model	18.184	16.368	15.366	17.411

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.061	.051	.071	.040
Independence model	.224	.217	.231	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	612.566	642.815		
Saturated model	700.000	818.954		
Independence model	3304.903	3313.399		

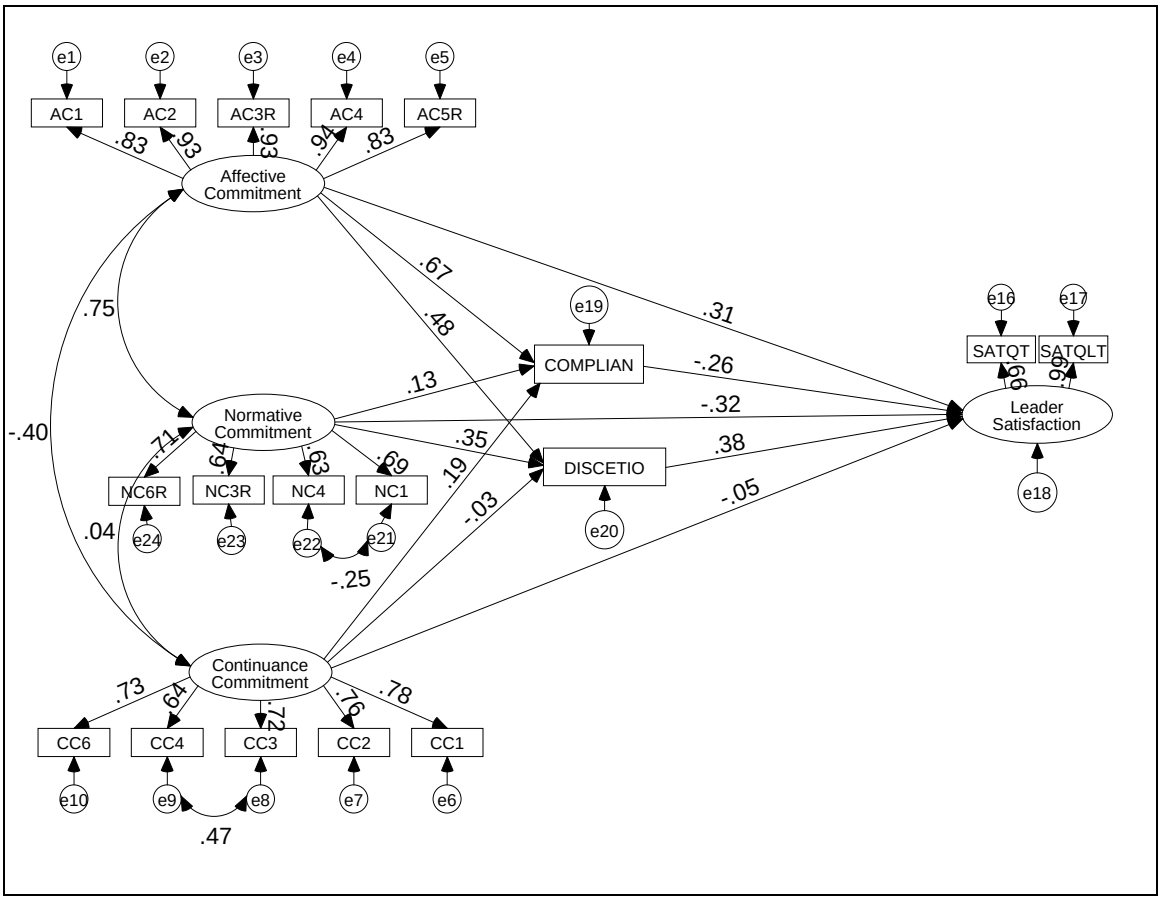
ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	3.422	3.124	3.765	3.591
Saturated model	3.911	3.911	3.911	4.575
Independence model	18.463	17.461	19.506	18.511

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	124	131
Independence model	21	22

Appendix P: SEM Results for Commitment Effects on Behavior and Leaders' Satisfaction



Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
DISCETIO	<---	Continuance_Commitment	-1.020	3.224	-.316	.752
COMPLIAN	<---	Affective_Commitment	7.554	1.689	4.471	***
DISCETIO	<---	Affective_Commitment	19.681	5.709	3.447	***
COMPLIAN	<---	Normative_Commitment	2.163	2.396	.903	.366
DISCETIO	<---	Normative_Commitment	21.468	8.475	2.533	.011
COMPLIAN	<---	Continuance_Commitment	1.968	.966	2.037	.042
Leader_Satisfaction	<---	Normative_Commitment	-.344	.237	-1.452	.146
Leader_Satisfaction	<---	Continuance_Commitment	-.033	.089	-.368	.713
Leader_Satisfaction	<---	Affective_Commitment	.220	.165	1.332	.183
Leader_Satisfaction	<---	COMPLIAN	-.016	.007	-2.171	.030
Leader_Satisfaction	<---	DISCETIO	.007	.002	2.788	.005
AC1	<---	Affective_Commitment	1.000			
AC2	<---	Affective_Commitment	1.129	.067	16.746	***

			Estimate	S.E.	C.R.	P
AC3R	<---	Affective_Commitment	1.209	.073	16.621	***
AC4	<---	Affective_Commitment	1.100	.065	16.942	***
AC5R	<---	Affective_Commitment	1.030	.075	13.812	***
CC1	<---	Continuance_Commitment	1.000			
CC2	<---	Continuance_Commitment	.964	.097	9.898	***
CC3	<---	Continuance_Commitment	.863	.093	9.314	***
CC4	<---	Continuance_Commitment	.772	.095	8.134	***
CC6	<---	Continuance_Commitment	.884	.093	9.536	***
SATQT	<---	Leader_Satisfaction	1.000			
SATQLT	<---	Leader_Satisfaction	1.571	.151	10.423	***
NC1	<---	Normative_Commitment	1.000			
NC4	<---	Normative_Commitment	1.239	.186	6.654	***
NC3R	<---	Normative_Commitment	1.200	.161	7.468	***
NC6R	<---	Normative_Commitment	1.163	.143	8.114	***

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
DISCETIO	<---	Continuance_Commitment	-.027
COMPLIAN	<---	Affective_Commitment	.668
DISCETIO	<---	Affective_Commitment	.483
COMPLIAN	<---	Normative_Commitment	.126
DISCETIO	<---	Normative_Commitment	.346
COMPLIAN	<---	Continuance_Commitment	.186
Leader_Satisfaction	<---	Normative_Commitment	-.323
Leader_Satisfaction	<---	Continuance_Commitment	-.050
Leader_Satisfaction	<---	Affective_Commitment	.314
Leader_Satisfaction	<---	COMPLIAN	-.259
Leader_Satisfaction	<---	DISCETIO	.383
AC1	<---	Affective_Commitment	.830
AC2	<---	Affective_Commitment	.930
AC3R	<---	Affective_Commitment	.927
AC4	<---	Affective_Commitment	.936
AC5R	<---	Affective_Commitment	.831
CC1	<---	Continuance_Commitment	.783
CC2	<---	Continuance_Commitment	.761
CC3	<---	Continuance_Commitment	.719
CC4	<---	Continuance_Commitment	.637
CC6	<---	Continuance_Commitment	.734
SATQT	<---	Leader_Satisfaction	.660
SATQLT	<---	Leader_Satisfaction	.995

			Estimate
NC1	<---	Normative_Commitment	.691
NC4	<---	Normative_Commitment	.634
NC3R	<---	Normative_Commitment	.641
NC6R	<---	Normative_Commitment	.710

Intercepts: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
COMPLIAN	55.676	.762	73.053	***
DISCETIO	56.180	2.747	20.452	***
AC1	3.817	.081	47.169	***
AC2	3.767	.082	46.197	***
AC3R	3.763	.088	42.918	***
AC4	3.744	.079	47.426	***
AC5R	3.606	.083	43.340	***
CC1	2.767	.092	30.101	***
CC2	2.956	.091	32.428	***
CC3	2.750	.086	31.880	***
CC4	2.856	.087	32.798	***
CC6	3.098	.087	35.723	***
SATQT	4.558	.439	10.382	***
SATQLT	4.653	.679	6.853	***
NC1	3.978	.064	62.167	***
NC4	3.349	.086	38.740	***
NC3R	3.661	.083	44.273	***
NC6R	3.914	.073	53.888	***

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Normative_Commitment	<-->	Affective_Commitment	.397	.065	6.080	***
Affective_Commitment	<-->	Continuance_Commitment	-.349	.081	-4.315	***
Normative_Commitment	<-->	Continuance_Commitment	.021	.052	.399	.690
e8	<-->	e9	.336	.073	4.577	***
e21	<-->	e22	-.140	.051	-2.746	.006

Correlations: (Group number 1 - Default model)

			Estimate
Normative_Commitment	<-->	Affective_Commitment	.748
Affective_Commitment	<-->	Continuance_Commitment	-.404
Normative_Commitment	<-->	Continuance_Commitment	.037

		Estimate
e8	<--> e9	.467
e21	<--> e22	-.253

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
Affective_Commitment	.807	.119	6.790	***
Continuance_Commitment	.926	.159	5.825	***
Normative_Commitment	.349	.073	4.813	***
e19	49.050	5.538	8.857	***
e20	518.134	61.127	8.476	***
e18	.327	.074	4.397	***
e17	.010			
e1	.365	.042	8.684	***
e2	.161	.022	7.177	***
e3	.192	.027	7.212	***
e4	.138	.020	6.908	***
e5	.383	.044	8.677	***
e6	.586	.086	6.811	***
e7	.625	.087	7.154	***
e8	.643	.084	7.628	***
e9	.806	.098	8.215	***
e10	.618	.083	7.490	***
e16	.514	.061	8.396	***
e21	.383	.051	7.585	***
e22	.797	.100	8.002	***
e23	.721	.086	8.350	***
e24	.466	.060	7.780	***

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	67	227.951	122	.000	1.868
Saturated model	189	.000	0		
Independence model	18	2232.144	171	.000	13.053

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.898	.857	.950	.928	.949
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.713	.641	.677
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	105.951	67.304	152.418
Saturated model	.000	.000	.000
Independence model	2061.144	1912.366	2217.303

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.273	.592	.376	.851
Saturated model	.000	.000	.000	.000
Independence model	12.470	11.515	10.684	12.387

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.070	.056	.084	.013
Independence model	.259	.250	.269	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	361.951	377.863		
Saturated model	378.000	422.888		
Independence model	2268.144	2272.419		

ECVI

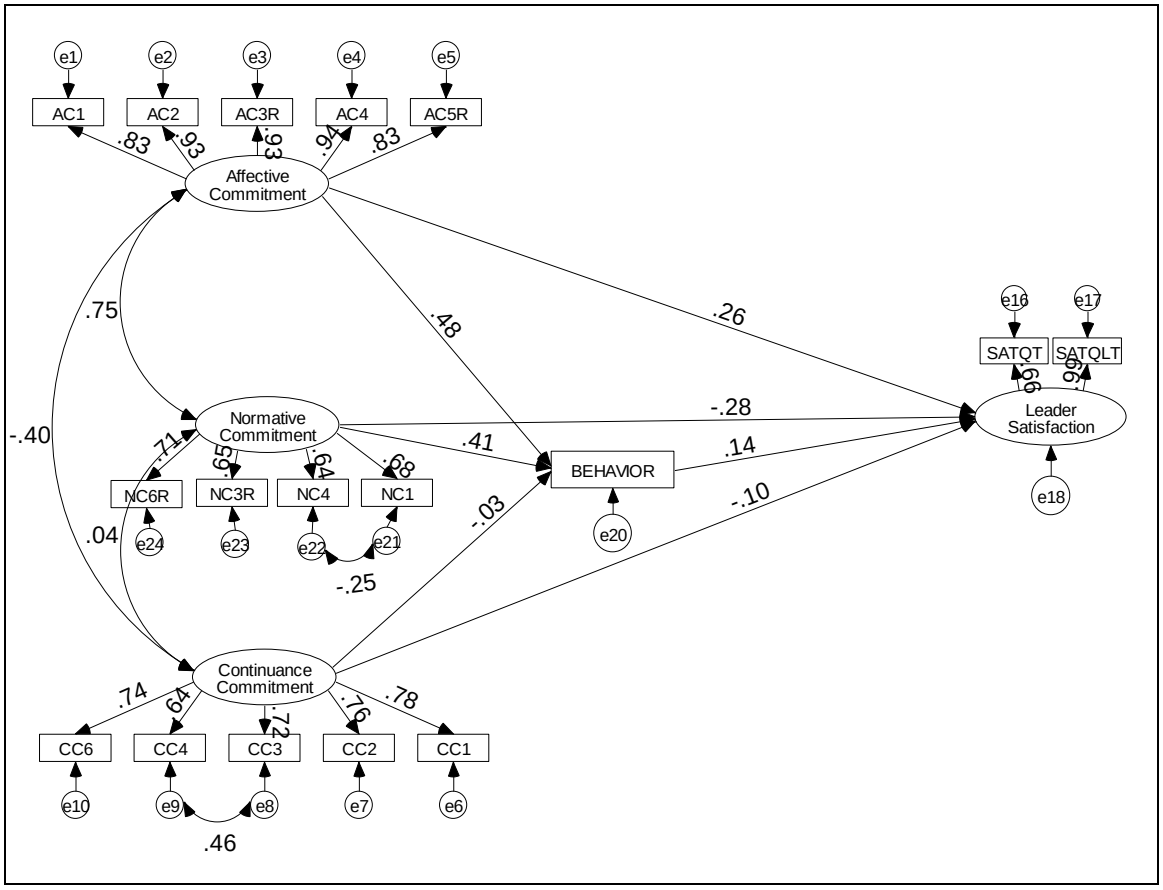
Model	ECVI	LO 90	HI 90	MECVI
Default model	2.022	1.806	2.282	2.111

Model	ECVI	LO 90	HI 90	MECVI
Saturated model	2.112	2.112	2.112	2.363
Independence model	12.671	11.840	13.544	12.695

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	117	127
Independence model	17	18

Appendix Q: SEM Results for an Exploratory Modification of Model 2



Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
BEHAVIOR	<---	Continuance_Commitment	-.619	1.562	-.396	.692	
BEHAVIOR	<---	Affective_Commitment	10.239	2.754	3.718	***	
BEHAVIOR	<---	Normative_Commitment	13.388	4.242	3.156	.002	
Leader_Satisfaction	<---	Normative_Commitment	-.301	.256	-1.173	.241	
Leader_Satisfaction	<---	Continuance_Commitment	-.063	.091	-.688	.491	
Leader_Satisfaction	<---	Affective_Commitment	.177	.156	1.132	.258	
Leader_Satisfaction	<---	BEHAVIOR	.004	.005	.846	.397	
AC1	<---	Affective_Commitment	1.000				
AC2	<---	Affective_Commitment	1.126	.067	16.864	***	
AC3R	<---	Affective_Commitment	1.205	.072	16.713	***	
AC4	<---	Affective_Commitment	1.095	.064	17.032	***	
AC5R	<---	Affective_Commitment	1.029	.074	13.932	***	
CC1	<---	Continuance_Commitment	1.000				

			Estimate	S.E.	C.R.	P	Label
CC2	<---	Continuance_Commitment	.968	.098	9.829	***	
CC3	<---	Continuance_Commitment	.869	.094	9.292	***	
CC4	<---	Continuance_Commitment	.779	.096	8.144	***	
CC6	<---	Continuance_Commitment	.889	.094	9.498	***	
SATQT	<---	Leader_Satisfaction	1.000				
SATQLT	<---	Leader_Satisfaction	1.572	.152	10.313	***	
NC1	<---	Normative_Commitment	1.000				
NC4	<---	Normative_Commitment	1.263	.190	6.652	***	
NC3R	<---	Normative_Commitment	1.236	.164	7.515	***	
NC6R	<---	Normative_Commitment	1.189	.147	8.098	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
BEHAVIOR	<---	Continuance_Commitment	-.031
BEHAVIOR	<---	Affective_Commitment	.481
BEHAVIOR	<---	Normative_Commitment	.407
Leader_Satisfaction	<---	Normative_Commitment	-.281
Leader_Satisfaction	<---	Continuance_Commitment	-.096
Leader_Satisfaction	<---	Affective_Commitment	.256
Leader_Satisfaction	<---	BEHAVIOR	.138
AC1	<---	Affective_Commitment	.833
AC2	<---	Affective_Commitment	.930
AC3R	<---	Affective_Commitment	.927
AC4	<---	Affective_Commitment	.935
AC5R	<---	Affective_Commitment	.833
CC1	<---	Continuance_Commitment	.779
CC2	<---	Continuance_Commitment	.760
CC3	<---	Continuance_Commitment	.722
CC4	<---	Continuance_Commitment	.641
CC6	<---	Continuance_Commitment	.736
SATQT	<---	Leader_Satisfaction	.656
SATQLT	<---	Leader_Satisfaction	.995
NC1	<---	Normative_Commitment	.680
NC4	<---	Normative_Commitment	.637
NC3R	<---	Normative_Commitment	.651
NC6R	<---	Normative_Commitment	.715

Intercepts: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label

	Estimate	S.E.	C.R.	P	Label
BEHAVIOR	69.108	1.438	48.061	***	
AC1	3.817	.081	47.169	***	
AC2	3.767	.082	46.197	***	
AC3R	3.763	.088	42.919	***	
AC4	3.744	.079	47.438	***	
AC5R	3.606	.083	43.340	***	
CC1	2.767	.092	30.101	***	
CC2	2.956	.091	32.428	***	
CC3	2.750	.086	31.880	***	
CC4	2.856	.087	32.798	***	
CC6	3.099	.087	35.727	***	
SATQT	3.727	.375	9.948	***	
SATQLT	3.346	.580	5.774	***	
NC1	3.978	.064	62.167	***	
NC4	3.350	.086	38.758	***	
NC3R	3.661	.083	44.273	***	
NC6R	3.914	.073	53.880	***	

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Normative_Commitment	<-->	Affective_Commitment	.391	.065	6.036	***
Affective_Commitment	<-->	Continuance_Commitment	-.348	.081	-4.299	***
Normative_Commitment	<-->	Continuance_Commitment	.023	.051	.458	.647
e8	<-->	e9	.331	.073	4.511	***
e21	<-->	e22	-.137	.051	-2.710	.007

Correlations: (Group number 1 - Default model)

			Estimate
Normative_Commitment	<-->	Affective_Commitment	.746
Affective_Commitment	<-->	Continuance_Commitment	-.402
Normative_Commitment	<-->	Continuance_Commitment	.042
e8	<-->	e9	.463
e21	<-->	e22	-.246

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
Affective_Commitment	.812	.119	6.821	***
Continuance_Commitment	.919	.159	5.785	***
Normative_Commitment	.339	.072	4.741	***
e20	110.304	13.933	7.916	***
e18	.354	.081	4.381	***

	Estimate	S.E.	C.R.	P
e17	.010			
e1	.359	.042	8.648	***
e2	.161	.023	7.108	***
e3	.193	.027	7.171	***
e4	.139	.020	6.874	***
e5	.378	.044	8.643	***
e6	.594	.087	6.837	***
e7	.627	.088	7.139	***
e8	.638	.084	7.579	***
e9	.799	.098	8.173	***
e10	.616	.083	7.454	***
e16	.515	.061	8.396	***
e21	.394	.051	7.744	***
e22	.791	.098	8.042	***
e23	.706	.085	8.316	***
e24	.459	.059	7.769	***

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	61	200.618	109	.000	1.841
Saturated model	170	.000	0		
Independence model	17	2112.502	153	.000	13.807

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.905	.867	.954	.934	.953
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.712	.645	.679
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90

Model	NCP	LO 90	HI 90
Default model	91.618	55.713	135.353
Saturated model	.000	.000	.000
Independence model	1959.502	1814.709	2111.680

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.121	.512	.311	.756
Saturated model	.000	.000	.000	.000
Independence model	11.802	10.947	10.138	11.797

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.069	.053	.083	.023
Independence model	.267	.257	.278	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	322.618	336.258		
Saturated model	340.000	378.012		
Independence model	2146.502	2150.303		

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.802	1.602	2.047	1.879
Saturated model	1.899	1.899	1.899	2.112
Independence model	11.992	11.183	12.842	12.013

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	120	131
Independence model	16	17