The Relationships among Employee Reactions to Training, Commitment to

Organizational Change, Learning, and Volunteering Behavior

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To learn is to be in a position of privilege. For the privileges that I have enjoyed over the course of my education, I am greatly indebted to a number of people. First and foremost, to my wife Suzy, for her every-day-sacrifices that testify to her loving and patient nature that made this endeavor possible. To my young sons, Elijah and Noah, whose bright faces on days when no end seemed near gave me the purpose and inspiration to continue. To my father and mother, who offered encouragement and reminded me of the virtues and rewards of perseverance. To my committee members: Dr. Jim Brown, Dr. John Campbell, and Dr. Gary McLean for challenging me and enriching my academic journey. Finally, to my advisor, Ken Bartlett, whose guidance and commitment to my success is the exemplar of professionalism and sage counsel.

ABSTRACT

This study explored the relationships between employee reactions to change-related training, commitment to organizational change, learning, and volunteering behavior. To accomplish this, online surveys were used to gather employee perceptions. Measures used were the Affective Commitment to Change Scale developed by Herscovitch and Meyer (2002) and Affective and Cognitive Reaction to Training Scales which were developed for this study based on Alliger, Tannenbaum, Bennett, Traver, and Shotland's (1997) previous conceptualizations. Theories related to attitude formation and change, learning, and organizational change provided a framework for this study and guided the research questions.

The sample in this study was comprised of four divisions of a large healthcare organization with approximately 650 independently operating facilities across the United States. Completed data were obtained from 1,091 participants, with a total response rate of approximately 30%. Correlational, factor, and hierarchical regression analyses were employed to assess study scales and relationships among the constructs.

Results showed strong correlations between training reaction sub-scales, suggesting conceptual overlap and need for revision. The results of factor analyses provided the best fit for a 2-dimensional model of training reactions. Hierarchical regression analyses showed significant relationships between training reactions, commitment to change, and volunteering behavior.

It was concluded that training reactions may serve as leading indicators for employee commitment and behavioral support for an organizational change. In general,

this study supports previous theoretical claims that commitment to change is critical to the successful implementation of organizational change.

These findings have implications for future research and practice. It is recommended that future research further explore the causal links between reactions, commitment, and volunteering behavior using approaches such as longitudinal methods. Additional research on other antecedents to commitment to change is recommended. Next, although affective and cognitive training reactions are useful concepts, the scale developed for this study needs further refinement. In conclusion, this study suggests that, as the causes and consequences of employee commitment to change are better understood, human resource development (HRD) practitioners and academics will be better equipped to help organizations realize their strategic objectives and help organizational members find greater fulfillment and meaning in the workplace.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

An organization's ability to respond to change and implement a planned response is vital for maintaining competitiveness and creating strategic advantage in today's business climate (Poole & Van de Ven, 2004; Wagner & Hollenbeck, 2009). Due to a variety of forces such as globalization, technological innovation, and shifting demographics, the scale of change has never been greater than in the current business environment (Balogun & Hope-Hailey, 2004; Burnes, 2004; Meyer, 2009; Porter, 2009). The current pace and breadth of change is, in turn, creating tremendous demand for more effective and innovative methods of managing change (Mintzberg, 2009).

When organizations realize a need for change, they naturally seek and plan ways to respond to or manage the change (Todnem-By, 2005). *Change management* has been defined as a "process of continually renewing an organization's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers" (Moran & Brightman, 2001, p. 111). Implementing and managing planned organizational change is a complex undertaking which, in order to achieve desired outcomes, usually requires a systemic approach and adjustments to multiple levers within the overall organizational system (Burke & Schmidt, 1971). However, when attempting to manage change, organizational leadership has historically focused on isolated strategies, structures, processes, or technologies in a disparate manner, which has resulted in significant rates of change initiative failures (Pettigrew & Whip, 1993; Sirkin, Keenan, & Jackson, 2005). Business leaders and management advisors now increasingly acknowledge the need for more holistic and integrated approaches that address the role of employees or humans as

primary enablers within planned organizational change efforts (Beer, 2009: Davenport, 2000; Sirkin et al., 2005; Todnem-By, 2005).

In contrast to management practice, the Human Resource Development (HRD) literature has long claimed that the role employees play within the context of organizational change is critical. Attitudes in particular have been identified as an important employee-related factor that is malleable, is manageable, and drives behavior (Armenakis, Harris, & Field, 1999; Bovey & Hede, 2001; Coetsee, 1999; Conner & Patterson, 1982; K. J. Klein & Sorra, 1996; Piderit, 2000). Employee attitudes are important within the context of organizational change because when employees are exposed to an organizational change, they immediately begin to form positive or negative attitudes about the change (Lines, 2005). These attitudes then serve to guide whether the employee behaves toward the change in a supportive or resistant manner (Armenakis, Harris, & Mossholder, 1993; Isabella, 1990).

In the context of organizational change, an attitude that has received increasing attention in the HRD literature is employee commitment to change. *Employee commitment to change* is defined as "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, p. 475) and is identified as a critical factor in determining the outcomes of planned organizational change (Armenakis & Bedeian, 1999; Coetsee, 1999). Conner and Patterson (1982) stated that the most prevalent factor contributing to failed change projects is "a lack of commitment by the people" (p. 18), and Connor added that employee commitment to change serves as "the glue that provides the vital bond between people and change goals" (Conner, 1992, p. 147). Employee

commitment to change is also identified as a central component in K. J. Klein and Sorra's (1996) theoretical model of effective innovation implementation in the workplace and Armenakis et al.'s (1999) theoretical model of system readiness for change.

Within many organizations, the HRD function is responsible for developing solutions and programs that help address the employee-related aspects of organizational change (Huselid, 1995; Ingham, 2006; Pfeffer, 1998). However, historically, there is a high rate of failure for organizational change initiatives, and often, one of the reasons cited for these failures are people-related issues such as a lack of employee commitment (Sirkin et al., 2005). This would suggest that while HRD literature maintains the theoretical significance of employee commitment to change, there is a need for research that identifies the key factors that may influence employee attitudes toward commitment to change as well as the outcomes of commitment to change (H. J. Klein, Becker, & Meyer, 2009).

During a change initiative, organizations often use training programs as a means of attempting to equip employees with the requisite learning (Tannenbaum, Mathieu, Salas & Cannon-Bowers, 1991; Worley, Hitchin, & Ross, 1995). For example, when an organization implements a new enterprise-wide information system or when new processes and policies are introduced, a significant portion of an organization's employees attend training in order to gain new knowledge and develop new skills (Davenport, 2000). While there is debate regarding whether organizations regularly invest sufficient resources into training or whether these training programs are designed and delivered effectively, most research on training outcomes has focused on the degree to which training actually impacts or increases employees' knowledge and skills.

Training may also play an important role in shaping employees' attitudes toward change. Some HRD scholars have noted that change-related training may actually have a significant role in shaping employees' perceptions and attitudes toward the change because training is often the employees' first significant exposure to the organizational change (Jacobs & Russ-Eft, 2001; Torraco & Swanson, 1995). However, the HRD literature has provided very little empirical research concerning the impact of employees' training experiences on their attitudes toward the organizational change (Jacobs & Russ-Eft, 2001).

Research on employees' reactions to training generally categorizes trainees' reactions into affective and cognitive types. Trainees' affective and CRT have been examined primarily as indicators of training effectiveness (Alliger et al., 1997; Ruona, Leimbach, Holton, & Yates, 2002; Tan, Hall, & Boyce, 2003). Findings have generally shown little correlation between trainee reactions to training and learning and even less between reactions to training and performance (Dixon, 1990; Warr & Bunce, 1995). This has led to calls for new research on how training reaction measures may relate to and influence other important individual and organizational outcomes such as employee commitment to change (Ruona et al., 2002).

When undergoing an organizational change, resources are often in short supply and it is difficult for management to anticipate all of the things that need to be done in order to make the change work. Therefore, management needs to rely on employees who are willing to become involved and exhibit voluntary behaviors that support the change (Lines, 2005). The more organizations are able to increase behavioral support for the change initiative, the more likely organizations are to achieve their strategic change

objectives within the desired time and budget (Cummings & Worley, 2001). Research shows that organizations that are able to secure discretionary behavioral support from their employees also realize benefits such as improved process performance and quality, and increased employee satisfaction and employee commitment accompany these discretionary behaviors (Guthrie, 2001; Lawler, Mohrman, & Ledford, 1995; Pfeffer, 1998). In short, organizations that are able to secure behavioral support from their employees for the implementation of their strategic change efforts are more likely to achieve the organizational responsiveness needed in a competitive, changing environment (Lawler et al, 1995).

Theoretical Perspectives

This study drew primarily on theories related to attitude formation and change, learning, and organizational change. According to attitude theory, an *attitude* is essentially a summary evaluation of an object (e.g., person, concept, etc.), and once formed, attitudes serve to guide and drive behavior toward the object (Ajzen, 2001). Furthermore, attitudes derive from beliefs and emotions, which are influenced through the employee's direct experience with the object or through receiving information about the object (Eagly & Chaiken, 1993). In this multi-component view of attitudes, beliefs are characterized as cognitive in nature, and emotions as affective in nature. Both components interact to form an attitude toward an object (Ajzen, 2001; Crano & Prislin, 2006). Therefore, early in the change process, when a person is first exposed to information regarding a pending change (e.g., during a change-related training event), an employee begins to form an attitude toward the change based on cognitive and affective reactions to the information received (Lines, 2005). While there is some debate over the

primacy of affect versus cognition in the attitude formation process (Haddock & Zanna, 1999), inherent in most attitude theory and research is the assumption that attitudes are formed primarily through cognitive processes (Ajzen, 2001). Finally, in regard to the link to behavior, some evidence suggests that while the affective and cognitive reactions contribute to forming the attitude, it is the attitude that is more accessible and prevails in the individual's memory over the course of time (Haddock & Zanna, 1999). Therefore, once the attitude toward the organizational change is formed, the attitude becomes the primary agent for influencing outcomes such as resistance or behavioral support for the change (Holland, Meertens, & VanVugt, 2002; Petty, Tormala, & Rucker, 2004; R. C. Thompson & Hunt, 1996).

In sum, according to attitude theory, attitudes are hierarchically structured. At the lower level of the hierarchy, affective and cognitive reactions cause the attitude, with cognitions taking primacy over affect in the attitude formation process. Then, in turn, attitudes cause behaviors, with attitudes taking primacy over reactions as they are solidified, stored in the memory, and then accessed and reinforced when the attitude object is encountered again (Lines, 2005). Therefore, a hierarchical model of attitudes was selected as part of the theoretical framework for this study as, first, cognitive reactions were thought to account for more variability in attitude than affective reactions, and second, while attitudes and reactions should both be related to behavior, attitude should account for more variability in behavior than affective or cognitive reactions.

Kurt Lewin's (1947) well-known three-stage model of planned organizational change, which explains how to initiate, manage, and institutionalize change, includes employee attitudes and behaviors at the hub of all organizational changes (Cummings &

Worley, 2001). According to attitude theory and within the context of organizational change, the initial period of attitude formation is of critical importance because once frozen—as in Lewin's (1947) well-known metaphor of social change—attitudes may be extremely difficult to alter at a later point. Therefore, from a change management perspective, this implies that organizations should invest a great deal of thought, care, and effort into managing employee commitment to change during the initial phases of the organizational change because a more significant investment will be required to overcome negative attitudes at a later point in the change process.

From the perspective of learning theory, Gagne's (1985) conditions for learning specify attitudes as one of five types of learning. Theories and models of adult learning, such Rogers' (1969) theory of experiential learning, identify attitudes as primary motivators or de-motivators in self-initiated learning. According to Gagne, attitudes can influence learning outcomes and vice versa. Furthermore, it is during the initial period of employee attitude formation that the most opportunity exists to influence the learning-attitude processes. For example, in the context of organizational change, employees are often first introduced to a planned organizational change initiative through a change-related training event (Jacobs & Russ-Eft, 2001). During the training event, commitment to change may be influenced through the employee's affective (e.g., a feeling of negativity associated with the training and the change) or cognitive evaluations (e.g., a persuasive, rationale message or presenter that makes a convincing and positive case for change) of the training event. In summary, this filled an important knowledge gap by examining theoretical claims regarding the relationships between reactions, attitudes, learning and behavior within the context of organizational change.

Problem Statement

Employee commitment is often cited in the change management literature as one of the most important elements of planned organizational change (Armenakis et al., 1999; Herscovitch & Meyer, 2002; K. J. Klein & Sorra, 1996). However, while theory posits that employee attitudes influence organizational change outcomes, very few studies have been conducted on the antecedents and consequences of employee commitment to change (H. J. Klein et al., 2009).

With limited empirical evidence on the nature of the relationships between affective and CRT, employee commitment to change, and outcomes of learning and behavioral support for change, additional research is needed in order to understand how to most effectively implement and manage change in organizations. This study helped address this knowledge gap and provided additional insight into and understanding of these relationships and ways in which HRD may further contribute towards helping the organization achieve its strategic objectives.

Purpose of Study

The purpose of this research was to identify whether significant relationships exist between employee reactions to training, employee commitment to change, and outcomes of learning and volunteering behavior. The following primary research questions guided this study:

1. What is the relationship between reactions to training (i.e., affective and cognitive) and affective commitment to change?

2. Are reactions to training and affective commitment to change significantly related to learning?

3. Are reactions to training and affective commitment to change significantly related to volunteering behavior?

Significance of the Study

As the scale and pace of organizational change increase, practitioners and academics alike are reporting the need for HRD to be a strategic partner and assist business in achieving change objectives (Cummings & Worley, 2001; Swanson & Holton, 2001; Ulrich, 1998). However, HRD practitioners need more information on the relationship between HRD processes (e.g., training), employee attitudes, and change-related outcomes (Dirkx, Gilley, & Maycunich-Gilley, 2004; Jacobs & Russ-Eft, 2001; Lines, 2005; Ulrich, 2007). The results of this study (a) contributed to the body of HRD literature on organizational change and employee attitudes and (b) provided guidance to businesses and HRD professionals attempting to engage in organizational change regarding how they might apply HRD practices and resources to influence employee attitudes regarding change and, thereby, help the organization realize the desired change goals.

Limitations of the Study

A number of limitations are inherent in this study. First, the generalizability of the results is limited to the degree to which other populations resemble the one studied. The population in the current study consisted of employees of a large healthcare organization. Thus, similar studies with different populations might yield different results than the ones found in the present study because the characteristics of employees in the healthcare industry may be different from employees in other industries.

A second limitation of this study is that employee attitudes were assessed at only one point during the change implementation. No pre-data were collected on any of this study's variables which limit the ability of this study to assess changes (or lack of change) in employee attitudes or outcomes over time. Longitudinal research which examines how change management activities might impact employee attitudes toward change over the entire change process would be of great value in identifying causal relationships.

Third, the present study used only one source and one data collection method to address the research questions. Therefore, single-source, single-method bias is a potential concern. However, due to resource constraints and limitations set by the participating organization on access to employee time, the data collection methods used in the present study were deemed the most feasible and appropriate. As in all self-report studies, common method variance is possible. *Common method variance* refers to the fact that because both measures come from the same source, any defect in the source contaminates both measures (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Common method variance occurs when correlations between measures are not due to true relationships between the constructs but simply because the same respondents provide the measures for both constructs. According to Podsakoff et al., one widely used method of investigating whether common method variance exists is to conduct Harman's single-factor test. Harman's single-factor test is an exploratory factor analysis (EFA) of all relevant variables which will identify whether a large degree of common method variance is present through the emergence of one factor (Podsakoff et al. 2003). Such an analysis

was conducted on the relevant variables in this study to determine whether common method variance existed.

A fourth limitation of this study is that the convenience sampling method utilized may bias the results, as those who volunteered to participate in the study may have been more resistant or possibly more committed to change. For example, it is possible that individuals who were more committed to the organizational change were willing to make extra effort and participate in the present study. It is also plausible that those employees that participated in the present study may have been more resistant to change and were seeking an outlet to voice their dissatisfaction.

A fifth limitation of this study is the use of self-report measures. Self-report measures are inherently biased and prevent causal claims regarding the relationships reported.

<div align="center">Summary of Chapter 1</div>

This study examined the relationship between employee reactions to change-related training, commitment to organizational change, learning, and volunteering behavior while controlling for employee demographic variables. This study also adds to the knowledge base of the field of HRD on the dynamic subject of organizational change and helped fill an important knowledge gap by drawing on attitude theory and examining theoretical claims regarding the importance of employee attitudes within the context of organizational change. A new instrument for evaluating and measuring the dimensional nature of employee reactions to training was developed as a result of this study. Finally, this study provided some guidance to organizations and HRD practitioners seeking to effectively manage organizational change.

CHAPTER 2: REVIEW OF LITERATURE

The purpose of the review of literature chapter was to provide a summary of theory and research related to this study. The first major section of this chapter summarized some of the current theoretical perspectives on organizational change. The second section summarized the literature on attitude theory. The subsequent sections reviewed previous research on the variables in this study.

Review of Organizational Change Theory

A review of theories and models of organizational change is important for this study because it provides context and grounding for the present study. In this section, the reader will find a discussion of definitions, typologies, and perspectives on managing organizational change.

Definitions of Organizational Change

A literature review on organizational change reveals a great variety of definitions of the construct. A few of these definitions are as follows:

- "Organizational change is defined as a deliberately planned change in an organization's formal structure, system, processes, or product-market domain intended to improve the attainment of one or more organizational objectives" (Lines, 2005, p. 9).

- *Organizational change* refers to understanding alterations within organizations at the broadest level among individuals, groups, and at the collective level across the entire organization (Burnes, 2004).

- *Organizational change* is the observation of difference over time across one or more dimensions of a given entity (Van de Ven & Poole, 1995).

- "Planned change originates with a decision by the system to deliberately improve its functioning and to engage an outside resource to help in the processes of making these improvements" (Levy, 1986, p. 6).

While the literature contains many more definitions of organizational change than those listed above, each definition is framed within a model or theory of change which contains certain assumptions. To better understand the many definitions of organizational change it is helpful to explore some of the categories or typologies of change models and some of their basic underlying assumptions.

Typologies of Organizational Change

Numerous and diverse models of organizational change exist throughout the multidisciplinary literature base. Several authors have made attempts at classifying these models into categories or types (e.g., Golembiewski, Billingsley, & Yeager, 1976; Nordvall, 1982; Van de Ven & Poole, 1995). This section briefly highlights some of these typologies of organizational change.

Evolutionary Models

Evolutionary models of organizational change originate from the biological sciences (Morgan, 1986). The main assumptions underlying evolutionary models of organizational change are as follows: (a) change is driven by the business environment, (b) organizational members have a relatively minor influence on the change process, and (c) change is mostly reactive and unplanned (Hrebiniak & Joyce, 1985). Critics of evolutionary models claim that they do not place sufficient emphasis on organizations as social constructions and, therefore, do not account for the social and psychological complexities of organizations (Burnes, 2004).

Teleological Models

Teleological models of organizational change originate from management and organization development fields and are often referred to as planned change, scientific management, and rational models. The main assumptions underlying teleological models are as follows: (a) change is driven by organizational members, (b) organizational members can anticipate and plan for demands from the environment, and (c) organizations can influence the external environment. Some well known examples of teleological strategies include organization development interventions, total quality management, and business process reengineering. Most criticism of teleological models comes from proponents of evolutionary models and relates to assumptions of an overly linear change process and rational actors and the belief that organizations exist in a relatively stable state, rather than in a continuous state of change.

Life Cycle

Life cycle models of organizational change are derived from studies of child development and focus on organizational growth, maturity, and decline (Levy & Merry, 1986). Inherent in life cycle models of organizational change are assumptions that (a) change must occur and cannot be stopped, (b) eventual decline is inevitable, (c) all employees are important to the change process and need to be prepared for the change, and (d) management serves as a guide to help the organization to maturity through motivating and developing individuals within the organization (Miller & Friesen, 1980; Morgan, 1986). Identification with the organization and personalization of work are strongly emphasized as reasons why people resist changes (Van de Ven & Poole, 1995). Critics of life cycle models of change argue that (a) organizational decline is not

inevitable, (b) organizations do not necessarily proceed through change sequences as proposed, and (c) most of the literature on lifecycle models is conceptual and has little empirical support (Lippitt, 1969).

Dialectical

Dialectical models of organizational change refer to the perspective in which polar opposite ideals, values, or norms are always present within organizations (Van de Ven & Poole, 1995). Dialectical models, which are also referred to as political models, characterize change as the result of clashing beliefs or ideals. Dialectical models of change assume that because humans hold different ideals and belief systems, conflict and change are inherent and inevitable parts of human interaction (Morgan, 1986). Furthermore, dialectical theories assume that a dominant belief system serves the interests of a privileged few, while the majority of organization members are relatively inactive in the process of change until a crisis occurs, causing the masses to mobilize (Baldridge, Curtis, Ecker, & Riley, 1977). Dialectical models are criticized for the lack of guidance they provide in managing change, for their underestimation of environmental influences, and for their deterministic nature (Morgan, 1986).

Social Cognition

Social cognition models are derived from a phenomenological or social-constructionist view of organizations (Scott, 1995; Weick, 1995). Social-cognition models characterize change as related to learning and cognitive processes such as sensemaking. Change comes about because individuals perceive a need to grow, learn, and change their behavior (Martin, 1992). Therefore, change is not necessarily a linear or sequenced process but rather a multidimensional and interrelated series of processes,

obstacles, and individuals (Harris, 1996). Criticisms of social cognition theory are that they (a) focus too much on cognitions and ignore the role of feelings, emotions, and values in organizational change and (b) focus too little on the role of the external environment on the individual (Nevis, Lancourt, & Vassallo, 1996).

Cultural

Cultural models of change describe change as a natural response to alterations that occur in the human environment (Morgan, 1986). The change process involves the alteration of a group's values, beliefs, symbols, and norms and tends to be gradual, nonlinear, and dynamic (Schein, 1985). Critics of cultural models cite assumptions of the malleability and complexity of culture as problematic (Burnes, 1996).

Multiple Models

Van de Ven and Poole (1995) suggested that multiple models be used when seeking to address organizational change. By using multiple models, additional insight can be gained into the intricacies of organizational change, and the weaknesses of one theory can be complemented by the strengths of another (Rajagopalan & Spreitzer, 1996). Bolman and Deal's (1991) four frames of organizational change and Morgan's (1986) organizational metaphors illustrate how teleological, evolutionary, cultural, social-cognition, and lifecycle models can be combined to understand change. Senge's (1990) model of learning organization combines evolutionary, social-cognition, cultural, and teleological models, and Pettigrew's (1985) open learning system combines evolutionary and teleological approaches.

Perspectives on Managing Organizational Change

Upon reviewing some of the typologies of organizational change, it is clear that typologies have differing assumptions regarding the degree to which the course and outcomes of organizational change can be influenced as well as the role that human actors can have in managing change (Carnall, 2003). Therefore, inherent in any approach or perspective on managing change are assumptions that change can be managed and that these management efforts or initiatives may differ in method, mechanisms, and effectiveness. This section compares the differences between the Organization Development and Change Management perspectives on managing planned organizational change.

Organization Development (OD) is a field of academic inquiry and professional practice from which a wide spectrum of practices, methods, and strategies for managing organizational change have emerged. Definitions of OD reveal several of the field's key perspective on managing planned change. First, the field of OD draws heavily on research and concepts from the behavioral sciences for insights on how to manage change (Beckhard, 1969; Beer, 1980; Burke, 1982; Cummings & Worley, 2001; Luecke, 2003.) Second, the end goal of OD change interventions should be to increase organizational effectiveness (Beckhard, 1969; Cummings & Worley, 2001). Third, the management of change through OD requires a long term, continuous effort (French & Bell, 1990). Fourth, most OD practices primarily focus on human-related variables and the value of human development and participation as key for effecting organizational change (Cummings & Worley, 2001; French & Bell, 1990).

Change management, a term widely used in the academic literature, encompasses change theory and intervention practices in the business strategy and operations, human resource management, and OD disciplines (Todnem-By, 2005). *Change management* has been defined as "the process of continually renewing an organization's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers" (Moran & Brightman, 200, p. 112). While change management is closely related to OD, some differences exist in terms of values and intervention strategies for managing change. Where change management takes a more programmatic and expert-driven approach to change, OD takes an adaptive and facilitative approach to managing change. OD interventions are based heavily on behavioral science knowledge and practices and tend to focus on the personal and social characteristics of a system as the primary lever for change (Worren, Ruddle, & Moore, 1999). For example, the traditional OD perspective holds that a change in individual attitudes must precede changes to the structure or technology of an organization (Argyris, 1970; Edmondson, 1996). Change management interventions tend to be broad and draw on knowledge related to human performance, process design, business strategy, and technology, and congruence between these components is emphasized as a primary lever for change (Paton, & McCalman, 2000). From the change management perspective, the preferred intervention method is to make structural or contextual changes which, in turn, induce changes in attitudes and behavior (Worren et al., 1999). Finally, OD has a value orientation that focuses on human development and participation. In contrast, change management is more focused on values related to economic potential and creation of a competitive advantage (Cummings & Worley, 2001).

Review of Attitude Theory

In this section of the literature review, the reader will find a brief overview of attitude theory and research. Such a review was important because the robust body of attitude theory and research helped to inform this study on attitude-related factors that could impact the implementation of organizational change. In this section, the reader will find a discussion of (a) attitude structure, (b) attitude formation and change, and (c) the attitude-behavior relationship.

The Structure of Attitudes

The attitude construct is probably one of the most important topics in psychology, and a significant amount of research has been conducted in recent years on the components that make up the attitude construct (Ajzen, 2001; Eagly & Chaiken, 1993; Edwards, 1990; Glasman & Albarracin, 2006; Haddock & Zanna, 1999; Wood, 2000). Attitudes are generally characterized as a learned tendency to respond positively or negatively toward a certain thing (e.g., idea, object, person, situation), and they encompass, or are closely related to, our emotions, opinions, and experiences (McGuire, 1986). Despite the extensive body of theory and research on attitudes, there is no universally agreed upon definition of attitude or consensus on the distinct components that should comprise the attitude construct (J. M. Olson & Zanna, 1993).

In regard to the components that make up the attitude structure, there are historically two competing views: (a) a unitary model and (b) multi-component model of attitudes. The unitary and multi-component models of attitude diverge in regard to the number of significant and distinct components (e.g., affective, cognitive, and behavioral) that contribute to the formation of an attitude (Eagly & Chaiken, 1993; Manstead &

Parker, 1995). The unitary model, most commonly associated with Fishbein and Ajzen's (1975) theory of reasoned action and Ajzen's (1991) theory of planned behavior, postulates that attitudes are affective responses based on the favorability of cognitive beliefs. The unitary model has been criticized for oversimplifying the attitude construct because it relies heavily on cognitions as the primary component of attitudes and underemphasizes the impact of affective and behavioral components within the structure of attitudes (Eagly & Chaiken, 1993; Haddock & Zanna, 1999; Manstead & Parker, 1995).

However, most contemporary attitude theories hold a multi-component view of the construct (Verplanken, Hofstee, & Jansen, 1998; Wood, 2000). Multi-component models of attitude postulate that evaluations and affective, behavioral, and cognitive sources of information contribute to the formation or modification of attitudes (Haddock & Zanna, 1999; Haugtvedt, 1997).

Evaluation Component

The evaluation component is central to the attitude construct. Evaluations involve the assignment of a good-bad, harmful-beneficial, pleasant-unpleasant, likeable-dislikable type dimension to the attitude object (Ajzen, 2001). This positive or negative orientation toward the attitude object is referred to as the *evaluative component*. Therefore, when an individual encounters an attitude object (e.g., a person, thing, institution, etc.), he or she automatically evaluates that object and assigns some degree of positivity or negativity. The evaluation response is so common and fundamental to psychological objects that some researchers have proposed that humans have an inherent need to evaluate (Jarvis & Petty, 1996; Petty & Jarvis, 1996). Furthermore, the evaluative component of an attitude

is derived from information an individual receives or perceives regarding the attitude object. The evaluation component is based on three different types of information: (a) cognitive information, (b) affective information, and (c) behavioral (sometimes referred to as conative) information (Zanna & Rempel, 1988). However, interestingly, some evidence suggests that while the affective, cognitive, and behavioral components contribute to forming the attitude, frequently it is only the evaluation component that is stored and remains in the individual's memory (Haddock & Zanna, 1999). This represents an important functional aspect of the attitude construct in that evaluations are used as shorthand and prevent the individual from going through the cognitively demanding and possibly emotionally difficult task of repeatedly evaluating the attitude object (Lines, 2005).

Cognitive Component

The cognitive component refers to an individual's beliefs, rationales, or thoughts about a given attitude object (Haddock & Zanna, 1999). For example, a person may express a belief that hand guns are dangerous to own because the majority of shooting fatalities come from the gun owners' own hand guns. Unitary theories of attitude emphasize cognitive processes as primary in the formation of attitudes (Eagly & Chaiken, 1993; Manstead & Parker, 1995). While unitary theories of attitude such as Fishbein and Ajzen's (1975) theory of reasoned action and Ajzen's (1991) theory of planned behavior use the term *affect,* the term is used to denote general moods or specific emotions which may moderate cognitions, but affect is not conceptualized as a unique or significant component of attitude.

Affective Component

The affective component refers to the feelings or emotions associated with a particular attitude object (Haddock & Zanna, 1999). While some unitary theories of attitude focus on cognitions (Ajzen, 1991; Fishbein & Ajzen, 1976), others assign primacy to affective processes within the attitude structure (Zajonic, 1980). However, the most widely accepted attitude models view cognitions and affective processes as jointly involved in influencing evaluations (Ajzen, 2001; Van der Pligt, Zeelenberg, Van Dijk, DeVries, & Richard, 1998). However, some recent research indicates that affective components differ from cognitive components in regard to accessibility (Verplanken et al., 1998). Accessibility refers to the strength between attitude objects and evaluations (Petty, Wegener, & Fabrigar, 1997). Highly accessible attitudes come to mind quickly and easily, whereas less accessible attitudes may rarely be noticed. Verplanken et al. (1998) found that when study participants were asked how they *felt* versus how they *thought* about certain attitude objects, participants' response times were significantly shorter for the affective judgments than for cognitive, suggesting greater levels of accessibility for the affective components of attitudes.

Behavioral Component

Behavioral components (sometimes referred to as conative) are the past experiences or behavioral intentions that an individual may have in regard to an attitude object (Haddock & Zanna, 1999). For example, an individual may have recently voted, or intend to vote, in favor of a law banning ownership of hand guns. Behavioral components should reflect personal action tendencies and are statements of past actions, future

intentions, and predicted behavior in hypothetical situations (Bagozzi, 1978; Ostrom, 1969).

Attitude Formation and Change

There are numerous theories of attitude formation and attitude change. However, the formation or modification of attitudes is generally characterized as something that occurs through some form of learning process (whether unconscious or conscious, active or passive, emotion-based or belief-based), whereby experience and knowledge interact with behaviors and existing attitudes and new or modified attitudes emerge (Eagly & Chaiken, 1993). Although often treated as indistinguishable, the processes and consequences of attitude formation and change are not identical. Attitude formation is believed to occur in a variety of ways. The primary distinction that is drawn among theories of attitude formation is the role that consciousness plays in whether an individual embraces or rejects an attitude object (Crano & Prislin, 2006). Considerable research has shown that attitude formation can occur at below conscious awareness (Hammerl, 2000; M. A. Olson & Fazio, 2001, 2002; Walther, 2002). Unlike theories of attitude formation where evaluations can be formed at below conscious awareness levels, most theories of attitude change require processing at conscious levels (Cacioppo, Marshall-Goodell, Tassinary, & Petty, 1992; Courbet, 2003; Till & Priluck, 2000; Walther, 2002). The following sections provide a summary of models of attitude formation and change.

Conditioning Models

Many models of attitude formation and change are, at their core, based on operant and classic conditioning principles. Operant conditioning is a simple form of learning whereby voluntary behaviors are conditioned to be repeated when they are reinforced

with a positive reward and, conversely, behaviors are stopped when they are reinforced with a negative reward. For example, according to operant conditioning and in the context of organizational change, if an individual holds a weak but positive view of a change initiative and behaves in support of the change (e.g., speaks positively to co-workers about the initiative) and then is subsequently rewarded for that behavior (e.g., praised by a supervisor for their support), the attitude will strengthen, and the behavior is likely to be demonstrated again. Operant conditioning is especially related to the behavioral component of attitudes.

Classical conditioning principles are also implicated in models of attitude formation and change. Classical conditioning occurs when involuntary responses or behaviors are formed through pairing of two different and distinct stimuli which become fused after proximal and frequent association. Classical conditioning principles are often reflected in models of attitude change that focus on the affective component of attitudes.

A recent example of classical conditioning principles within attitude research (Walther, 2002) showed that when a valenced (positive or negative) and a nonvalenced (neutral) attitude object are associated, the nonvalenced object takes on the effect of the valenced object. Furthermore, evaluative conditioning of this type is unlikely to occur at a conscious level because it is not dependent on strong temporal reinforcement contingencies. Within the context of organizational change these classical conditioning principles imply that there can be a contagion effect that could be equally beneficial or dangerous when seeking to implement change. For example, in a scenario where an employee had a non-valenced attitude towards a planned organizational change, and attended a change-related training program in which they had a positive experience, their

experience with the change-related training event may positively valence their attitude toward the organizational change itself. Of course the reverse is also true.

Cognitive Dissonance Theory

Cognitive dissonance theory is a classic motivational theory (Festinger, 1957) that views attitude change as a function of a psychological need to maintain cognitive consistency (Wood, 2000). Cognitive dissonance is said to exist when affect, cognitions, and behaviors are perceived to be contradictory or inconsistent; conversely, when these components are in agreement, cognitive consonance exists. The state of psychological dissonance creates an aversive state of tension which motivates individuals to change their thoughts, feelings, or behaviors (Harmon-Jones & Mills, 1999). According to cognitive dissonance theory, the process of attitude change may be conscious, but quite often occurs without conscious awareness (Wood, 2000). For example, in the context of organizational change, an individual who starts out with a negative attitude toward a change initiative might experience cognitive dissonance if he or she became involved in the initiative and then found himself or herself starting to enjoy working on the project. This state of dissonance might then motivate him or her to either change his or her attitude toward the change initiative or stop participating.

Self-Perception Theory

Self-perception theory (Bem, 1965, 1967) was proposed as an alternative to cognitive dissonance theory. Most models of attitude formation and change hold the view that attitudes precede behavior (Ajzen, 2001; Crano & Prislin, 2006). For example, an individual is (a) exposed to an organizational change initiative (the attitude object); (b) cognitive, affective, and behavioral related beliefs about the change initiative are elicited;

and then, (c) the salient beliefs are then bundled together to form an attitude toward the change initiative. Self perception theory maintains that this sequence of attitude formation events occurs in reverse to the commonly held view; rather, behaviors precede attitude formation.

Self-perception theory maintains that individuals infer their attitudes and internal states by observing their own behavior (Bem, 1972). Furthermore, this theory maintains that individuals do not have accessibility to their inner attitudes, nor do they consciously reflect on conflicting attitudes (Miller, Brickman, & Bolen, 1975). For example, if an individual were assigned the role of departmental "change champion" and subsequently began to perform responsibilities such as promoting the change to departmental colleagues, this individual would conclude his or her attitude based on his or her actions. So if the individual were promoting and expressing support for the change initiative, this individual would likely conclude that his or her attitude was positive in nature. Empirical research provides support for self-perception theory's prediction that attitudes can be regulated by manipulating behavior (Duclos & Laird, 2001). However, individual differences appear to moderate the relative efficacy of these attitude control strategies (Schnall & Laird, 2003). Reflecting on the previous section on perspectives for managing change, self-perception theory is consistent with the change management approach (versus the traditional OD approach) for managing change, where the change agent focuses on making structural changes first and then bringing the human factors into alignment with the structural changes.

Persuasion Models

Persuasion models have historically been and remain the most influential paradigm on attitude formation and change (Petty & Wegener, 1998; Wood, 2000). Persuasion models of attitude change focus on the factors that drive attitude change. In these models, the dual processes of motivation and ability to process information are the primary factors that, in concert with source and message, determine the outcomes of persuasive interactions (Chaiken & Trope, 1999). While little is known about the cause and effect patterns of attitude change, the basic premise of the persuasion models posits that individuals receive messages, the messages are processed, and then the individual's attitude is moved toward the position advocated in the messages. The modified attitude may then influence subsequent behavior if conditions are right (Crano & Prislin, 2006).

Two persuasion models that exemplify the general process of message reception leading to attitude change and then (potentially) behavior change are the elaboration likelihood model (ELM) and the heuristic systematic model (Chen & Chaiken, 1999; Petty & Wegener, 1999; Wegener & Carlston, 2005). These models maintain that if the individuals receiving the message have the ability and motivation, they will tend to systematically analyze (or elaborate) persuasive messages. Furthermore, if the message has the appropriate characteristics (e.g., is logical, accurate, clearly stated), the individual will be persuaded. If the message does not have the appropriate characteristics, it will fail to persuade. According to these models, auxiliary features have little influence unless the individual is unable or unmotivated to process the message. However, if this is the case, then the individual will rely on auxiliary features, called "peripheral cues" (e.g, she looks smart and successful) or heuristics (e.g., the authorities are generally right), to simplify

the more effort intensive elaboration process in forming an attitude. Attitudes that are formed through reliance on auxiliary features tend to be more susceptible to counter messages, more unstable, and less predictive of behavior than attitudes formed through a more effortful elaboration process (Crano & Prislin, 2006).

Motivation. Research continues to be conducted on the reasons why people are motivated to engage in thoughtful processing and factors that enhance thoughtful processing. Thoughtful processing involves the careful weighing of evidence for and against a particular attitude. For example, a person may carefully listen to the presidential debates and read opinions of political experts in order to decide which candidate to vote for in an election. This analysis then forms the attitudes the person holds about the political candidates. The heuristic/systematic model maintains that individuals are motivated to engage in systematic processing of information out of a need to obtain a desired level of confidence in their judgments (Chaiken, Wood, & Eagly, 1996).

Some research supports the hypothesis that motivation to engage in thoughtful attitude processing may be related to individual traits or disposition. For example, it appears that some individuals engage more in systematic processing because they have a high need for or enjoy effortful cognitive activity (Cacioppo, Petty, Feinstein, & Jarvis, 1996) or because they believe in their own ability to evaluate (Bohner, Rank, Reinhard, Einwiller, & Erb, 1998).

Other research has shown that motivation to engage in thoughtful attitude processing depends on contextual factors. For example, research indicates that individuals tend to be more motivated to engage in thoughtful processing when a message is presented in accessible, straightforward language (Hafer, Reynolds, &

Obertynski, 1996) or when messages are framed in an unusual or unexpected manner (Smith & Petty, 1996).

Source. The effects of the message source on attitude formation and change have received considerable attention over the last 20 years, especially in the area of minority influence research (Areni, 2003; Hosman, Huebner, & Siltanen, 2002). Minority influence research examines the ways in which a minority faction can persuade the majority to accept a position counter to the current majority attitude. Persuasive messages from majority sources tend to produce changes in the focal attitude fairly quickly; however, these changes are often temporary. In contrast, while persuasive messages from the minority sources do not frequently influence the focal attitude, they often produce change on issues related to the focal attitude. Furthermore, when persuasive messages from minority sources do influence the focal attitude, they tend to occur after a temporal delay and have a more permanent influence (Crano, 2001). Interestingly, these findings present problems for the dual process persuasion models because long-term changes to focal attitudes in response to a peripheral or heuristic cue (e.g., source status) are theoretically incompatible (Crano, 2000). Within the context of organizational change the role of majority and minority sources might be paired in order to effectively implement change. For example, in situations where deeply held beliefs and feelings exist which are contrary to the direction of the organizational change, it might be useful to employ majority sources to deliver messages in order to gain traction and begin to produce temporal change, and then introduce messages from minority sources in order to effect a more permanent influence.

Message. Persuasion models posit that the characteristics of messages can play a role in attitude change. Persuasion models hold that if a message is strong (e.g., rational, factual, well-structured, stated tactfully), it will persuade. If it does not have the characteristics of a strong message it will fail to persuade (O'Keefe, 1990). For example, research shows that message presentation methods, such as representing both sides of an issue, help persuade by showing support for one side of an issue while acknowledging that another position exists. Furthermore, refuting the counter position makes it more difficult for targets to continue to support attitudes that are counter to those advocated. Additionally, messages that overtly controvert attitude positions held by individuals may cause negative reactions and result in attitude change in the opposite direction. The negative reaction is most likely to be elicited when the target of the message feels as though his or her freedom is threatened (D. L. Nelson & Quick, 2006).

The Attitude-Behavior Relationship

Explaining and predicting human behavior is a complex and difficult undertaking to which academics from a variety of fields have devoted significant thought and work. The primary reason that the attitude construct has been such a popular topic of theorizing and research in the social sciences is because attitudes are often thought to direct or predict behaviors (Ajzen, 1991; Glasman & Albarracin, 2003). Since LaPierre's (1934) seminal study on the relationship between attitudes and behaviors (which found that, despite the fact that the majority of hotel owners held negative attitudes toward persons of Chinese descent, the majority of these same hotel owners would accept a Chinese couple who sought accommodations), research on this topic continues to be of great interest (Crano & Prislin, 2006). Over the next decades, subsequent research on attitude-

behavior consistency yielded a considerable degree of variability in the predictive validity of attitudes (Glasman & Albarracin, 2006). The failure of general attitudes to predict specific behaviors led to calls for abandoning the attitude concept entirely (Wicker, 1969). Therefore, a recurring theme of attitude research in recent decades has been on the conditions and factors that moderate the attitude-behavior relationship (Ajzen, 2001).

Aggregation of Behaviors

A proposed solution for remedying the poor predictive validity of general attitudes is to change the way behaviors are measured in attitude research so that there is a better match to the way in which attitudes are conceptualized. While quite malleable in comparison to personality traits, attitudes are typically conceptualized as relatively stable across situations and predictive of multiple behaviors. However, behaviors are believed to be highly dictated or influenced by context or condition (Epstein, 1983). The principle of aggregation holds that any single sample of behavior contains not only the influence of attitude but also the influence of a variety of other factors that are unique to the particular occasion or situation. Therefore, by aggregating behaviors, the temporal or situational factors will cancel each other out, and the influence of the underlying and stable attitude will emerge and yield a better picture of the attitude-behavior relationship (Ajzen, 1991). Studies have shown that general attitudes do, in fact, predict aggregated behaviors better than specific behaviors (Ajzen, 1988). However, the principle of aggregation does not allow for prediction of a specific behavior, nor does it help explain variation in behaviors across situations. Some have suggested that general attitudes only indirectly impact

specific behaviors by influencing the factors that are more closely linked with the target behavior (Ajzen & Fishbein, 1980).

Intention and Perceived Behavioral Control

Intention is a central component of Fishbein and Ajzen's (1975) theory of reasoned action and Ajzen's (1991) theory of planned behavior. Intentions represent how hard people are willing to try in order to perform a behavior. Therefore, the stronger the intention a person has to perform a behavior, the more likely the behavior will actually be performed. However, people frequently encounter situations in which they do not have complete volitional control over their behaviors. Obviously, people don't always have actual behavior control (e.g., resources and opportunities such as time, skills, money, freedom) to act as they might if they did have actual behavior control. On the other hand, sometimes people may have actual behavioral control but believe or perceive that they cannot perform the behavior. Perceived behavioral control refers to a person's perceptions of the ease or difficulty of performing a behavior. It is important to note that in attitude theory, perceived behavioral control is not characterized as a stable dispositional or personality trait (such as locus of control) that persists across situations (Ajzen, 1991). Rather, perceived behavioral control is specific to situations, occasions, and actions. For example, a person may believe that, in general, his or her skills, abilities, and motivation generally determine outcomes (i.e., internal locus of control); however, he or she may also believe that that he or she has little chance of becoming a professional hockey player, no matter how much he or she would like to (low perceived behavioral control). In summary, theories of attitude maintain that the likelihood that an attitude will actually predict performance of a behavior will vary to the extent that the person has (a)

actual behavioral control, (b) a sufficient degree of perceived behavioral control, and (c) a sufficient level of intention.

Attitude Accessibility and Stability

Processing factors that appear to influence attitude-behavior consistency are accessibility and stability. *Accessibility* refers to the speed at which attitudes are retrieved from memory. When attitudes are highly accessible, people's attitudes are more likely to guide behavior (Fazio, 1989). The premise for this hypothesis is twofold. First, attitudes that are more accessible are more likely to serve as criteria for future behavioral decisions (Fazio, 1989; Fazio & Williams, 1986; Fazio, Powell, & Williams, 1989). Second, attitudes that are more accessible impact the interpretation of information related to the attitude object (Fazio, Powell, & Herr, 1983; Fazio & Williams, 1986). In brief, research on accessibility shows that that the more people think about the attitude object, the more people talk about or express their attitude. In addition, the more direct behavioral experience people have, the more their attitude accessibility will be increased, and the more likely their attitudes will be consistent with their behavior (Cacioppo, Petty, Kao, & Rodriguez, 1986; Fazio, Chen, McDonel, & Sherman, 1982; Powell & Fazio, 1984; Regan & Fazio, 1977).

When faced with a decision to engage in a behavior, people frequently recall and use previous attitudes to inform their decision. However, these attitudes can be adjusted at the time of decision based on available information (Schwarz & Bonner, 2001). Therefore, the stability of information associated with the attitude may influence attitude-behavior consistency. In Glasman and Albarracin's (2006) meta-analysis of research on the attitude-behavior relation, they found that (a) behavioral relevance of the initial

attitude, (b) the degree of one-sidedness of information, and (c) the level of attitude confidence all contributed to attitude-behavior stability.

Affective-Cognitive Consistency

According to attitude theory, cognitive and affective sources of information work in combination to form attitudes (Haddock & Zanna, 1999; Rosenberg, 1968). Rosenberg stated that the greater the degree of consistency between affective and cognitive sources of information, the stronger the attitude-behavior relation will be. Therefore, persons with high affective-cognitive consistency are expected to exhibit more stable attitudes that are better predictors of behavior than the attitudes of individuals with low affective-cognitive consistency. A study by Norman (1975) of students' volunteering behavior investigated this hypothesis. Norman found that persons with high affective-cognitive consistency possessed stronger attitude-behavior relations than participants with low affective-cognitive consistency.

Involvement

A person is involved in an attitude object when it is perceived to be personally important or relevant (Kokkinaki & Lunt, 1997). Several recent studies have hypothesized the moderating effect of participation and involvement on attitude-behavior consistency (Cooke & Sheeran, 2004; Crano, 1997; Sears, 1997). Kokkinaki and Lunt found that increased involvement and accessibility led to increased correspondence between consumer attitudes and product choice behavior. A study by Crano (1997) explored the role of involvement on political attitudes and behavior. Crano's study showed that, while involvement does not appear to be related to attitude strength, it does moderate the strength of the relation between attitudes and behavior. However, a study by

Sears (1997) on the relationship between the political attitudes and behaviors of college students found that involvement plays an insignificant role in comparison to the ideology and values elicited by the attitude object.

Personality

The most widely explored personality moderator of the attitude-behavior relationship is self-monitoring (Petty et al., 1997). Self-monitoring is the degree to which people depend on internal cues such as attitudes (low self-monitoring) versus external, situational cues (high self-monitoring) to guide their behavior (Snyder, 1979). A meta-analysis by Kraus (1995) found that individuals who relied on internal cues (low self-monitors) had higher attitude-behavior consistency than those who relied on situational cues (high self-monitors). Other personality variables that have been found to moderate attitude-behavior consistency are action state orientation (Bagozzi, Baumgartner, & Yi, 1992) and autonomous-control behavioral self-regulation (Koestner, Bernieri, & Zuckerman, 1992).

Application of Attitude Theory to the Present Study

According to the current prevailing models of attitude theory, affective, cognitive, and behavioral sources of information all contribute to the formation of an attitude in regard to a given attitude object. This study draws on the multi-component view of attitude and focuses on affective and cognitive responses in the context of change-related training and their influence on attitude formation, which is consistent with the majority of recent research on attitude structure (Haddock & Zanna, 1998). Within attitude theory, the formation of attitudes is generally characterized as a continuous learning process whereby an individual's experience and knowledge interact with existing attitudes from

which new or modified attitudes emerge (Eagly & Chaiken, 1993). This study examines the relationship between affective and cognitive responses reactions to training and their influence on employee attitudes toward organizational change, employee learning, and behavior.

Overview of Employee Commitment to Organizational Change

Employee commitment to organizational change is a workplace-related attitude construct. Most research on commitment in the workplace has focused on the organization as the target of employees' commitment (Meyer & Allen, 1997). However, given the tremendous changes which have occurred in recent years in the business environment (e.g., increased competition, globalization, technological innovation, and shifting demographics) and the corresponding changes in the employee-organization psychological contract, organizational change, as a focus of employee commitment, is an important and interesting topic of research (H. J. Klein et al., 2009).

In recent decades, employee commitment to the organization has been a topic of considerable scholarly discourse and empirical study. This body of research has shown that employees' levels and types of commitment to the organization are related to outcomes such as employee turnover, organizational citizenship behaviors, and job satisfaction (Meyer & Allen, 1997). While employee commitment to the organization has received the most attention, Meyer and Herscovitch (2001) argued that the "core essence" of commitment should be the same, regardless of the target or foci (e.g., occupation, team, change initiative) of that commitment. This study examined organizational change as the target of employee commitment.

Employee commitment to change has been identified as a critical factor in determining the outcomes of planned organizational change (Armenakis & Bedeian, 1999; Coetsee, 1999). Conner and Patterson (1982) stated that the most prevalent factor contributing to failed change projects is "a lack of commitment by the people" (p. 18), and Connor (1992) maintained that employee commitment to change serves as "the glue that provides the vital bond between people and change goals" (p. 147). Employee commitment to change is also identified as a central component in K. J. Klein and Sorra's (1996) theoretical model of effective innovation implementation in the workplace and Armenakis et al.'s (1999) theoretical model of system readiness for change.

While the literature has established the importance of employee commitment to change, only a few empirical studies have attempted to substantiate theoretical claims. Herscovitch and Meyer (2002) developed and tested a three-component model which differentiates between affective, continuance, and normative employee commitment to change, where *affective commitment to change* is defined as "a desire to provide support for the change based on a belief in its inherent benefits," *continuance commitment* is defined as "a recognition that there are costs associated with failure to provide support for the change," and *normative commitment to change* is defined as "a sense of obligation to provide support for the change" (p. 475).

In their study, Herscovitch and Meyer (2002) found employee commitment to organizational change to be a better predictor of behavioral support for the change than employee commitment to the organization. Furthermore, they found that the affective, continuance, and normative components of employee commitment to change were distinguishable from one another and have different consequences for levels of

behavioral support for organizational change (i.e., resistance, compliance, cooperation, and championing). The affective form of employee commitment to organizational change was found to have the strongest relationship with the most desirable change-related behaviors (i.e., cooperation and championing).

A study by Cunningham (2006) examined the relationship between Herscovitch and Meyer's (2002) three forms of employee commitment to change, employee ability to cope with change, and turnover intentions. This study found that the affective form of employee commitment to change had the strongest positive relationship with coping with change and strongest negative relationship with turnover intentions.

The current study focused on the affective form of employee commitment to organizational change, given that (a) the affective form of employee commitment to change has shown to be the most promising form in terms of positive change-related behaviors (Cunningham, 2006; Herscovitch & Meyer, 2002) and (b) to date, no studies have examined those variables that may relate to employee affective commitment to change.

The subsequent sections of this chapter contain a review of literature on variables which are conceptualized as potential antecedents (affective and CRT) and outcomes or consequences (volunteering behavior) of affective commitment to organizational change. While some empirical studies (Cunningham, 2006; Herscovitch & Meyer, 2002) have begun to explore the consequences or outcomes of affective commitment to organizational change (e.g., levels of turnover intentions, increased ability to cope with change), this study helped fill a need for research on the antecedents or factors that may influence employees' levels of affective commitment to organizational change.

Overview of Employee Reactions to Training

Organizations often use training as a strategy to implement and prepare for organizational change (Tannenbaum et al., 1991; Worley et al., 1995). HRD scholars have noted that training is believed to help facilitate change and is often employees' first significant exposure to the organizational change (Jacobs & Russ-Eft, 2001; Torraco & Swanson, 1995). For example, when an organization implements a new enterprise-wide information system or when new processes and policies are introduced, a significant portion of employees will need to gain new knowledge and develop new skills (Davenport, 2000). However, the HRD literature has provided very little empirical research concerning the impact of employees' training experience on their perceptions of the organizational change (Jacobs & Russ-Eft, 2001).

Employee reactions to training are the most frequently collected criteria for assessing training effectiveness (Bassi, Benson, & Cheney, 1996; Dixon, 1987). Despite their popularity, the use of trainee reactions for evaluation purposes is often criticized because of the lack of evidence that trainee reactions are related to trainee learning, knowledge acquisition and retention, and skill/behavior demonstration or to broader organizational outcomes (Swanson & Holton, 2001). However, in the context of organizational change where the employees' initial exposure to the organizational change often occurs via their training experience, employee reactions to training may be of vital importance in influencing their perceptions regarding the planned organizational change during a critical opinion forming period. Furthermore, some research (Alliger et al., 1997; Morgan & Casper, 2000) has suggested that reactions to training measures should not be designed as a global construct, as they typically are. Rather, training criteria should be

viewed as multidimensional in nature (Campbell, McCloy, Oppler, & Sager, 1993; Kraiger, Ford, & Salas, 1993) in order to determine more precisely the relationships between employee reactions and outcome variables such as performance, learning, etc. In their meta-analytic research, Alliger et al. (1997) differentiated measures of trainee reactions into two types: (a) affective reactions and (b) cognitive reactions.

Affective Reactions to Training

Affective reactions to training have been largely characterized in the training evaluation literature as the trainees' immediate emotional response to the training. Examples of typical affective-type training reaction survey items are, "I'm glad I participated in this training," or "I found this training to be enjoyable." In the context of organizational change, when employees are often first exposed to the change initiative via change-related training, employees' affective responses to training may be a critical factor in influencing their commitment to the change.

Cognitive Reactions to Training

Some researchers (e.g., Alliger & Janak, 1989; Tannenbaum & Yukl, 1992; Warr & Bunce, 1995) have suggested that reaction measures that ask trainees about the utility or transferability of training may be more closely related to outcomes such as trainee learning and performance than affective-type measures. Alliger et al.'s (1997) meta-analytic study, which differentiated between affective reactions and cognitive reactions to training, found that cognitive-type reactions were more strongly related to on-the-job performance than affective-type reactions. Furthermore, the study found that cognitive-type reactions were more strongly correlated to on-the-job performance than post-training measures of learning retention. In the context of organizational change, the degree to

which employees perceive utility and rationale in the proposed change and associated change-related training may impact the degree to which they are willing to become affectively committed to the organizational change.

No studies to date have examined the relationship between employee affective and cognitive reactions to training and employee attitudes toward change. Using a multi-dimensional conceptualization and measurement of employee reactions to training will contribute to the literature and may help better explain relationships between trainee reactions and individual and organizational outcomes.

<div align="center">Overview of Volunteering Behavior</div>

Attitude theory posits that attitudes cause behaviors (Ajzen, 2001; Lines 2005). Furthermore, theories of organizational change assert that successful change implementation requires not only compliance from organizational members but also discretionary behaviors that go above and beyond in supporting the change efforts (Armenakis & Bedeian, 1999; Glew, O'Leary-Kelly, Griffin, & Van Fleet, 1995; Pfeffer, 1998). Research on the topic of organizational citizenship behaviors (OCB), which are defined as behaviors that go beyond the basic requirements of the job and are discretionary (Organ, 1988; Lambert, 2006), shows that OCBs generally serve to facilitate the overall effective functioning of the organization; and, furthermore, both affect and cognitions play an important role in the formation of OCBs (Lee & Allen, 2002). Given the costs and time constraints associated with a strategic change implementation, the challenge for the organization is to find ways of securing behaviors that will not only support rapid implementation but also long term competitive advantage (Lawler, 1992; Morgan & Zeffane, 2003).

Most prior research on the outcomes of commitment to change has focused primarily on nondiscretionary performance behaviors (H. J. Klein et al., 2009). A study by Neubert and Cady (2001) showed that affective commitment to an organizational change program was positively related to level of participation in the program and program-related performance, both within and across time. Another study of 11 police departments implementing a new law enforcement strategy found that officer commitment to the strategy was positively related to the frequency of strategy supporting behaviors exhibited by officers (Ford, Weissbein, & Plamondon, 2003). Other studies found that affective, normative, and continuance forms of commitment to change were related to compliance, but affective and normative commitment to change were positively related to organizational members' willingness to go above and beyond minimum requirements (Herscovitch & Meyer, 2002; Meyer, Srinivas, Lal, & Topolnytsky, 2007). Finally, a study by Cunningham (2006) found that employee intentions to leave the organization during or after the change were negatively related to affective and normative forms of commitment and positively related to the continuance form of commitment.

In sum, most previous research exploring outcomes associated with commitment to change focused on non-discretionary performance behaviors. The current study will add to theory and recent empirical investigations regarding the link between employee attitudes and discretionary behavior and provide additional insight for HRD practitioners on ways to potentially align employee volunteering behaviors with strategic organizational objectives.

Overview of Learning

This study examined the relationship between learning outcomes, employee reactions to change-related training, and employee commitment to change. Learning is increasingly viewed as a key element for developing and maintaining competitive advantage (Argyris & Schon, 1996; A. Armstrong & Foley, 2003; Senge, 1990). For any business or organization, the ability to learn better and faster is directly linked to the organization's ability to implement change (K. J. Klein & Sorra, 1996; Sugarman, 2001).

The relationship between attitude and learning has roots in learning theory. Gagne's (1987) conditions for learning specify attitudes as 1 of 5 types of learning. Theories and models of adult learning, such as Rogers' (1982) theory of experiential learning, identify attitudes as primary motivators or de-motivators in learning. According to Gagne, attitude processes can influence learning outcomes, and it is during the initial period of employee attitude formation that HRD practices such as training can have the most impact. For example, in the context of organizational change, employees are often introduced to a planned organizational change initiative through a change-related training event (Jacobs & Russ-Eft, 2001). During the training event, employees will naturally have affective and cognitive reactions which will contribute to the formation of attitudes regarding the change (Ajzen, 2001). These reactions toward the training and newly formed attitude toward the change could then, in turn, influence the degree to which information being presented is attended to, thereby impact learning outcomes (Gange, 1987; Rogers, 1982).

While no research to date has explored the relationship between employee commitment to change and learning outcomes, Vandenberghe (2009) proposed that the

relationship between commitment and in-role and extra-role performance is mediated by their preference for learning in achievement situations. For example, individuals with a high learning goal orientation may view learning as a means to improving their own skills and competencies in new situations such as organizational change. Therefore, Vandenberghe suggested that commitment strength interacts with learning orientation to influence in-role and extra-role performance.

A number of studies have examined the relationship between training reactions and learning outcomes (Brown, 2005; Sitzman, Brown, Casper, Ely, & Zimmerman, 2008). Historically, there have been differing views in the literature regarding the usefulness of training reactions for predicting learning outcomes. In regard to affective reactions to training in particular, Hook and Bunce (2001) noted, "In relation to affective reactions, there are no theoretical or empirical reasons to expect enjoyment to be significantly associated with immediate declarative knowledge" (p. 439). Specifically, in regards to predicting learning outcomes, some have found that trainee reactions are unrelated to learning and overused in practice (Alliger et al., 1997, Holton, 1996; Hook & Bunce, 2001), while others have found that training reactions can influence learning as well as other outcomes of interest to organizations (Brown, 2005; Noe, 1986; Warr, Allan, & Birdi, 1999). The latter position is congruent with affect theory and research, which suggests that affect has consequences for learning (Pekrun, 1992). Pekrun, Goetz, Titz, and Perry (2002) commented, "Does it matter, for example, if a student is bored and indulges in daydreaming while in class, or feels excited and enjoys the lesson? Everyday experiences, as well as psychological theorizing, tell us that the answer should be yes" (p. 96).

In sum, attitude and learning theory as well as previous research on training reactions have several implications for the current study in terms of learning outcomes. First, both affective and cognitive reactions should be positively associated with learning outcomes. Second, higher levels of affective commitment to change should be associated with higher learning scores.

Summary of Chapter 2

This chapter provided an overview of the theory and constructs related to this study. First, theories and models of organizational change were reviewed to provide context and grounding for the study; and definitions, typologies, and perspectives on managing organizational change were discussed. Second, the literature on attitude theory was reviewed to inform this study on the structure of attitudes, processes involved in the formation of attitudes, and the relationship between attitudes and behaviors. Attitudes were discussed in regards to their theoretical hierarchical structure. Affective and cognitive reactions were acknowledged for their importance in the formation of attitudes as well as their role in increasing the stability of the attitude-behavior relationship. The application of attitude theory to this study was explained in terms of a multi-component view of attitude and the study's focus on affective and cognitive responses in the context of change-related training and their influence on attitude formation and behavioral and learning outcomes. Third, theory and prior research was reviewed for each of the study's variables. Training reactions were defined as a multi-dimensional construct based Alliger et al.'s (1997) conceptualization and it was proposed that distinguishing between training reaction dimensions should have implications for the differential prediction of outcomes. Commitment to change was identified as a critical factor in determining the outcomes of

planned organizational change and as a central component in several models of system readiness for change (Armenakis et al., 1999; K. J. Klein & Sorra, 1996). However, it was also acknowledged that despite claims of importance, studies have attempted to substantiate these claims empirically. The learning and volunteering behavior outcome variables were also reviewed in terms of their importance within the context of organizational change. In sum, this chapter provided the theoretical framework for this study and laid the foundation for empirically testing the relationship between training reactions, commitment to change, learning, and volunteering behavior. The following chapter will discuss the research methods that were used to empirically test the hypothesized relationships.

CHAPTER 3: RESEARCH METHODS

The purpose of this study was to explore the relationships between affective reactions to training, cognitive reactions to training, affective commitment to organizational change, and learning and volunteering behavior outcomes. To investigate these relationships, an applied survey research design was employed in which individual-level perception data on measures related to these constructs, as well as individual-level behavioral data, were collected and analyzed. Individual-level perception data were measured using the Affective Commitment to Change (ACC) Scale developed by Herscovitch and Meyer's (2002). I developed the Affective Reaction to Training (ART), and the Cognitive Reactions to Training (CRT) scale based on previous conceptualizations of types of trainee reactions (Ruona, Leimbach, Holton, & Bates, 2002; Tan et al., 2003). Volunteering behavior was measured on a categorical basis as to whether an employee did or did not volunteer to participate in activities supporting the organizational change initiative. Learning was measured using eight multiple-choice questions.

This chapter describes the research methods used for exploring the relationships between the study variables. This chapter includes six sub-sections, and information is provided on (a) research design, (b) data collection, (c) population and sample, (d) data set, (e) instrumentation, and (f) data analysis.

Research Design

The appropriate design of a research study is dependent upon the purpose of the study and the types of research questions that are being posed. This study sought to address questions concerning the empirical relationships between several different

constructs and present a generalizable set of findings. Therefore, a quantitative design using correlational research methods was employed.

The purpose of correlational research is to determine if relationships exist between independent and outcome variables through the use of correlational statistics. Advantages of the correlational method include the following: (a) analysis of relationships between large numbers of variables, (b) analysis of the degree and direction of the relationship between variables, and (c) analysis of the variables of interest either singly or in combination (Gall, Borg, & Gall, 1996). Hierarchical regression analysis was utilized in order to (a) examine the amount of influence each predictor variable exerts on outcome variables of interest and (b) allow for a logical, theory-based order of entry for the predictor variables (Ryan & Joiner, 2001). Because this study posed questions about the relationship between several variables, a correlational research design was well suited for this study.

As part of this study's research design, an online electronic survey was employed in order to investigate the questions outlined in Chapter 1. Operationalizing study variables through the use of a survey or questionnaire is often done in research settings where the variables of interest, such as employee attitudes, cannot be directly observed (Gall, Gall, & Borg, 2003; Schneider, Ashworth, Higgs, & Carr, 1996). A study design that employs the use of questionnaires as opposed to interviews provides several advantages, such as reduced time and resources needed to collect data and reduced cost of sampling respondents over a dispersed geographic area. However, a design disadvantage is that questionnaires are limited to the extent to which they provide deep insight into the attitudes and beliefs of the respondents (Gall et al., 2003).

Data Collection

The goal of this study was to explore the relationships between employee commitment to change and antecedent variables such as employee reactions to change-related training and outcome variables of learning and volunteering behavior. Data were collected on employee commitment and employee reactions to training variables through the use of a web-based electronic survey, which was part of a large healthcare organization's efforts to implement a large-scale, organization-wide financial reporting and revenue process change initiative. Data was collected on learning through the use of a multiple-choice test which was administered through the organization's LMS. Data was collected on volunteering behavior through the use of electronic communication and responses from study participants were recorded and maintained centrally by the HRD function in a database within the organization's LMS. The proprietary and non-public dataset resulting from these data collection efforts was made available by the organization at my request for the sole purposes of this study.

Using web-based surveys and assessments offers several advantages in data collection. Some of the advantages of web-based survey delivery mechanisms include increased delivery speed, control and monitoring, automatic data validation, and decreased data entry error (Falletta & Combs, 2002; Sheehan & McMillan, 1999). However, some studies have indicated that electronic surveys do not yield as high a response rate as paper-based surveys (Schuldt & Totten, 1994; Tse et al. 1994; Weible & Wallace, 1998). Yet, other studies indicate no significant difference in response rates between electronic and paper-based administration (Donovan, Drasgow, & Probst, 2000; McConkey, Stevens, & Loudon, 2003; Mehta & Sivadas, 1995; Schaefer & Dillman,

1998), while others advocate that response rates for electronic surveys are superior to paper-based surveys (Kiesler & Sproull, 1986; Parker, 1992).

While the research literature does not appear to offer conclusive evidence that one method of survey delivery and collection is inherently better suited than another for securing a higher response rate, researchers do agree that certain factors, such as the number of contacts, personalized contacts, and pre-contacts, can help increase response rates for both electronic and mail surveys (Cook, Heath, & Thompson, 2000; Dillman, 2000). Therefore, the corporate LMS was used to generate personalized e-mails to potential survey participants, introducing them to the study survey, and to send follow-up reminder e-mails to non-respondents.

The HRD function within the organization was responsible for administering the questionnaire, learning measure, soliciting volunteers, and maintaining the resulting data set that was used in this study. However, through a consulting relationship and as an advisor to the HRD function, I had significant input into the survey design, learning measure design, and data collection process. The HRD function used the survey as a tool for monitoring system-wide change efforts, and the survey data were collected over a period of approximately six weeks during June and July 2005. The questionnaire for the study survey was housed in the organization's LMS and was directly populated by study participants via the participants' secured, password-protected LMS and intranet access. HRD management periodically queried the dataset to produce reports that were presented to senior company executives during regular status updates. No research or analysis on the questions investigated in this study was conducted by the company or their HRD staff.

Data collection for the study was initiated after approximately 3,700 employees attended a change-related training program that occurred in the latter part of May 2005. The training event was precipitated due to large scale reporting fraud that had been uncovered, the Securities Exchange Commission had de-listed the organization and timely re-listing depended upon the organizations ability to change and remediate revenue and reporting processes on an enterprise-wide scale. Employees were required to attend this training because their jobs and duties were significantly impacted by the organizational change. The entire training program lasted approximately one week and consisted of several training courses covering new processes, procedures and policies related to revenue cycle and reporting. Upon completion of the training event, employees were required to complete a learning test, which assessed employee declarative knowledge of the concepts presented in the change-related training event. The learning test was also housed in the organization's LMS. Once training event participants had completed the learning test through the LMS, they were automatically routed to the initial page of the study questionnaire, which was secured at the individual level through the employees' LMS usernames and passwords. On the launch page of the questionnaire, training participants were informed of the nature of the questionnaire and asked to complete the survey.

Participants were informed that responses were voluntary and anonymous and that any use of survey data by management would be performed at the aggregate level. Informed consent was sought from each prospective participant at the beginning of the survey, and participant acknowledgement of consent was a precondition for access to the electronic survey. Before any survey data export or data analysis occurred, steps were

taken to protect the privacy and confidentiality of participants by removing identifiers, such as name and employee identification number, from the dataset.

Data related to study scales were collected over a period of approximately six weeks. After the first 3 weeks of data collection, a reminder email was sent to employees who had completed the change-related training but had not completed the survey questionnaire. The email communication was generated through the organization's LMS at the request of the organization's HRD department. A final email reminder was sent during the last week of data collection. Of the total 1,299 survey responses, 91% (1,183 responses) were completed within the first 3 weeks of data collection. During weeks 4-6 of data collection, 4% (50 responses) were completed. Approximately 5% of the surveys (66 surveys) were never completed by survey respondents and, therefore, had a system status of incomplete. The status of incomplete did not necessarily occur because these respondents had not completed the questionnaire but because they failed to indicate within the web-based survey tool that they were finished with the survey. Therefore, it could not be determined in which period these respondents had completed their responses to the survey.

<center>Population and Sample</center>

One of the major purposes of empirical research is to generalize from a sample to a larger population. At the outset of this study, the intent was to use a population of working adults in the United States. Because employee commitment to change, ART and CRT, learning, and volunteering behavior are general constructs that are relevant to most workplace environments where planned organizational change is occurring, there was no perceived need to target a specific population for this study. However, difficulties in

securing organizations to participate in this study resulted in a modified and more specific target population. The sample for this study resulted from a survey conducted in a large healthcare organization with independently operating facilities across the United States. This organization is structured into four different divisions (Diagnostics, Inpatient, Outpatient, and Surgery) which provide a variety of healthcare services. At the time of data collection, this organization employed approximately 41,000 people in approximately 650 facilities geographically dispersed across the United States. Table 1 illustrates the number and percentage of employees working in each division.

Table 1

Facilities Represented in Sample by Division

Division	Count	Percent
Inpatient	145	32.5
Outpatient	132	29.6
Surgery	113	25.3
Diagnostics	56	12.6
Total	446	100.0

Of the 41,000 total employees, 3,717 employees were required to attend the change-related training. These employees were required to attend the training because they worked primarily in finance function roles and the organizational change involved revenue and financial reporting process re-design and implementation.

Response Rate

After attending change-related training, each of the 3,717 employees was asked to complete a survey which contained items related to the variables within this study. A total of 1,299 employees completed the survey, yielding an initial response rate of 34.9%. However, 208 cases were discarded because data related to the study's independent or dependent variables were missing, yielding a final count of 1,091 usable responses and a

final response rate of 29.3%. Although this response rate was not initially considered to be very high, research has shown that response rates in studies using electronic survey methodologies have steadily declined over the past years, with average response rates currently at about 30 % (Bartel-Sheehan, 2001; MacElroy, 2004, Weiner & Dalessio, 2006). Therefore, given these findings and the results of the multivariate analysis of variance (MANOVA) that served as a proxy test for non-response bias in this study, it was concluded that the response rate is within a generally acceptable and expected range.

Non-Response Bias

One of the criticisms of mail and electronic surveys is related to the problem of non-response bias. That is, given the nature of mail and electronic surveys, it is difficult to determine if the responses from those who choose to respond to the survey are substantially different from those who choose not to respond. There are several methods of estimating non-response bias, such as (a) comparisons with known values for the population, (b) subjective estimates, and (c) extrapolation. An extrapolation method of assessing non-response bias compares the responses of early respondents to the responses of late respondents, as late respondents are considered a good proxy for non-respondents (S. J. Armstrong & Overton, 1977). As a proxy for determining potential non-respondent bias, a MANOVA was conducted to assess mean differences in responses between early and late respondents. The MANOVA procedure was chosen over a t-test or analysis of variance (ANOVA) in order to reduce Type I error and to account for the interrelation of the responses on the different measures. While a MANOVA is similar in technique to an ANOVA or a t-test, an important difference is that, with the MANOVA procedure, differences between groups can be determined on two or more dependent variables (Gall

et al., 2003). If ANOVA or t-tests were used to measure the differences between early and late responses, multiple tests would have been required to assess all the study variables, which would have increased the risk of Type I error.

Early respondents filled out the survey within the first 3 weeks of data collection. Of the total 1,299 total survey responses, approximately 91% (1,183 surveys) were completed within the first period. After the first 3 weeks of data collection, a reminder e-mail generated through the organization's LMS was sent out to non-respondents, inviting them to complete the survey. Late respondents completed the survey in the 3 weeks following the delivery of the reminder email. Table 2 classifies the responses according to response period.

Table 2

Responses by Response Period

Period	Frequency	Percent	Percent with Responses	Cumulative Percent with Responses
1	1,183	91.1	95.9	95.9
2	50	3.8	4.1	100.0
Total	1,233	94.9	100.0	
Missing	66	5.1		
Total	1,299	100.0		

Approximately 4% (50 surveys) of respondents completed the survey within the second period of 4-6 weeks of data collection. Approximately 66 surveys (5%) had a status of incomplete. This status did not necessarily occur because these respondents had not completed the questionnaire but because they failed to indicate within the web-based survey tool that they were finished with the survey. Therefore, because it could not be determined in which period these respondents had completed their responses to the

survey, these cases were not included in the MANOVA comparison of research

constructs by response time.

The MANOVA results presented in Table 3 show that there does not appear to be

any significant differences in the way first period and second period respondents

responded to the study survey. This suggests that there is no non-respondent bias related

to the study constructs. Because outcomes related to volunteering behavior and learning

was not determined by the study participant's response to the survey questionnaire, these

variables were not included in the comparison of research constructs by response time.

Table 3

Comparison of Scales by Response Period (MANOVA)

Variable	First Period Respondents N = 1,183		Second Period Respondents N = 50		F	Sig.
	Mean	SD	Mean	SD		
Affective Reactions to Training	5.04	1.3	4.74	1.2	1.78	.183
Cognitive Reactions to Training	5.38	1.2	5.25	1.0	.39	.534
Affective Commitment to Change	5.70	.9	5.63	1.0	.16	.687

* = significant at the .05 level

Treatment of Missing Data

Of the 1,299 total survey responses, 208 cases were discarded because they were

missing data related to one or more of the primary study variables: (a) ACC, (b) ART, (c)

CRT, (d) learning, and (e) volunteering behavior. To assess whether the missing data

occurred at random or whether there was a more systematic pattern, the following

procedure was performed on the study variables. First, a grouping variable with two

levels (0 = cases with no missing values, 1 = cases with missing values) was created

using the Recode function in the SPSS statistical package. Then, a test of differences

(MANOVA) was performed between the two levels of the variable. This examination did not reveal any meaningful differences (see Table 4). Therefore, the missing data appear to occur at random, and no underlying pattern was found that contributes to biased data.

Table 4

Comparison of Research Constructs by Missing Data (MANOVA)

Variable	Cases with No Missing Data n = 1,091		Cases with Missing Data n = 208		F	Sig.
	Mean	SD	Mean	SD		
Affective Reactions to Training	5.00	1.3	4.75	1.4	0.45	0.51
Cognitive Reactions to Training	5.36	1.2	5.15	1.5	0.37	0.54
Affective Commitment to Change	5.68	.94	5.04	1.4	6.05	0.1
Learning	0.89	.15	0.91	.14	0.77	0.38
Volunteering Behavior	1.16	.36	1.20	.40	0.63	.43

* = significant at the .05 level

Employee Characteristics Variables

Data were collected on a number of employee characteristic-type variables for the purpose of describing the study sample and to serve as control variables which were held constant across the data analyses for each research question. Descriptive statistics for each of the employee characteristics variables are presented in the following sections.

Gender

Participants' gender was obtained through the organization's LMS, which interfaces with the organization's human resource information system (HRIS). There were two possible gender types in this study: (a) male (coded as 1) and (b) female (coded as 2). The majority of respondents in this study were female (85.7%; see Table 5). This

result is consistent with the gender profile of the population involved in the change

initiative which consisted of approximately 83% female and 17% male.

Table 5

Gender of Respondents

Gender	Frequency	Percent	Percent with Responses	Cumulative Percent with Responses
Men	156	14.3	14.3	14.3
Women	935	85.7	85.7	100.0
Total	1091	100.0	100.0	
Missing	0	0.0		
Total	1091	100.0		

Employment Status

Participants' employee status was also obtained through the organization's LMS.

There were four possible employee status categories for participants in this study: (a) full

time with benefits, (b) part-time with benefits,(c) part-time with no benefits, and (d)

temporary or pool. The majority of respondents in this study had the employment status

of full-time (93.6% with valid responses). Approximately 119 survey responses had a

missing or unknown employee status (see Table 6).

Table 6

Employment Status of Respondents

Employment Status	Frequency	Percent	Percent with Responses	Cumulative Percent with Responses
Full time	909	83.4	93.6	93.6
Part time with benefits	22	1.9	2.2	95.8
Part time without benefits	13	1.2	1.3	97.1
Temporary	28	2.6	2.9	100.0
Total	972	89.1	100.0	
Missing	119	10.9		
Total	1091	100.0		

Because the vast majority of respondents fell in the full-time employment status category and all other categories of employment status had a relatively small number of participants, all cases that were not in the full-time employment status category were re-coded into one category. Therefore, all study analyses, including employment class, were based on a dichotomous classification of employment status. Table 7 provides a summary of frequencies by full-time or all-other employment statuses.

Table 7

Employment Status of Respondents after Recode

Employment Status	Frequency	Percent	Percent with Responses	Cumulative Percent with Responses
Full time	909	83.3	93.6	93.5
All other	63	5.8	6.5	100.0
Total	972	89.1	100.0	
Missing	119	10.9		
Total	1091	100.0		

Organizational Tenure

The length of time a participant had been employed with the organization was obtained through the organization's LMS. Organizational tenure was coded in number of total days of employment. The median organizational tenure for respondents was 1,914 days (5.2 years), with a minimum and maximum of 178 days (0.5 years) and 12,680 days (34.7 years), respectively (see Figure 1).

Figure 1. Organizational tenure of respondents.

	178	985	1388	2194	3808	5017	6227	7437	8647	10260	11470
Cumulative %	0.00	0.24	0.35	0.55	0.75	0.85	0.94	0.97	0.98	0.99	1.00
Frequency	1	93	111	78	40	30	23	2	2	1	1
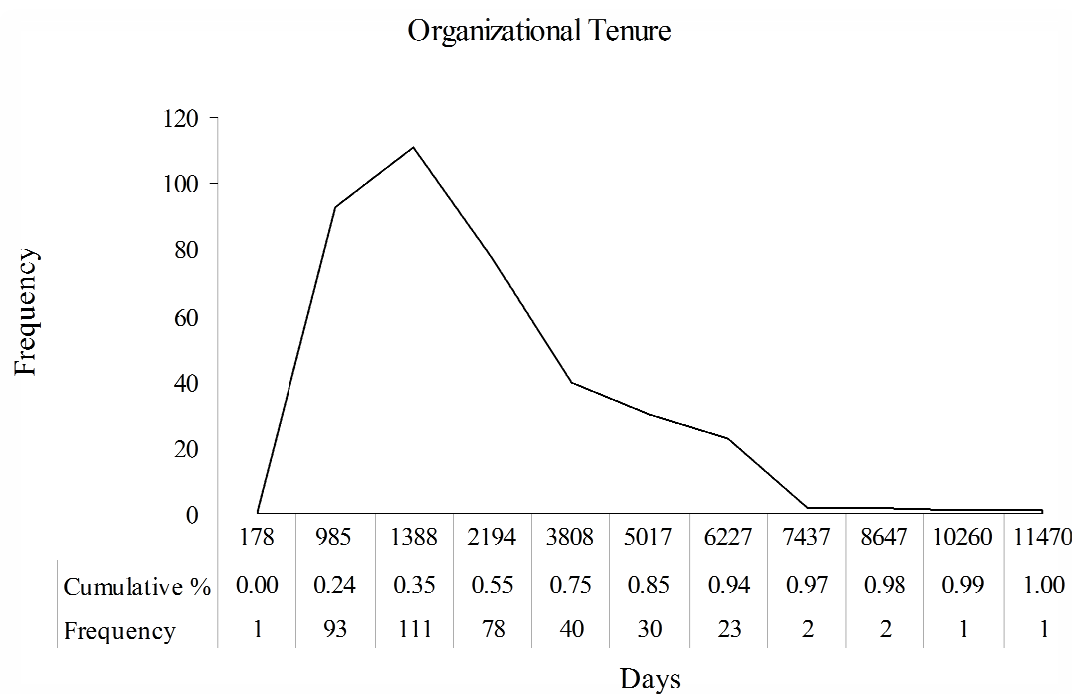
Job Tenure

The length of time a participant had been employed in his or her current position with the study organization was obtained through the organization's LMS, which interfaces with the organization's HRIS. Job tenure was coded in number of days in current position. The median job tenure for respondents was 854 days (2.3 years), with a minimum and maximum of 176 days (0.5 years) and 4,871 days (13.3 years), respectively (see Figure 2).

Figure 2. Job tenure of respondents.

Job Tenure

	176	327	630	782	1236	2448	2751	2902	3054	3356	3659
Frequency	1	163	113	72	44	16	26	13	7	8	7
Cumulative %	0.00	0.17	0.40	0.47	0.63	0.89	0.93	0.94	0.95	0.96	0.97

Days

Dataset

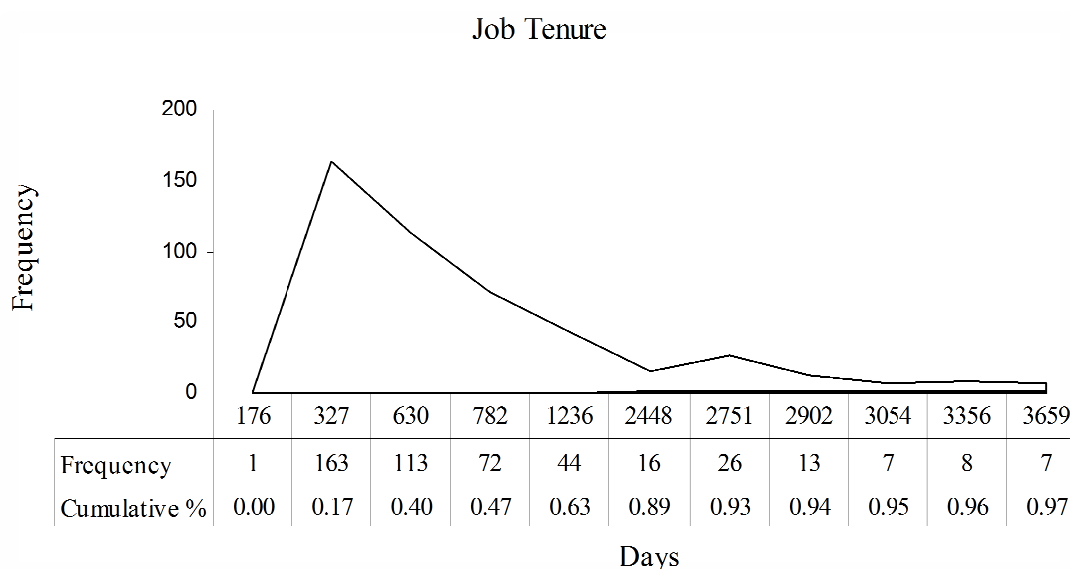This study used an existing proprietary and non-public dataset that was collected as part of a large healthcare organization's efforts to implement a large-scale, organization-wide financial reporting and revenue process change initiative. The HRD function within the large healthcare organization was responsible for developing, administering, and maintaining the dataset used in the current study for the purpose of monitoring change efforts that were implemented over the period of approximately three months. However, through a consulting relationship and as an advisor to the HRD function, I had significant input into the survey design, learning measure design, and data collection process throughout most of the duration of the change initiative implementation. HRD management periodically queried the dataset to produce reports that were presented to senior company executives during regular status updates. The dataset was housed in the organization's learning management system (LMS), and the

questionnaire and learning measure were directly populated by study participants via the participants' LMS and intranet access. The healthcare organization provided access to this dataset for this study.

<div align="center">Instrumentation</div>

This section briefly describes the instruments used to collect data from the 1,299 employees who responded to the study survey. The questionnaire in this study was developed by the HRD function of the large healthcare organization in which the survey was conducted. However, through a consulting relationship, I had significant input in advising the HRD function on the design and development of the survey instrument. The survey questionnaire was 12 items in length and was comprised of three different instruments which assessed the constructs of (a) ACC, (b) ART, and (c) CRT. ACC was measured using a scale that was previously developed by Herscovitch and Meyer (2002). Because there was no previously developed scale to measure the two dimensions of employee reactions to training (affective and cognitive), I developed a scale based on previous research (Alliger et al., 2002; Tan et al., 2003). Participants indicated their answers to all questionnaire items on a Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). (See Appendix B for a listing of all items used in the study's questionnaire). The volunteering behavior outcome variable was not assessed through the use of the survey instrument. Rather, level of volunteering behavior was assessed based on whether the employee did or did not volunteer to participate in activities related to supporting the organizational change initiative. The learning outcome variable was assessed based on an eight item multiple choice test which was administered to all study participants upon completion of change-related training. Further discussion

and findings concerning the reliability and validity of the scales used in this study are presented in the following sections.

Instrumentation for Affective Commitment to Organizational Change

Employee commitment to organizational change was measured using four items from Herscovitch and Meyer's (2002) Affective Commitment to Change (ACC) scale (ACCS). However, due to survey length constraints, four items from the original six-item ACC scale were used in the present study. The four items with the strongest factor loadings in Herscovitch and Meyer's study were selected from original six-item scale. Responses for the four-item ACCS were obtained on a 7-point Likert-type scale with end points labeled 1 = *strongly disagree*, 7 = *strongly agree*. This format is consistent with the scale used in the Herscovitch and Meyer study.

Instrumentation for Training Reactions

Employee reactions to change-related training were assessed using a total of eight items developed for this study. Training items were based on several previous conceptualizations of types of trainee reactions (1997; Ruona et al., 2002; Tan et al., 2003). According to these authors' conceptualizations, trainee reactions to training can be categorized into two separate types or dimensions: (a) affective reactions and (b) cognitive reactions.

I developed the items that represented the affective and cognitive training reaction constructs. First, previous descriptions and conceptualizations of ART and CRT were used to generate a set of approximately 15 training reaction items. Second, a panel of four expert HRD practitioners was asked to match the items I generated against definitions of ART and CRT and to also review items for clarity and meaning. Based on the expert

panel review, some items were eliminated due to a lack of conceptual match, some items were eliminated due to duplication of meaning, and some of the items were reworded to improve clarity. As a result of this exercise, the pool of total training reaction items was narrowed down to a total of 8 items, 4 for the cognitive reaction construct and 4 for the affective reaction construct. Finally, all survey items, including training reactions were piloted with a group of approximately 20 organizational members to further ensure clarity and meaning. No further modifications to the training reaction items or rating scales resulted from the pilot testing exercise. Examples of items are highlighted in the sections below and the scales in their entirety are referenced in the appendix.

Items Related to Affective Training Reactions

An affective reaction refers to whether the trainee liked the training. A typical affective reaction item is, "I found this training program to be enjoyable." Affective reactions are the principal means by which organizations have traditionally evaluated training efforts (Alliger et al., 1997; Bassi et al., 1996). The Affective Reaction to Training (ART) scale consisted of four items and responses for the scale were obtained on a 7-point Likert-type scale, with end points labeled 1 = *strongly disagree*, 7 = *strongly agree*.

Items Related to Cognitive Training Reactions

Cognitive reactions to training refer to the trainees' assessment of the instrumentality and perceptions of the likelihood that they will use what they learned in a training program in their job. A statement like, "Participating in this training will help me perform my job better," is an example of a cognitive reaction to training (Alliger et al., 1997). The Cognitive Reaction to Training (CRT) scale consisted of four items, and

responses for the scale were obtained on a 7-point Likert-type scale with end points labeled 1 = *strongly disagree*, 7 = *strongly agree*.

Instrumentation for Volunteering Behavior

All respondents in this study had some degree of involvement with the organizational change initiatives through various channels such as change-related training events, meetings, and communications. However, to foster the likelihood of success of the organizational change and to distribute workload, the HRD function solicited employees from across the organization to volunteer to volunteer as "change champions" in supporting the change initiative.

To solicit volunteers, the HRD function sent electronic communications to all participants who had attended change-related training. A total of three electronic communications were sent. The electronic communication requested that all recipients respond and indicate whether they would or would not volunteer. The first solicitation was sent the day after training was completed. The second solicitation was sent one week after training had been completed. The third solicitation was sent two weeks after training had been completed. The electronic communication outlined the general responsibilities and activities that volunteering would entail. Responsibilities for employees who volunteered to serve as change champions included (a) defining how the new processes would be implemented at their local facilities, (b) attending additional change initiative workshops, and (c) delivering communications and further training at their local facilities.

The HRD function maintained a central database within the LMS of employees who responded and indicated that they would or would not volunteer to support the

change initiative. In this study, employees who volunteered to carry out these responsibilities were coded as 2, and those employees who did not were coded as 1. The total number of participants who chose to engage in volunteering behavior was 182, the total number of participants who chose not to engage in volunteering behavior was 965, and the total number of participants with an unknown or missing volunteering behavior status was 152. All cases that had an unknown volunteering behavior status were discarded from the study. Table 8 categorizes participants according to their volunteering behavior.

Table 8

Respondents in Sample by Volunteering Behavior

Level of Volunteering	Frequency	Percent	Percent with Responses	Cumulative Percent with Responses
Did Not Volunteer	965	74.3	84.1	84.1
Did Volunteer	182	14.0	15.9	100.0
Valid Total	1147	88.3	100.0	
Missing	152	11.7		
Total	1299	100.0		

Instrumentation for Learning

Learning was assessed using a measure consisting of eight multiple choice items. The learning measure was administered immediately following completion of training. All study participants completed the same learning measure. The learning measure was constructed to tap the content domain covered in the training program to ensure content validity. To construct the test, I and a group of subject matter experts reviewed the course content and learning objectives and questions were defined in order to represent the key learning criteria. The multiple choice question stems, answers, and distractor options

were written so as to: (a) measure an objective or key content covered in the course, (b) avoid providing clues to the correct answer, and (c) be clear and concise.

Scale Reliability Analysis

To assess the reliability of the three scales used in this study (ACC, ART, and CRT), a reliability analysis was conducted. Reliability was determined by calculating the Cronbach alpha coefficient value for each of the measured constructs. The Cronbach alpha coefficient is a measure of the internal consistency of a psychometric instrument and is "based on the extent to which test-takers who answer an item one way, respond to other items in the same way" (Gall et al., 1996, p. 757). A scale that is internally consistent suggests that the items are all measuring the same construct. Cronbach's alpha can range between 0 to 1. A commonly accepted standard is that a Cronbach's alpha of 0.6 to 0.7 indicates acceptable reliability, and 0.8 and higher indicates good reliability. However, an extremely high reliability (0.95 or higher) is not desirable as this may indicate redundancy rather than reliability within the items of an instrument (Howell, 2001). Table 9 presents the reliability results for the instruments used in this study as well as the reliability coefficients from previous studies. Further discussion concerning the reliability and validity of the instruments and associated items used in the study questionnaire are presented in the following sections.

Table 9

Cronbach's Alpha Reliability Results

Scale	No. of Items in Present Study	α in Present Study	No. of Items in Previous Study	α in Previous Studies
Affective Commitment to Change (ACC) Scale	4	.94	6	.88a
Affective Reactions to Training (ART) Scale	4	.90	N/A	N/A
Cognitive Reactions to Training (CRT) Scale	4	.91	N/A	N/A

a = as reported in Herscovitch and Meyer (2002)

* = below the acceptable reliability standard of .70

Reliability of the Affective Commitment to Change Scale

In their previous research, Herscovitch and Meyer (2002) reported Cronbach's alpha coefficient values of .88 for the entire six-item ACC scale. However, due to survey length constraints, only four items from the original six-item ACC scale were used in the present study. The four items with the strongest factor loadings from the original six-item scale were selected for inclusion in this study. Based on data collected for this study, the Cronbach's alpha for the revised four-item ACC scale was .94. It is interesting to note that the two items from the original six-item ACC scale that were not used in this study were also the only two items in the original scale that were negatively worded. Removal of these negatively worded items may have increased the consistency of participants' responses to the items, thereby increasing the reliability of the ACC scale used in this study over Herscovitch and Meyer's study.

Reliability of the Affective and Cognitive Reaction to Training Scales

Since no scales existed that distinguish between affective and cognitive type reactions to training, the ART scale and the CRT scale were developed for this study.

Therefore, no previous reliability results are available. However, reliability analyses of the ART and CRT items used in this study yielded Cronbach's alpha coefficients of .90 and .91 respectively.

Scale Factor Analyses

To assess the construct validity and proposed underlying dimensions of the reactions to training instruments used in this study (affective versus cognitive), an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted. The EFA and CFA can be used in a complementary fashion in scale development so the researcher can first explore the underlying structure of the proposed construct (i.e. EFA) and then confirm the number of factors according to prior theoretical hypotheses (Thompson, 2004). The factor analytic method is often used for several purposes, such as (a) evaluating score validity, (b) developing theory concerning the nature of psychological constructs, and (c) summarizing relationships between inter-related variables in a parsimonious manner (B. Thompson, 2004). In this study, factor analyses were used to assess whether the instruments measured the postulated factors. The EFA can be used when the researcher either has a specific hypothesis regarding the number of factors within a construct or when the researcher wants to account for as much of the covariance in the observed data with as few factors as possible (Fabrigar, Wegener, MacCallum, & Strahan, 1999). However, the CFA explicitly tests the ability of a predefined factor model to fit an observed set of data (DeCoster, 1998). Therefore, when the CFA is utilized, the researcher must have specific hypotheses in regard to the number of factors, whether factors are correlated, and which variables belong to which proposed factors (Thompson, 2004).

First, to conduct the factor analyses, the sample in this study was divided into two random groups using a statistical package. The first random group was analyzed using EFA procedures in the statistics software package SPSS with principal axis factoring and a varimax rotation to discover the underlying constructs of the ART and CRT scales. The second random group was analyzed using CFA procedures and the statistics software package AMOS to confirm the proposed factor structure for the ART and CRT scales resulting from the EFA. The following factor analyses sections contain the results of the EFA and CFA for each of the scales used in this study.

Exploratory Factor Analysis of Reactions to Training

EFA is a frequently utilized statistical method in the social sciences for uncovering the latent structure of a set of variables. There are a variety of different techniques and criteria for extracting factors from a set of data (Costello & Osborne, 2005). Before conducting an EFA, the researcher must decide which type of factor extraction method should be used (e.g., principal components analysis, common factor analysis, maximum likelihood, etc.) and the criteria for determining the number of factors (e.g., Kaiser criterion, Joliffe criterion, scree plot, parallel analysis, maximum average partial criterion, etc.) based on what the researcher is trying to achieve. For example, principle components analysis (PCA) should be used if the researcher is not concerned about differentiating between common and unique variance and is simply attempting to reduce data into the fewest number of variables. Alternatively, a CFA method should be used if the research goal is to discriminate between shared and unique variance and to identify the latent variables contained in a data set (Fabrigar et al., 1999). The common factor analysis method was employed in this study because the goal of the EFA was to

determine the unique factors that are responsible for a set of observed responses and not to simply perform data reduction, for which the PCA method is better suited.

Once the method for factor extraction in EFA has been determined, the researcher must determine the criterion for the number of factors to retain. The most commonly used criterion for determining the number of factors to retain for rotation is the Kaiser criterion, which eliminates any factors which do not have eigenvalues greater than 1.0 (Costello & Osborne, 2005). Despite the popularity of the Kaiser criterion, the recent literature on factor analysis indicates that it is one of the least accurate methods for determining the number of factors to retain and results in frequent overextraction and underextraction of factors (Lance, Butts, & Michels, 2006; Velicer & Jackson, 1990). Other tests for determining the number of factors to retain include the scree test, Velicers's minimum average partial (MAP) criterion, and parallel analysis (PA), also known as the Humphrey-Illgen Parallel Analysis. While PA and MAP are generally considered the best methods to assess the true number of factors (Lance et al., 2006; Velicer et al., 2000), unfortunately, the MAP and PA are not available in most statistical software (e.g., SPSS, SAS, MiniTab). Therefore, the best and most readily available criterion for researchers is typically the scree test (Costello & Osborne, 2005).

The scree test, also referred to as the Cattell scree plot (Cattell, 1966), involves the examination of eigenvalues on a graph where the components are plotted on the X axis and corresponding factor eigenvalues are plotted on the Y axis. The researcher determines the number of factors by looking for the bend or breakpoint on the graph where the curve flattens out. Cattell's scree test says to drop components after the

component that starts the break (L. R. Nelson, 2005). Figure 3 displays the scree test for the data set.

Using Cattell's (1996) guidelines, an examination of the scree plot generated from the data in the present study reveals two factors. The first component yields a strong eigenvalue of 5.28. The second component starts the break in the curve and yields a relatively weak eigenvalue of 0.75. Note that the eigenvalue of the second component lies between the Kaiser criterion (which specifies that all components with eigenvalues less than 1.0 should be dropped) and the Joliffe criterion (which specifies that all components with eigenvalues greater than 0.70 be retained).

Figure 3. Scree plot.
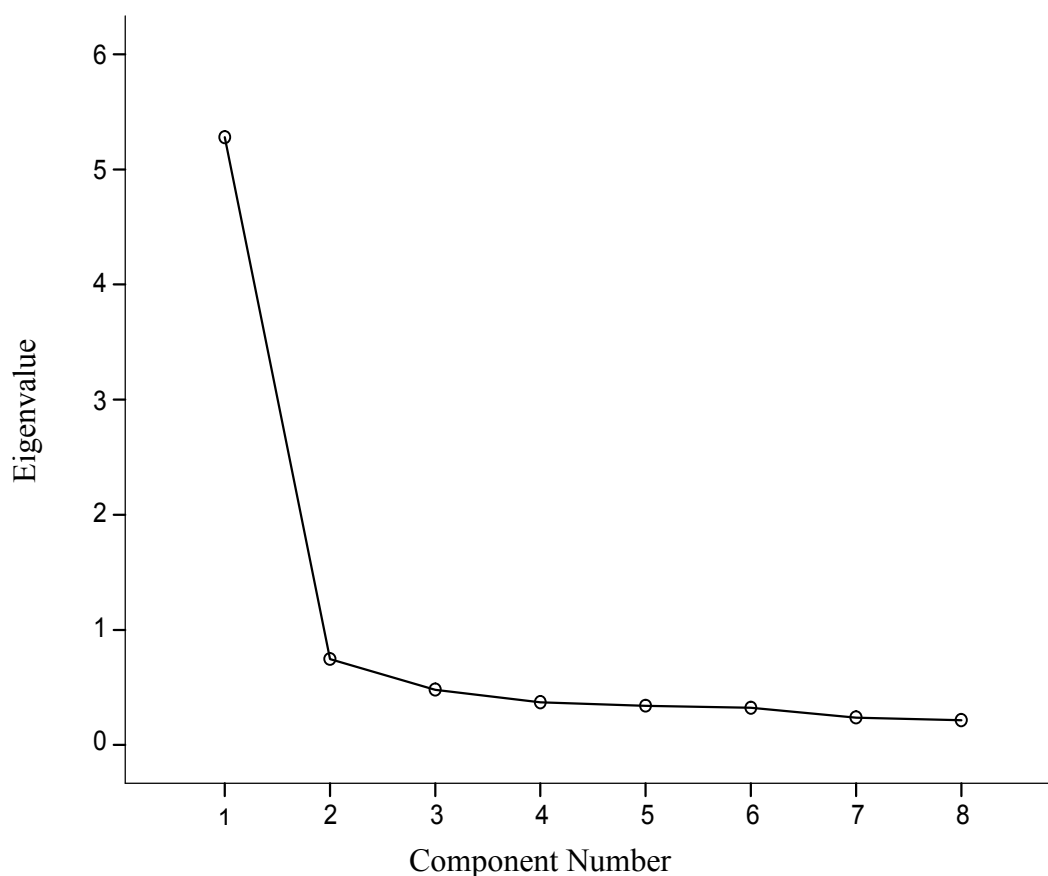
Table 10 displays the EFA results for the reactions to training instrument with a two-factor model specified in SPSS. The EFA for the Reactions to Training scale revealed some overlap between items in the first factor (affective reactions) and the second factor (cognitive reactions). After rotation, the first factor explained 42.01% of the variance, and the second factor explained 33.33% of the variance, with a total of 75.34% of the variance explained by these two factors.

Table 10

Exploratory Factor Analysis on Reactions to Training (n = 542)

| | Factor | | |
Item	1	2	Communalities
ART1	.85		.76
ART2	.82		.78
ART3	.82		.79
ART4	.70	.50	.74
CRT1	.51	.67	.70
CRT2		.87	.77
CRT3	.53	.71	.78
CRT4	.50	.68	.71
Eigenvalue	5.28	0.75	-
Explained Variance	42.01%	33.33%	75.34%

Rotation converged in 3 iterations. All loadings exceeding .35 are included in this table

While the results of the scree test and the EFA provide evidence of a two-factor model, because the scree test indicates a second component with a small eigenvalue and the results of the EFA showed overlap between components, the subsequent confirmatory factor analyses tested whether a single-factor or two-factor model provides the best fit.

Confirmatory Factor Analysis of Reactions to Training

The CFA tests the ability of a predefined factor model to fit an observed set of data (DeCoster, 1998). Therefore, when the CFA is utilized, the researcher must have specific hypotheses in regard to the number of factors, whether factors are correlated, and which variables reflect the given factors (B. Thompson, 2004). The current study hypothesized a two-factor model. However, because the EFA results for this study were inconclusive and indicated the possibility of either a single-factor or a two-factor model, a CFA was performed for both a single-factor and two-factor model to determine which model best fits the data. To conduct the CFA, the sample in this study was divided into two random groups using a statistical package. The first random group was used for EFA,

and the second random group was analyzed using CFA procedures. AMOS version 7.0 was the statistics software package used to confirm the proposed factor structures for the ART and CRT scales.

Table 11 provides the results of the confirmatory factor analyses for both the single-factor and two-factor models. The model with the best goodness-of-fit is determined by examining and comparing multiple indices. While there are many indices of fit for CFA and new indices continue to emerge, typical measures examined in a goodness-of-fit analysis include the chi-square (and its associated probability value), the Normed Fit Index (NFI), Comparative Fit Index (CFI), the Akaike Information Criterion (AIC), and the Root Mean Square Error of Approximation (RMSEA; Bollen & Long, 1993).

The chi-square ($\chi2$) test is one measure that is often reported for evaluating goodness-of-fit. The $\chi2$ test is interpreted by comparing the P-value to the significance level, and rejecting the null hypothesis when the P-value is less than the significance level. Therefore, failure to reject the null is a sign of a good model fit.

As Table 11 shows, both the single-factor model and two-factor model in this study are represented by a significant p-value for the $\chi2$ test (Note that *** indicates a p-value less than 0.001). Therefore, the results of the $\chi2$ tests reject the null hypotheses and do not support either the single-factor or two-factor model. However, the $\chi2$ test is widely recognized to be sensitive to sample size (Jöreskog, 1969), which frequently results in the null hypothesis being too easily rejected for analyses of large samples. For models with about 75 to 200 cases, the $\chi2$ test is considered a reasonable measure of fit (Bollen & Long, 1993). However, for models with more cases (the CFA analysis for this

study has an n = 549), the χ2 test is almost always statistically significant. Because of the

drawbacks with the χ2 test, alternative fit indices were also examined.

Table 11

Goodness-of-Fit Indicators of Models for Reactions to Training (n = 549)

Model	χ2	Df	NFI	CFI	AIC	RMSEA
Single-Factor	233.3***	20	0.92	0.93	281.3	0.14
Two-Factor	61.8***	19	0.98	0.99	111.8	0.06

***p < .001.

The NFI was examined for both the single-factor and two-factor models. The NFI

compares the improvement in the minimum discrepancy for the specified (default) model

to the discrepancy for the independence model (Bollen & Long, 1993). When the NFI

value is between 0.90 and 0.95, it is interpreted as acceptable, whereas values above 0.95

indicate good fit (Hu & Bentler, 1999). The NFI for the single-factor model is 0.92 and

0.98 for the two-factor model. Therefore, the NFI provides more support for the two-

factor model than the single-factor model.

The CFI was also examined for both the single-factor and two-factor models. The

CFI, like the NFI, compares the specified model fit with a null model which assumes the

latent variables in the model are uncorrelated. However, the NFI penalizes for sample

size (Bollen & Long, 1993) and, therefore, is among the goodness-of-fit indices least

affected by sample size (Fan, Thompson, & Wang, 1999). The CFI measure varies from 0

to 1, and a CFI close to 1 indicates a very good fit. Typically, to accept the model, the

CFI should be equal to or greater than 0.90, which indicates that 90% of the covariation

in the data can be reproduced by the specified model (Hu & Bentler, 1999). The CFI for

the single-factor model is 0.93 and 0.99 for the two-factor model. Therefore, the CFI provides more support for the two-factor model than the single-factor model.

The AIC was also examined for both models. This criterion indicates better goodness-of-fit when it is smaller. The AIC is not standardized, and values are not interpreted for a specified or default model. Rather, when comparing two or more models estimated from the same data set, the model with the smaller AIC is to be preferred (Hu & Bentler, 1999). The AIC is 281.3 and 111.8 for the single-factor model and the two-factor model, respectively. Therefore, the AIC provides more support for the two-factor model than the single-factor model.

Finally, the RMSEA was examined for both the single-factor and the two-factor model. The RMSEA is based on the non-centrality parameter and reflects the extent to which the null hypothesis is false. When the RMSEA value is 0.05 or less, it indicates a good fit. Values between 0.05 and 0.10 indicate reasonable fit, and values above 0.10 indicate poor fit. The RMSEA is 0.14 and 0.06 for the single-factor model and the two-factor model, respectively. Therefore, the RMSEA measures provide more support for the two-factor model than for the single-factor model.

In conclusion, because the results from the EFA were mixed (i.e., the scree plot indicated two factors, but the second factor had a small eigenvalue, and there was also some overlap between ART items and CRT items), confirmatory factor analyses were conducted on both a single-factor model and two-factor model to determine which model provided the best fit. All goodness-of-fit indices indicate that a two-factor model provides a better fit than a single-factor model. However, while the NFI and CFI measures indicated "good" fit for the two-factor model, the chi-square test was significant, and the

RMSEA measure showed only "moderate" fit. Therefore, the factor analysis results should be interpreted with caution, and future research should further explore the underlying factor structure of the reactions to training scale.

Data Analysis

Several methods of data analysis were used in order to appropriately address the research questions in the study. Multiple linear and logistic regression procedures were conducted to analyze the percentage of variance that was accounted for in the outcome variables of interest by the predictor variables of interest in the study. More specifically, hierarchical linear and logistic regression analyses were performed so that predictor variables could be entered manually in order of hypothesized importance. The order of hypothesized importance was derived from theory and previous research. While there are several methods for entering predictor variables into a regression equation, some methods (e.g., forward selection, backward elimination, stepwise, etc.) allow for the statistical properties of the data to drive the order of entry (Osborne, 2000). Hierarchical methods require the researcher to specify the order of entry, which the researcher should establish on a theoretical basis.

For all research questions, employee characteristic variables (i.e. organizational and job tenure, gender, and employment status) were entered simultaneously into the first block of the regression analyses. Employee characteristic variables were viewed as potentially confounding variables and, therefore, they were entered first into the regression model to partial out any variance associated with the primary variables of interest.

Question 1 examined the relationship between training reactions and employee attitudes towards change (i.e. commitment to change). Within attitude theory, debate exists over the primacy of affect versus cognition in the formation of attitudes (Haddock & Zanna, 2000; Zajonic, 1980). Historically, most attitude theory and research asserts that attitudes are formed primarily through cognitive processes (Ajzen, 2001). However, some researchers claim that affect is equally, if not more important, as cognitions in the formation of attitudes and that a multidimensional affect-cognition model of attitude may allow for better prediction of different outcomes across different situations (Crano & Prislin, 2006; Verplanken *et al.,* 1998). Therefore, for question 1, ART and CRT were entered simultaneously into the second block of the regression analyses for the purpose of determining (a) how much the training reactions predict together over and above the employee characteristic variables, (b) how much CRT predict over and above employee characteristics and ART and (c) how much ART predict over and above employee characteristics and CRT.

Question 2 examined the relationships between training reactions, commitment to change, and learning. Some recent research on training reactions which differentiates between affective and cognitive type training reactions has shown that cognitive reactions may better predict outcomes such as learning and training effectiveness than affective reactions (Alliger et al., 1997; Ruona et al., 2002; Tan et al., 2003). However, a recent meta-analysis of training reactions by Sitzman et al. (2008) found cognitive and affective-type reactions do not differ in their relationships with learning outcomes. Additionally, theories and models of adult learning, such as Rogers' (1982) theory of experiential learning, identify attitudes as primary motivators or de-motivators in

learning. According to Gagne, attitude processes can influence learning outcomes, and it is during the initial period of employee attitude formation that HRD practices such as training can have the most impact. However, although theory and research posits that both training reactions and attitudes may influence learning outcomes, no guidance exists concerning the hierarchical nature of the antecedents of learning outcomes. Therefore, for question 2, training reaction and commitment to change variables were added simultaneously to the second block of the regression for the purpose of determining (a) how much these variables together predict learning over and above the employee characteristic variables; (b) how much CRT predict over and above the employee characteristics variables, ART, and ACC; (c) how much ART predict over and above employee characteristics variables, CRT, and ACC; and (d) how much ACC predicts over and above employee characteristic variables, CRT, and ART.

Question 3 examined the relationships between training reactions, commitment to change, and volunteering behavior. According to the current prevailing models of attitude theory, affective and cognitive sources of information contribute to the formation of attitude which, in turn, influences behaviors (Crano & Prislin, 2006). This hierarchical model of attitudes therefore has implications for the order of entry of variables for question 3. The ART and CRTtraining reaction variables were added as the second step of the logistic regression in order to determine: (a) the cumulative predictive effects of the employee characteristic variables and the training reactions variables on volunteering behavior, and (b) whether the training reaction variables significantly contributed to the prediction of volunteering behavior over and above the employee characteristic variables. The ACC variable was added as the third step of the logistic regression in order to

determine: (a) the cumulative predictive effects of the employee characteristics, training reactions, and commitment to change variables together on volunteering behavior, and (b) whether the commitment to change variable significantly contributed to the prediction of volunteering behavior over and above the employee characteristic and training reaction variables

Summary of Chapter 3

This chapter addressed the methods used to examine the research questions: What is the relationship between ART, CRT, and ACC? Are reactions to training and ACC significantly related to learning? Are ART, CRT, and ACC significantly related to volunteering behavior?

The sample in this study was comprised of 4 divisions of a large healthcare organization with approximately 650 independently operating facilities across the United States. Completed data were obtained from 1,091 participants, with a total response rate of approximately 30%. Correlational, factor, and hierarchical regression analyses were employed to assess study scales and relationships between the constructs. A survey research design was used in which individual level perception data were collected through an on-line questionnaire.

A total of 4 of the 12 questions on this questionnaire came from a previously validated scale that was used in earlier published research studies. Since no published scale existed to measure training reaction s, a new scale was developed to measure the dimensions of this construct. Evidence of previously reported reliability of the scales was presented, where appropriate, combined with the reliability results for the scales based on

the collected data. The reliability analysis revealed alphas between 0.85 and 0.91 indicating generally good reliability

Exploratory factor analyses were conducted on first half of the sample, which was randomly chosen, to assess the construct validity of the scales used in this study. Confirmatory factor analyses were conducted on the other half of the data to cross-validate the results. The construct validity for the training reaction construct was confirmed by the exploratory factor analyses, although some overlap existed between affective and cognitive reactions. The confirmatory factor analysis revealed a best fit for the proposed two-factor structure.

Multiple hierarchical linear and logistic regression procedures were conducted to (a) analyze the percentage of variance that was accounted for in the outcome variables of interest by the predictor variables of interest in the study, (b) control for the variance in employee demographics variables, and (c) control the order of entry of study variables in accordance with theory and previous research. The hypothesized order of entry was explained by research question. Hierarchical regression analysis was conducted using Statistical Package for the Social Sciences (SPSS). AMOS version 7.0 was the statistics software package used to confirm the proposed factor structures for the ART and CRT scales. Results from the data analyses are presented in the Chapter 4.

CHAPTER 4: RESULTS

The previous chapter discussed the research design, methods, and instruments used to collect data for this study. The purpose of this chapter is to present the results of the analyses of the data. The focus of this study was to investigate the relationships between employee attitudes pertaining to training and organizational change and outcomes related to learning and volunteering behavior.

This chapter is organized into two primary sections. First, analyses of study scales are presented, including descriptive statistics (e.g., means and standard deviations) and correlations to assess the strength of relationships between the study scales. Second, the results of the analyses by the study's primary research question are presented. The questions and associated analyses focus on (a) the relationships between reactions to ART, CRT, and ACC; (b) the relationships between ACC, ART and CRT, and learning; and (c) the relationship between ACC, ART and CRT, and volunteering behavior.

Analyses of Study Scales

The scales and associated items that are used in this study were previously described in detail in Chapter 3. This section presents the descriptive statistics for each of the scales and correlations between the scales.

Scale Descriptive Statistics

To assess central tendencies descriptive statistics were used (Table 12 reports the means and standard deviations for the scales and items). On average, study participants gave the highest scores to the ACC items. This would seem to indicate that employees who participated in this study had a strong desire to provide support for the organizational change based on their belief in the inherent benefits of the change.

Table 12

Descriptive Statistics of Instrument Scales and Items (Scale of 1-7)

Measure	No. of Items	Scale Mean	Scale SD	Item Mean	Item SD
Commitment to Change					
Affective Commitment	4	22.58	4.04	5.68	.94
Reactions to Training					
Affective Reactions	4	19.97	5.35	5.00	1.33
Cognitive Reactions	4	21.40	4.85	5.36	1.20

The lowest scale scores were reported on the ART scale. The ART scale captured participants' immediate emotional response to the change-related training. The CRT scale captured participants' reactions concerning the utility or transferability of change-related training. On average, participants had higher scores on CRT than on ART.

Scale Correlations

In order to assess the strength of the relationships between the study scales of ACC, ART, and CRT, bi-variate correlations using product-moment correlation coefficient (also called the *Pearson's r)* were computed. The level of significance was set at $p < .01$ and .05. The correlation matrix is shown in Table 13.

Table 13

Correlations among Study Scales (n = 1091)

Scale	M	SD	1	2	3
1. ACC	5.68	.94			
2. ART	5.00	1.3	.468*		
3. CRT	5.36	1.2	.490*	.772*	

ACC = Affective Commitment to Change, ART= Affective Reactions to Training, CRT = Cognitive Reactions to Training. All scales were measured on a 7-point scale where 1 = *strongly disagree* 7 = *strongly agree*. *Correlation is significant at the 0.01 level (2-tailed).

Guidelines have been offered in regard to interpreting the size of correlation coefficients in behavioral science studies. Cohen (1988) has suggested that, as a general rule, positive or negative correlations between 0.1 and 0.3 are classified as weak, correlations between 0.3 and 0.5 are moderate, and correlations between 0.5 and 1.0 are strong. However, such guidelines should be used with caution because the interpretation of a correlation coefficient depends on the study's context and purposes.

The Relationship between Affective Commitment to Change and Reactions to Training

There was a moderate positive relationship between ACC and both forms of training reactions. ART had a slightly weaker relationship with ACC ($r = .47$, $p < .01$) than CRT ($r = .49$, $p < .01$). These results suggest that employees who had positive reactions to the change-related training were more likely to report higher levels of affective commitment to organizational change.

The Relationship between Reactions to Training Subscales

A strong positive relationship was also found between the sub-scales used to measure reactions to training. One of the strongest relationships reported was the correlation between ART and CRT ($r = .77$, $p < .01$). This strong internal correlation suggests a conceptual overlap between ART and CRT. However, theory posits that these constructs would likely be related (Alliger et al., 1997), and the results of the factor analyses in Chapter 3 indicate that a two-factor model provides a better fit than a unidimensional construct.

Results by Research Question

Study analyses and their associated results are presented by research question in this section. Different analyses and statistical tests were performed based on the nature of

the study question and data. Therefore, the results of each analysis are presented separately in this section according to the study's three primary research questions.

Research Question 1: What is the Relationship between Affective Reactions to Training,

Cognitive Reactions to Training, and Affective Commitment to Change?

To explore this question, a hierarchical linear regression analysis was conducted. The results of this analysis helped to establish whether the study's predictor variables (i.e., CRT and ART) explain a significant portion of the variance in the outcome variable of interest (i.e., ACC) while controlling for employee characteristic variables (e.g., organizational tenure, job tenure, gender, employment class). Each of the predictor variables was analyzed to determine the unique percentage of variance that was accounted for in the outcome variable (i.e., ACC).

A hierarchical linear regression analysis procedure was utilized so that the predictor variables could be entered in order of importance according to theory and previous research. The order of entry was as follows. The employee characteristic variables (i.e., organizational tenure, job tenure, gender, employment class) were included in the first block of the regression. Employee characteristic variables were entered simultaneously into the first block of the regression for the purpose of partialing out any variance due to this set of variables. In the second block, the ART and CRT variables were added simultaneously into the regression. ART and CRT were added together in one block for the purpose of determining (a) how much the training reactions predict together over and above the employee characteristic variables, (b) how much CRT predict over and above employee characteristics and ART, and (c) how much ART predict over and above employee characteristics and CRT.

The main results of the hierarchical regression analysis showed that CRT and ART were reliable predictors of ACC. Results are reported in Table 14. In the first block of the regression, which excluded ART and CRT but included employee characteristic variables (i.e., organizational tenure, job tenure, gender, employment class), a significant model did not emerge ($F = 2.36$, $p = 0.052$. Adjusted R square = 0.006). However, the results showed that both organizational tenure ($\beta = 0.08$, $p = 0.042$) and job tenure ($\beta = -0.09$, $p = 0.016$) were significant predictors of ACC.

A significant model emerged ($F = 63.42$, $p < 0.001$, Adjusted R square = 0.278) for the second block in which ART, CRT, and employee characteristic variables were all regressed on ACC. However, the relationship that existed in block one between the two significant employee characteristic variables (organizational tenure and job tenure) and the outcome variable (ACC) disappeared once the ART and CRT variables were entered into the model. The second model showed that when training reactions were entered into the regression while controlling for employee characteristic variables, only the reactions to training variables were reliable predictors of ACC, with $\beta = 0.34$ ($p < 0.001$) for CRT and $\beta = 0.22$ ($p < 0.001$) for ART. The squared semi-partial (part) correlation (sr2), which represents the percent of total variance in ACC explained by the given predictor variable (ART or CRT) over and beyond other predictors in the model, was .02 for ART and .05 for CRT.

Table 14

Summary of Hierarchical Linear Regression Analysis for Variables Predicting Affective Commitment to Change (N = 972)

Predictor	B	$SE\ B$	β	sr^2
Step 1				
Employment class	-0.05	0.12	-0.01	0.01
Organizational tenure	0.00	0.00	0.08*	0.07
Job tenure	0.00	0.00	-0.01**	0.08
Gender	0.14	0.09	0.05	0.05
Step 2				
Employment class	-0.10	0.10	-0.03	0.03
Organizational tenure	0.00	0.00	0.05	0.04
Job tenure	0.00	0.00	-0.03	0.03
Gender	0.01	0.07	0.01	0.00
Affective reactions	0.16	0.03	0.22***	0.14
Cognitive reactions	0.26	0.03	0.34***	0.22

Note. Total R2 = 0.01 for Step 1; Δ R2 = 0.27 for Step 2 (*ps* < .001). Employee characteristic variables (organizational tenure, job tenure, gender, and employment class) were entered in the first block; training reaction variables were added in the second block. Unstandardized regression coefficients (*B's*), the standard error of betas (*SE B*), standardized partial regression coefficients (β's), and squared semi-partial (part) correlations (sr2) are reported. The squared semi-partial (part) correlation represents the percent of total variance in the dependent variable explained by the given predictor variable, over and beyond other predictors in the model. Employee characteristic variables, employment class, and gender are dichotomous variables. Gender was scored as follows: 1= male, 2 = female. Employment class was scored as follows: 1 = full-time with benefits, 2 = all other employment classes such as part-time, pool, etc. *p < .05, **p < .01, ***p < .001.

Research Question 2: Are Reactions to Training and Affective Commitment to Change

Significantly Related to Learning?

A hierarchical linear regression analysis was conducted to explore this question. Hierarchical regression procedures allow variance in the outcome variable of interest to be analyzed at multiple hierarchical levels which are established by the researcher according to theory and prior research. The results of this analysis helped to establish whether the predictor variables (i.e., CRTand ART, and ACC) explain a significant portion of the variance in the outcome variable of interest (i.e., learning) while controlling for employee characteristic variables (e.g., organizational tenure, job tenure, gender, employment class). Each of the predictor variables was analyzed to determine the unique percentage of variance that was accounted for in the outcome variable of interest.

The order of variable entry into the regression for this research question was as follows. The employee characteristic variables (i.e., employment class, organizational tenure, job tenure, and gender) were included in the first block of the regression. Employee characteristic variables were entered simultaneously into the first block of the regression for the purpose of partialing out any variance due to this set of variables. In the second block, the primary variables of interest (i.e., ART, CRT, and ACC) were added simultaneously into the regression. The primary variables of interest were added simultaneously together in the second block for the purpose of determining (a) how much these variables together predict learning over and above the employee characteristic variables; (b) how much CRT predict over and above the employee characteristics variables, ART, and ACC; (c) how much ART predict over and above employee

characteristics variables, CRT, and ACC; and (d) how much ACC predicts over and above employee characteristic variables, CRT, and ART.

The main results of the hierarchical regression analysis showed that only the ART variable was a reliable predictor of learning. Results are reported in Table 15. In the first block of the regression, which included only employee characteristic variables, a significant model did not emerge ($F = 0.58$, $p = 0.677$, Adjusted R square = -0.002). Furthermore, none of the individual employee characteristic variables within the model appeared to be significant.

A significant model did emerge ($F = 3.05$, $p < 0.004$, Adjusted R square = 0.02) for the second model (block 2) in which the ART, CRT, ACC, and employee characteristic variables were regressed together against the learning variable. However, when controlling for other variables in the equation, only ART emerged as reliable predictor of learning with a $\beta = 0.2$ ($p < 0.003$) and an sr2 = .01.

Table 15

Summary of Hierarchical Regression Analysis for Variables Predicting Learning (N = 972)

Predictor	*B*	*SE B*	β	*sr2*
Step 1				
Employment class	.01	.02	.02	
Organizational tenure	.00	.00	-.01	
Job tenure	.00	.00	-.04	
Gender	.00	.01	.00	
Step 2				
Employment class	.01	.02	.02	
Organizational tenure	.00	.00	-.02	
Job tenure	.00	.00	-.02	
Gender	.00	.01	-.01	
Affective reactions to change	.02	.01	.15**	.01
Cognitive reactions to change	.00	.01	-.03	
Affective commitment to change	.00	.01	.02	

Note. Total R2 = 0.002 for Step 1; Δ *R2* = 0.02 for Step 2 (*ps* < .001). Employee characteristic variables (organizational tenure, job tenure, gender, and employment class) were entered in the first block; ART, CRT, and ACC variables were added in the second block. Unstandardized regression coefficients (*B's*), the standard error of betas (*SE B*), standardized partial regression coefficients (β's), and squared semi-partial (part) correlations (sr2) are reported. The squared semi-partial (part) correlation represents the percent of total variance in the dependent variable explained by the given predictor variable, over and beyond other predictors in the model. Employee characteristic variables, employment class, and gender are dichotomous variables. Gender was scored as follows: 1= male; 2 = female. Employment class was scored as follows: 1 = full-time with benefits; 2 = all other employment classes such as part-time, pool, etc. *p < .05, **p < .01, ***p < .001.

Research Question 3: Are Reactions to Training and Affective Commitment to Change

Significantly Related to Volunteering Behavior?

A hierarchical logistic regression analysis was used to explore this question. Hierarchical logistic regression procedures are used to predict a categorical dependent variable from a set of continuous or categorical independent variables. The results of this analysis helped to establish the probability that study participants engaged in volunteering behavior given their responses on items related to CRT, ART, and ACC while controlling for employee characteristic variables.

To account for the effects of employee characteristic variables (e.g. employment class, organizational tenure, job tenure, and gender) in the logistic regression model, these variables were entered in a separate block. By specifying a hierarchy of models in logistic regression (i.e. block 1 = employee characteristic variables model; block 2 = reactions to training model; block 3 = ACC model), the block chi-square (x^2) which is the logical equivalent of the F change statistic in linear regression can be examined to determine the unique and incremental predictive effects of one set of variables over another set of variables. In the analysis for this question, employee characteristic variables were entered into the first block of the logistic regression. Training reaction variables were entered in second block. The commitment to change variable was entered into the third block of the regression model. Table 16 lists the logistic regression coefficient, the standard error of the regression coefficient, Wald test and its significance level, odds ratio, and confidence interval for each of the models and predictor variables.

A total of 972 cases were used in the logistic regression analysis. Of these cases, 84.2% (818) of respondents did not engage in volunteering behavior and 15.8 % (154) of

respondents did engage in volunteering behavior. Since 154 respondents did engage in volunteering behavior and 818 respondents did not, the observed odds of a participant engaging in volunteering behavior are 154/818 = .188.

A significant model emerged for the first step of the logistic regression in which the employee characteristic variables (i.e. employment class, organizational tenure, job tenure, and gender) were regressed on the outcome variable of interest (i.e. volunteering behavior). An examination of the Omnibus Tests of Model Coefficients for block 1 reveals a Chi-Square (x^2) of 21.48 on 4 degrees of freedom that is significant beyond the .001 level. Therefore, the results for the employee characteristics model (block 1) show that the null hypothesis (i.e. adding employee characteristic variables to the model will not significantly increase the ability to predict volunteering behavior) can be rejected. The -2 Log Likelihood statistic, which measures how poorly the model predicts volunteering behavior (i.e. the smaller the statistic the better the model), for the employee characteristic variables only model (block 1) is 828.18. The -2 Log Likelihood statistic for the intercept only model (block 0) was 849.659. Therefore, adding the employee characteristic variables to the regression reduced the -2 Log Likelihood statistic by 21.479 (849.659 - 828.18 = 21.479). The *p* value on a Chi-Square of 21.48 on 4 *df* is significant beyond .001 indicating a significant increase the model's ability to predict volunteering behavior with the inclusion of employee characteristic variables. For model 1, the Nagelkerke R^2 was .038, indicating that employee characteristic variables model accounts for approximately 4% of the variability in volunteering behavior.

Examining the individual employee characteristic variables in model 1 and employing a .05 criterion of statistical significance, 2 of the 4 employee characteristic

variables: employment class ($B = 2.56$, $SE B = 1.01$, $Wald = 6.40$, $p = .011$, $e^B = 12.98$) and job tenure ($B = 0.00$, $SE B = 0.00$, $Wald = 5.01$, $p = .025$, $e^B = 1.0$) had significant partial effects. Therefore, for the employee characteristics variables only model, the odds ratios for employment class indicate that, when holding all other variables constant, the odds that respondents who were non-full time with benefit employees would engage in volunteering behavior were approximately 13 times greater than the odds that respondents who were full-time with benefits would participate in volunteering behavior. The odds ratio for job-tenure reveals that for every 1 day increase in job tenure, the odds of participating in volunteering behavior is 1 times greater.

The ART and CRT were added as the second step of the logistic regression in order to determine the cumulative predictive effects of the employee characteristic variables and the training reactions variables on volunteering behavior and whether the training reaction variables significantly contributed to the prediction of volunteering behavior over and above the employee characteristic variables. An examination of the Chi-Square for the second model, which contained both employee characteristic variables and training reactions, shows a x^2 of 136.25 on 6 degrees of freedom with a p-value that is significant beyond the .001 level. Furthermore, while controlling for employee characteristic variables in step 1, a significant model also emerged for step 2 ($x^2 = 114.77$, $df = 2$, $p < .001$) which indicates that the ART and CRT variables together significantly contributed to the prediction of volunteering behavior over and above the employee characteristic variables. For model 2, which included employee characteristics and training reaction variables, the Nagelkerke R^2 was .224, indicating that the cumulative model accounts for approximately 22% of the variability in volunteering behavior. Recall

that for model 1, the Nagelkerke R^2 was .038; therefore, the addition of the training reaction variables to the model in block 2 account for approximate 18% increase in the ability to predict volunteering behavior. Examining both the training reaction and employee characteristic variables in model 2 and employing a .05 criterion of statistical significance, employment class ($B = 2.71$, $SE\ B = 1.02$, $Wald = 7.04$, $p =.008$, $e^B =15.06$), ART ($B = 0.45$, $SE\ B = 0.14$, $Wald = 10.22$, $p =.001$, $e^B =1.57$), and CRT ($B = 0.77$, $SE\ B = 0.17$, $Wald = 19.86$, $p =.025$, $e^B =2.17$) had significant partial effects. Note that the relationship between job tenure and volunteering behavior that emerged in the first model (i.e. employee characteristics only) disappeared once the training reaction variables were added to the logistic regression.

The ACC variable was added as the third step of the logistic regression in order to determine: (a) the cumulative predictive effects of the employee characteristics, training reactions, and commitment to change variables together on volunteering behavior, and (b) whether the commitment to change variable significantly contributed to the prediction of volunteering behavior over and above the employee characteristic and training reaction variables. An examination of the Chi-Square for the cumulative model, which contained employee characteristic variables, training reactions, and commitment to change, shows a x^2 of 143.43 on 7 degrees of freedom with a p-value that is significant beyond the .001 level. Furthermore, while controlling for employee characteristic and training reaction variables in step 2, a significant model also emerged for step 3 ($x^2 = 7.18$, $df = 1$, $p < .05$) which indicates that the ACC significantly contributed to the prediction of volunteering behavior over and above the employee characteristic and training reaction variables. The cumulative model, which included all study variables, the Nagelkerke R^2 was .24,

indicating that the cumulative model accounts for approximately 24% of the variability in volunteering behavior. Recall that for model 2, the Nagelkerke R^2 was .22; therefore, the addition of ACC to the model in step account for approximate 2% increase in the ability to predict volunteering behavior.

Examining all of the variables in step 3 (which included employee characteristics, training reactions, and commitment to change) and using a .05 criterion of statistical significance, 4 of the 8 variables in the analysis – employment class ($B = 2.66$, $SE\ B = 1.02$, $Wald = 6.76$, $p = .009$, $e^B = 14.28$), ART ($B = 0.40$, $SE\ B = 0.14$, $Wald = 7.78$, $p = .005$, $e^B = 1.49$), CRT ($B = 0.65$, $SE\ B = 0.18$, $Wald = 13.59$, $p = .0002$, $e^B = 1.92$), and ACC ($B = 0.47$, $SE\ B = 0.19$, $Wald = 6.19$, $p = .013$, $e^B = 1.60$) had significant partial effect. Therefore, for, the cumulative model, the odds ratios indicate that when holding all other variables constant:

- Respondents who were full time employees (as opposed to employees of all other employment statuses) were 13 more likely to engage in volunteering behavior.

- For every 1 unit increase in ART, the odds for volunteering behavior increased by a factor of 1.49.

- For every 1 unit increase in CRT, the odds for volunteering behavior increased by a factor of 1.92.

- For every 1 unit increase in ACC, the odds for volunteering behavior increased by a factor of 1.6.

Table 16

Summary of Hierarchical Logistic Regression Analysis for Variables Predicting Volunteering Behavior (N = 972)

Predictor	B	$SE\ B$	$Wald$	e^B	95% C.I. for e^B	
					Lower	Upper
Step 1						
Employment class	2.56	1.01	6.41*	12.98	1.78	94.51
Organizational tenure	0.00	0.00	0.10	1.00	1.00	1.00
Job tenure	0.00	0.00	5.01*	1.00	1.00	1.00
Gender	0.01	0.25	0.00	1.01	0.62	1.64
Step 2						
Employment class	2.71	1.02	7.04**	15.06	2.03	111.69
Organizational tenure	.00	.00	.20	1.00	1.00	1.00
Job tenure	.00	.00	2.38	1.00	1.00	1.00
Gender	.28	.27	1.08	1.32	.78	2.24
Affective training reactions	.45	.14	10.22**	1.57	1.19	2.07
Cognitive training reactions	.77	.17	19.86**	2.17	1.54	3.04

Step 3

Employment class	2.66	1.02	6.76**	14.28	1.92	106.00
Organizational tenure	.00	.00	.39	1.00	1.00	1.00
Job tenure	.00	.00	2.02	1.00	1.00	1.00
Gender	.30	.27	1.21	1.35	.79	2.28
Affective training reactions	.40	.14	7.78**	1.49	1.13	1.97
Cognitive training reactions	.65	.18	13.59***	1.92	1.36	2.71
Affective commitment to change	.47	.19	6.19*	1.60	1.11	2.32

Note. Employment class, gender, and volunteering behavior are dichotomous variables. Gender was scored as follows: 1= male; 2 = female. Employment class was scored as follows: 1 = full-time; 2 = all other employment classes such as part-time, pool, etc. Volunteering behavior was scored as follows: 1= did not volunteer; 2=did volunteer. All other variables are continuous. *p < .05, **p < .01, ***p < .001. p value obtained from the associated Wald statistic.

Summary of Chapter 4

This chapter began with a presentation of the descriptive statistics for each of the scales and correlations between the study scales. On average, study participants gave the highest scores to the ACC items indicating that study participants generally had a strong desire to provide support for the organizational change based on their belief in the inherent benefits of the change. On average, participants had higher scores on CRT than on ART indicating that study participants felt the training was more useful and of practical value than enjoyable and interesting.

The strength of the relationships between ACC, CRT, and ART was assessed by correlational analysis. There was a moderate positive relationship between ACC and both forms of training reactions. These results suggested that employees who had positive reactions to the change-related training were more likely to report higher levels of affective commitment to organizational change. A strong positive relationship was also found between the ART and CRT constructs. While this strong internal correlation suggested that there might be conceptual overlap, it was noted that theory posits that these constructs would likely be related (Alliger et al., 1997). Furthermore, factor analyses indicated that a two-factor model provided a better fit than a uni-dimensional construct.

The second section of this chapter presented the results of the study's analyses by primary research question. The main findings from the hierarchical linear regression analysis conducted for question 1 revealed that CRTand ART were reliable predictors of ACC while controlling for employee characteristic variables. Furthermore, both ART and CRT individually accounted for a significant percent of total variance in ACC over and

above all other variables in the model. The results of question 2, which examined the relationship between study variables and learning outcomes, showed that that only the ART variable was a reliable predictor of learning. A hierarchical logistic regression analysis was used to explore question 3 which examined the relationships between study variables and volunteering behavior. Three blocks of variables were sequentially entered into the logistic equation, starting with employee characteristic variables in the first block, ART and CRT variables were added to the second block, finally ACC was added to the third block. The results showed that each block yielded a significant model for predicting volunteering behavior. In the first block, job tenure and employment class significantly predicted volunteering behavior. However, when employee characteristic variables were entered into the second and third blocks, only employment class remained as a significant variable. The ART and CRT items together and individually predicted volunteering behavior. Finally, ACC was entered last into the regression equation (a) to partial out any variance in volunteering behavior that could be attributed to other study variables and (b) because theory posits that attitudes are most closely associated with behavior, was significantly related to volunteering behavior. Question 3 results revealed that (a) respondents who were full time employees 13 more likely to engage in volunteering behavior, and (b) for every 1 unit increase in ART, CRT, and ACC the odds for volunteering behavior increased by a factor of 1.49, 1.92, and 1.6 respectively. The implications of these results will be discussed in Chapter 5.

CHAPTER 5: SUMMARY, CONCLUSIONS, DISCUSSION, AND
RECOMMENDATIONS

This chapter provided a summary of the study, and general conclusions were presented based on findings. Conclusions were then discussed in light of the research and theory presented in the previous chapters. Finally, recommendations for practice and future research were proposed.

Summary

Employee commitment is often cited in the change management literature as one of the most important elements of planned organizational change (Armenakis et al., 1999; Herscovitch & Meyer, 2002; K. J. Klein & Sorra, 1996). However, very few studies have been conducted on the antecedents and consequences of employee commitment to change (H. J. Klein et al., 2009). The purpose of this study was to better understand the relationships between affective commitment to change (ACC), affective reactions to training (ART), cognitive reactions to training (CRT), and learning and volunteering behavior outcomes. More specifically, the following research questions were addressed:

1. What is the relationship between ART, CRT, and ACC?

2. Are ART, CRT, and ACC significantly related to learning?

3. Are ACC, CRT, and ART significantly related to volunteering behavior?

To explore these research questions, data were gathered from a large healthcare organization undergoing a significant change event. The change event that the organization was undergoing was significant in that, due to large scale reporting fraud that had been uncovered, the Securities Exchange Commission had de-listed the organization and timely re-listing depended upon the organizations ability to change and

remediate revenue and reporting processes on an enterprise-wide scale. The remediation of the revenue processes directly impacted approximately 3,700 employees in over 650 facilities geographically dispersed across the U.S. Data were collected using a survey that was administered via the organization's online LMS and through the organization's HRIS. Data on individual-level perception measures related to training reactions and ACC were collected through an online survey housed in the organization's LMS. Data on the outcomes of volunteering behavior and learning outcomes were also collected via the LMS. Data related to employee characteristic variables were collected through the organization's HRIS.

The scales used in this study were the ACC scale developed by Herscovitch and Meyer's (2002), I developed the ART and CRT scales based on other researchers' conceptualizations of types of trainee reactions (Alliger et al., 2002; Tan et al., 2003). The reliability analyses for the studies scales revealed Cronbach's alphas of .94 for Herscovitch and Meyer's (2002) revised four-item ACC scale. Reliability analyses of the ART and CRT items yielded Cronbach's alpha coefficients of .90 and .91, respectively. In order to assess the strength of relationship between the ART, CRT, and ACC scales, correlations were computed. There was a moderate positive relationship between ACC and both the ART ($r = .47$, $p < .01$) and CRT ($r = .49$, $p < .01$) scales. A strong positive relationship was also found between the training reaction sub-scales ($r = .77$, $p < .01$), suggesting that there might be an overlap between the ART and CRT constructs.

Exploratory factor analyses were used to assess the construct validity of the training reaction scales developed for this study. Confirmatory factor analyses were conducted to cross-validate the results from the EFA. While the exploratory factor

analyses revealed some overlap between the ART and CRT scales, when a confirmatory factor analyses was conducted on both a single-factor model and a two-factor model, all goodness-of-fit indices indicated that a two-factor model provided a better fit than a single-factor model.

The sample (n = 1,299) in this study was generated from a large U.S. healthcare organization consisting of four divisions (Diagnostics, Inpatient, Outpatient, and Surgery) which provided a variety of healthcare services. At the time of data collection, this organization employed approximately 41,000 employees in approximately 650 independently operating facilities geographically dispersed across the United States.

In order to analyze the research questions, descriptive statistics, correlations, and hierarchical linear and logistic regressions were computed. Linear and logistic regression procedures were conducted to analyze the percentage of variance that was accounted for in the outcome variables of interest by the predictor variables of interest. Furthermore, specifying a hierarchy of models in the regression allowed for the manual entry of variables according to theory and previous research and provided insight into the unique and incremental predictive effects of one set of variables over another.

The key findings of this study can be summarized as follows. First, moderate to strong correlations were reported between the training reaction (i.e., affective and cognitive) sub-scales developed for this study, indicating overlap between constructs. However, findings from the factor analyses generally indicated a better fit for a two-factor model than a single-factor model. Furthermore, the results of the regression analyses appear to indicate that conceptualizing and instrumentalizing training reactions as a multidimensional construct are useful for predicting different outcomes. Second,

significant relationships were found between reactions to training and ACC. More specifically, while controlling for employee characteristic variables, both the ART and CRT each accounted for a significant amount of variance in ACC, over and beyond other predictors in the model. Third, a significant relationship was found between ART and learning. Fourth, when holding all other variables constant, employment class, ART, CRT, and ACC were significant predictors of volunteering behavior. Conclusions that have been drawn from this summary are presented next.

<div align="center">Conclusions</div>

Based on the results of the data analyses, several key conclusions can be drawn from this study. First, in regard to the training reaction scales developed for this study, while the strong correlations between the ART and CRT subscales and inconclusive EFA and CFA warrant some caution, results from the regression analyses appear to provide some evidence for a multidimensional training reaction construct. For example, when examining the relationships between the study's independent variables and learning, only the ART variable emerged as a significant and reliable predictor variable ($\beta = 0.2$, $p < 0.003$). Additionally, when examining research questions 1 and 3 of this study, both the ART and CRT subscales each represented a significant percent of total variance in the dependent variables (i.e., ACC and volunteering behavior), over and beyond the other training reaction scale as well as other predictors in the model. Therefore, overall, the results of the study analyses lead to the conclusion that while some revisions could be made to the training reactions scales to improve their psychometric properties, there appears to be some discriminant validity between the ART and CRT constructs.

Second, in regard to research question 1 (which examined the relationships between reactions to training, employee characteristics, and ACC), participants' reactions to training were significant predictors of ACC. When both the ART and CRT variables were regressed simultaneously on ACC, while controlling for employee characteristics, a significant model emerged ($F = 63.42$, $p < 0.001$, Adjusted R square = 0.278). These results indicate that, contrary to previous criticisms concerning the general efficacy of training reactions (e.g., Swanson & Holton, 2001), within the context of organizational change employee reactions to training may influence perceptions and attitudes toward organizational change. Furthermore, in regard to the ART and CRT individually, both reactions to training variables were reliable predictors of ACC, with $\beta = 0.34$ ($p < 0.001$) for CRT and $\beta = 0.22$ ($p < 0.001$) for ART. The squared semi-partial (part) correlations for were $sr2 = 0.02$ for ART and $sr2 = 0.05$ for CRT. Therefore, it can be concluded that both the ART and CRT variables predict a significant percent of the total variance in ACC over and beyond the other training reaction scale as well as other predictors in the model.

Third, in regard to research question 2, which examined the relationships between training reactions, ACC, employee characteristics, and learning, the following was concluded. The main results of the hierarchical regression analysis showed that only the ART variable predicted learning. A significant overall model emerged ($F = 3.05$, $p = 0.004$, Adjusted R square = 0.02) when the ART, CRT, ACC, and employee characteristic variables were regressed simultaneously against the learning variable. However, when controlling for other variables in the equation, only the ART variable emerged as reliable predictor of learning ($\beta = 0.2$, $p < 0.01$, $sr2 = 0.01$).

Finally, in regard to research question 3, which examined the relationships between training reactions, ACC, employee characteristics, and volunteering behavior, the following was concluded. A significant cumulative model emerged, accounting for 14% to 24% of the variability, when the ART, CRT, ACC, and employee characteristic variables were regressed simultaneously on volunteering behavior. Furthermore, the ART, CRT, and ACC variables together significantly contributed to the prediction of volunteering behavior over and above the employee characteristic variables. Four of the seven variables in the analysis—employment class, ART, CRT, and ACC—had significant partial effects. Therefore, it was concluded that all the primary variables of interest (ART, CRT, and ACC) individually and together are significant and meaningful predictors of volunteering behavior. While the employee characteristic variable, employment class, was also a statistically significant predictor of volunteering behavior (i.e., employees who were other than full-time employees were 14 times less likely to engage in volunteering behavior), this result can likely be attributed to a constraint that part-time employees had significantly less time at work to volunteer to support the change initiative.

Discussion

In this section, study findings were interpreted and discussed in terms of their relationships and principal implications. Furthermore, the results were compared with findings from previous research studies and extant theory.

Training Reactions

Organizations often use training programs as a means of equipping employees with the knowledge and skills required for the implementation of an organizational

change (Tannenbaum et al., 1991; Worley et al., 1995). While most research on change-related training outcomes has focused on the degree to which training impacts knowledge and skills, some researchers have noted that change-related training may have a significant role in shaping employees' attitudes toward organizational change as well as other performance-related outcomes (Jacobs & Russ-Eft, 2001; Torraco & Swanson, 1995). However, the existing literature has provided very little empirical research concerning the impact of employees' perceptions of training on change-related attitudes and outcomes (Holton, Bates, & Ruona, 2000; Sitzman et al., 2008; Tan et al., 2003).

The results of this study suggest that training reactions are related to important change-related attitudes and outcomes. Research question 1 of this study, which examined the relationships between reactions to training and ACC, demonstrated that both ART and CRT are significantly related to ACC. Together, ART and CRT accounted for 27% of the variance in ACC. Individually, ART and CRT each accounted for 2% and 5% of the variance in ACC, respectively, above and beyond other predictors. These results appear to support previously conducted research (e.g., Alliger & Janak, 1989; Tannenbaum & Yukl, 1992; Warr & Bunce, 1995), which suggests that CRT measures are more closely related to other change-related outcomes such as trainee learning and performance than ART.

The results for research question 1 support the view that planned training may support broader organizational change goals (Jacobs & Russ-Eft, 2001; Worley et al., 1995), rather than just traditional individual development objectives and outcomes. The results imply that training should be viewed as a key enabler in the change management process because employees' perceptions and reactions related to the training may

influence the formation of attitudes toward the organizational change which, once formed and institutionalized, may be difficult and costly to modify.

The results for research question 2 of this study indicate that ART had a small but significant impact on the ability to predict participants' post training knowledge test scores. Entering the training reactions into the regression equation after the employee characteristic variables provided an opportunity to assess their ability to explain any unique variance in learning above and beyond that explained by the other variables examined in the study. Despite this, participant affective reactions still contributed to the prediction of learning. While the increase in multiple-R was relatively small, affective reactions did increase the predictive power of the model. It should be noted that the large sample size provided sufficient statistical power to detect even small effects. If this study were to be replicated on a smaller sample, perhaps participant affective reactions might not contribute significantly to the regression equation

Previous research has offered differing views regarding the usefulness of training reactions. Some researchers have decried the overuse of training reactions in practice and noted that there is no theoretical reason to expect that affect would be related to learning outcomes (Alliger et al., 1997; Holton, 1996; Hook & Bunce, 2001). However, others have countered that training reactions can influence learning as well other organizational outcomes (Brown, 2005; Noe, 1986; Warr, Allan, & Birdi, 1999). This latter position is consistent with affect theory and research, which suggest that affect has consequences for learning (Pekrun, 1992).

The results of this study showed that ART are significantly related to learning. However, the results of research question 2 also appeared to support the position that

ART and CRT are not of great value in evaluating learning outcomes in light of the relatively small contribution that the training reactions made to the prediction of the learning scores. A possible explanation for this may be that the training reaction measures developed for this study were fairly broad and generalized in nature and, therefore, not very precise measures in identifying and predicting specific learning outcomes such as learning.

One of the most interesting findings of this study came from the results of research question 3, which examined the relationship between training reactions and volunteering behavior. The results from question 3 showed that both ART and CRT are significantly related to volunteering behavior. For every one unit increase in ART, volunteering behavior increased by a factor of 1.49. For every one unit increase in CRT, volunteering behavior increased by a factor of 1.92.

While several previous studies have explored the relationship between training reactions and learning outcomes with mixed results, few studies have examined the relationship between training reactions and behavioral outcomes. Given the mixed results regarding the relationship between training reactions and learning, some have concluded training reactions should typically have even less of an impact on actual performance or behavior (Alliger & Janak, 1989; Alliger et al., 1997; Dixon, 1990; Noe & Schmidt, 1986; Ruona et al., 2002; Warr & Bunce, 1995). However, this study's findings suggest that both CRT and ART have a stronger relationship with behavioral outcomes that with learning outcomes. Although these findings are not consistent with previous conclusions about the usefulness of training reactions, the findings linking ART and CRT with behavior are consistent with attitude theory and research.

According to the current prevailing models of attitude theory, affective and cognitive sources of information contribute to the formation of attitude which, in turn, influences behaviors (Crano & Prislin, 2006). A recent meta-analysis by Glasman and Albarracin (2006) exploring the attitude-behavior relationship suggested that:

> people form attitudes more predictive of behavior when they are motivated to think about the object they are considering . . . construct their attitudes on the basis of information that is relevant to the behavior, receive or generate either positive or negative information about the object. (p. 814)

The results from question 3 provided support for attitude theory in that when people attend training, they are motivated to think about the change and begin to generate affective or cognitive responses toward the change initiative. Therefore, if people enjoy the change-related training or if people perceive that the change-related training is useful to them or the organization, they are more likely to engage in behaviors such as volunteering, which are aligned with their evaluations and attitudes.

Although this study had no way of causally connecting training reactions to attitudinal, learning, or behavioral outcomes, the analyses performed in this study indicate that training reactions are more closely associated with attitude constructs (i.e., training reactions explained 27% of the variance in ACC) and behavioral outcomes (i.e., training reactions explained between 13% and 22% of the variance in volunteering behavior) than with learning outcomes (i.e., training reactions explained 2% of the variance in learning). Indeed, given this study's results and previous research findings on the limitations of training reactions for predicting learning outcomes, one might conclude that the value of training reactions lies in other non-learning-related outcomes of interest

to organizations. For example, in the context of an organizational change initiative, training is often the first significant exposure an employee has to the change. In this context, training reaction measures may serve as leading indicators which provide management and organization development professionals with important information concerning the nature and strength of attitude the employee is likely to develop toward the change, as well as the likelihood that the employee will demonstrate behaviors which support the organizational change.

Multidimensional Nature of Training Reactions

The results of this study provided some support for the multi-dimensional conceptualization and operationalization of training reactions (Campbell et al., 1993; Kraiger et al., 1993). The training reaction scales used in this study were self-developed but based on several previous conceptualizations of types of trainee reactions (Alliger et al., 1997; Ruona et al., 2002; Tan et al., 2003). The reactions to training items were categorized into two dimensions: (a) affective reactions and (b) cognitive reactions. To assess the underlying dimensions of the training reaction items developed for this study, exploratory and confirmatory factor analyses were conducted.

Overall, the results of the factor analyses indicated that a two-factor model was a better fit than a single-factor model and provided moderate support for the validity of the two proposed underlying dimensions of training reactions. Furthermore, the results of the regression analyses showed that it is useful to conceptualize and instrumentalize training reactions as a two distinct dimensions. The results of questions 1 and question 3 showed that while both CRT and ART predicted ACC and volunteering behavior, CRT was more closely related to ACC and volunteering behavior than ART. The results of question 2

showed that while ART predicted learning, cognitive reactions did not. Conceptualizing and measuring training reactions as a uni-dimensional construct would not allow these distinctions to emerge. With that said, there is some overlap in the training reaction instrument used in this questionnaire and further attention should be given to refining the measurement between the ART and CRT training reaction dimensions.

Findings regarding the multidimensional nature of training reactions and their relationship with attitudes and behaviors also provided support for persuasion models of attitude formation and change. Persuasion models of attitude change focus on the factors that drive attitude change and attitude-behavior consistency (Crano & Prislin, 2006). According to attitude theory and persuasion models, cognitive and affective sources of information work in combination to form attitudes; the greater the degree of consistency between affective and cognitive sources of information, the stronger the attitude-behavior relation will be (Haddock & Zanna, 1999; Rosenberg, 1968). The results of this study showed that persons who reported high levels of ACC and engaged in volunteering behavior also tended to have high levels of both ART and CRT.

In summary, this study's findings regarding training reactions provided evidence contrary to previous claims that the use of training reaction items are of little to no value (Swanson & Holton, 2001). While this study and previous studies have shown that training reactions do not appear to be of great value in predicting learning outcomes, they may provide valuable information concerning employees' change-related training experiences and the likelihood that employees will develop attitudes and engage in behaviors that support organizational change. This study also supported the position that training reactions are multidimensional in nature, and while more work should be done to

refine their measurement, recognizing the existence of different forms of training reactions is illustrated by findings of their differential association and strength of association with change-related outcomes.

Implications of Employee Commitment for Implementing Organizational Change

As organizations encounter changing demands in the market and business environment, they must also find ways to renew the organization's direction, structure, and capabilities in order to survive and grow. Therefore, an organization's ability to effectively conceptualize, design, and implement appropriate strategies and initiatives to meet the needs of the market and business environment becomes a competitive differentiator (Todnem-By, 2005). Pfeffer (1998) argued that an organization's ability to implement strategic initiatives is especially critical, given that even the most elegantly designed strategy will not work if it is not implemented effectively.

Employee commitment to change has been identified as a critical factor for determining the success of a change initiative, particularly in the implementation phase of an organizational change (Armenakis & Bedeian, 1999; Coetsee, 1999; Pfeffer, 1998). However, while theory and literature have long posited the importance of employee commitment to change, it has only recently become the focus of empirical investigation (Cunningham, 2006; Herscovitch & Meyer, 2002; Meyer et al., 2007). These studies have focused primarily on the link between commitment to change and outcomes such as employee effort and performance.

The results of this study showed that ACC is significantly related to levels of volunteering behavior. For every 1 unit increase in participant's ART, the odds of volunteering behavior increased by a factor of 1.49. This study's findings are generally

consistent with other recent studies examining the relationship between ACC and behavioral support for organizational change (Cunningham, 2006; Herscovitch & Meyer, 2002; Meyer et al., 2007). However, training reactions, particularly CRT were also found to be significantly related to volunteering behavior. Therefore, from a limited resources perspective, one might ask why it is important to focus on employee attitudes towards change when this study's results shows that CRT account for more variance in volunteering behavior than ACC? Is it sufficient for those seeking to implement change to just focus on ensuring that change-related training events elicit the desired positive affective and cognitive reactions? Previous research and theory posits that attitudes, once formed, tend to persist and be fairly difficult to change. Therefore, from a change management perspective, a greater long-term benefit would be gained from fostering employee attitudes that support the change than on events that elicit temporal affective or cognitive reactions. However, this study's findings also beg questions regarding the attitude formation process. For example, what are the factors that sustain employee commitment to change and its association with volunteering behavior over extended periods? What is the appropriate sequential application of these factors? Further research is needed in this area in order to better understand the causal links between attitudes and desired outcomes.

Insights on the Structure and Formation of Attitudes toward Change

In addition to replicating and extending recent findings regarding the linkage between commitment to change and behavior, this study also provided some insight into theory regarding the structure and formation of attitudes toward organizational change. According to Crano and Prislin (2005), most attitude theorists "accept the view that an

attitude represents an evaluative integration of cognitions and affects experienced in relation to an object. Attitudes are the evaluative judgments that integrate and summarize these cognitive/affective reactions" (p. 347). Therefore, early in the change process when people are first exposed to information regarding a pending change (e.g., during a change-related training event), they begin to form attitudes toward the change based on their cognitive and affective reactions to the information they receive (Lines, 2005). Furthermore, in regard to the relative contributions of affect and cognition in the formation of attitudes, while there is some debate over the primacy of affect versus cognition (Haddock & Zanna, 2000; Zajonic, 1980), inherent in most attitude theory and research is the assumption that attitudes are formed primarily through cognitive processes (Ajzen, 2001). Finally, in regard to the link to behavior, some research has shown that while the affective and cognitive reactions contribute to forming the attitude, it is the attitude that is more accessible and prevails in the individual's memory over the course of time (Haddock & Zanna, 1999). Therefore, once the attitude toward the organizational change is formed, the attitude becomes the primary agent for influencing outcomes such as resistance or behavioral support for the change (Holland et al., 2002; Petty et al., 2004; R. C. Thompson & Hunt, 1996).

Summarizing the above, according to attitude theory, attitudes are hierarchically structured. At the lower level of the hierarchy, affective and cognitive reactions cause the attitude, with cognitions taking primacy over affect in the attitude formation process. Then, in turn, attitudes cause behaviors, with attitudes taking primacy over reactions as they are solidified, stored in the memory, and then accessed and reinforced when the attitude object is encountered again (Lines, 2005). Therefore, a hierarchical model of

attitudes has implications for this study's findings. First, cognitive reactions should account for more variability in attitude than affective reactions. Second, attitude should account for more variability in behaviors than affective or cognitive reactions.

The results of the hierarchical regression analyses conducted in this study provided some support for a hierarchical model of attitude toward change. Question 1, which examined the relationship between reactions to change-related training and ACC, provided support for a hierarchical model. Analyses showed that CRT were more closely associated with attitude than ART. This finding lends further support for claims of the primacy of cognition over affect in the formation of attitudes (Ajzen, 2001).

However, the results of question 3, which examined the relationships between ART, CRT, ACC, and volunteering behavior, showed mixed support for a hierarchical model of attitude. While commitment to change accounted for more variability in volunteering behavior than ART, CRT accounted for the greatest amount of variability in volunteering behavior. This finding is inconsistent with the hierarchical assumptions of attitude theory in which attitudes should be more closely associated with behaviors than reactions.

There are several potential interpretations for the mixed results for question 3. First, the study survey was administered to participants after completion of the training session. While attitude formation is believed to occur fairly rapidly and the hierarchical assumptions of attitude theory imply that attitudes are more closely related to behaviors than reactions, there is no clarity in attitude theory regarding how much time is required before affective and cognitive reactions combine to form a prevailing attitude with a strength and valence that would supersede the strength and valence of affective and

cognitive reactions toward the attitude object. Therefore, the results of question 3 may provide a snapshot into the attitude formation process in which participants' attitudes toward the change were still forming and being solidified from their combined affective and cognitive reactions.

Second, the focus of ART and CRT items used in this study was on tapping participants' reactions to change-related training. In other words, the object or target of employees' reactions was the change-related training and not the change initiative itself. While it is likely that individuals' affective and cognitive evaluations of change-related training would be very closely linked to their affective and cognitive evaluations of the organizational change initiative itself, especially if the training event was their first exposure to the organizational change initiative, training reaction items are a proxy at best and do not directly tap the study participants' affective and cognitive reactions to the change initiative as a distinct attitude object.

In conclusion, this study's findings provided some support for theoretical claims that employee commitment is a key to the successful implementation of an organizational change initiative (Armenakis et al., 1999; K. J. Klein & Sorra, 1996). Additionally, this study's findings regarding training reactions do not support previous claims (Swanson & Holton, 2001) that training reactions are not associated with important individual or organizational outcomes. Rather, within the context of organizational change, employee reactions to change-related training may provide valuable information concerning the likelihood that employees will develop attitudes and engage in behaviors that support the organizational change initiative. Finally, the results of this study supported the position that training reactions are multidimensional in nature, and while more works needs to be

done to refine their measurement, distinguishing between dimensions may be useful for predicting different outcomes.

<div align="center">Recommendations for Future Research</div>

Overall, the contribution of this research is substantive in that the study demonstrated that employee commitment to change and employee reactions to change-related training are associated with behavioral outcomes which could impact the success of an organizational change initiative. However, much remains to be understood about the relationships between these variables. Therefore, the following recommendations are suggested for future research.

Additional research is needed in understanding the causal links between affect, cognitions, and the formation of attitudes and behaviors within the context of organizational change. A limitation of this study is that study variables were measured at only one point during the change implementation, limiting the ability to assess changes in employees' reactions, attitudes toward change, and behavior over time. Longitudinal research which examines how change management events, such as additional training and communications (and employees' affective and cognitive reactions to these events), might impact employee attitudes toward change and behavior over the entire change process would be of great value in identifying causal relationships. Furthermore, longitudinal research on commitment to change would also contribute to understanding and validation of the hierarchical structure and function of attitude theory (Lines, 2005).

Additionally, future research that employed structural equation modeling (SEM) techniques could be particularly informative in helping to understand the causal relationships, hierarchical nature, antecedents, and moderators of training reactions,

commitment, learning, and volunteering behavior. SEM is a statistical method for testing the validity of a theory about causal links among variables by testing corresponding and alternative models (Gall, Borg, & Gall, 1996). According to attitude theory, affective and cognitive sources of information contribute to the formation of attitude which, in turn, influences behaviors (Crano & Prislin, 2006).   Applying the assumptions of attitude theory to this study, suggests that employee's attitudes of commitment to change should moderate the relationship training reactions and volunteering behavior. Future research could use SEM methods to statistically confirm whether commitment moderates according to theory or test alternative models to determine which causal model provides the best fit.

Second, since reactions to change-related training and ACC were shown to be related to the outcome of volunteering behavior, it is recommended that more research be conducted on the antecedents and moderators of these variables. For example, it would be useful to understand the differences and similarities in the antecedents to ART versus CRT. Although some work indicates that ART and CRT share some antecedents (Saavedra & Kwun, 2000), it is likely that they also have their own unique set of causes.

For example, research and theory on persuasion, reviewed in Chapter 2 of this study, provided some direction regarding potential moderators for cognitive and affective reactions to change-related training. In persuasion models of attitude change, message and source, in concert with motivation and ability to process information, determine how people react emotionally and rationally to a position (Chaiken & Trope, 1999). Persuasion theory would suggest that a majority source (i.e., someone who is like the audience receiving the message) deliver change-related training to increase the likelihood

that an audience will react positively and rapidly accept the message. Also, concerning the message, persuasion models hold that if messages delivered in a training event concerning the proposed organizational change are strong (e.g., rational, factual, well-structured, stated tactfully), they will persuade; if not, they will fail to persuade (O'Keefe, 1990) and may also elicit negative affect (D. L. Nelson & Quick, 2006).

Regarding moderators or antecedents to ACC, previous research on commitment theory (H. J. Klein et al., 2009; Meyer & Allen, 1997; Meyer & Herscovitch, 2001) has shown that individual differences, as well as enduring preconditions within the organizational environment, may predispose employee attitudes toward change. For example, individual differences in openness and ability to cope with change may contribute to a commitment propensity (H. J. Klein et al., 2009). Enduring preconditions within the organizational environment may also positively or negatively prime employees' reactions. For example, some research on organizational cynicism (Reichers, Wanous, & Austin, 1997) suggested that affective states are developed over time, and theories of procedural justice predict that perceived fairness in how the change process is structured and carried out will influence attitudes toward change (Konovsky, 2000).

Third, further refinement of training reaction measures is recommended. Items used to assess ART and CRT were developed for this study based on Alliger et al.'s (1997) meta-analytic study, which differentiated between affective reactions and cognitive reactions to training. To assess the construct validity and proposed underlying dimensions of the reactions to training instrument developed for this study, an EFA and CFA was conducted. The results from the factor analysis were mixed because, while all goodness-of-fit indices indicated that a two-factor model provided a better fit than a

single-factor model, the fit indices for the two-factor model ranged from "good" fit to "moderate" fit. Therefore, future research should further explore the underlying dimensions of the reactions to training scale in other populations and their predictive relationship to other outcome variables.

Fourth, it is recommended that future studies explore the antecedents of other components of commitment to change, such as the normative and continuance forms of commitment proposed by Herscovitch and Meyer (2002). This study focused on the affective component of commitment to organizational change given that (a) the affective form of employee commitment to change has shown to be the most promising form in terms of positive change-related behaviors (Cunningham, 2006; Herscovitch & Meyer, 2002; Neubert & Cady, 2001) and (b) exploration of those variables that may be antecedents to employee ACC has been limited. This study found that employees' experience in and reaction to change-related training may influence the formation of employees' attitudes toward the organizational change initiative itself. However, no studies to date have been conducted on the common and unique set of factors that would influence the formation of the continuance and normative components of commitment to change (Meyer et al., 2007).

Finally, being careful about making generalizations with regard to change-related attitudes and behaviors across different groups is important as well. Although demographic characteristics were not related, for the most part, to study variables, it should be noted that generalizations of these findings to other population should not be made. Rather, the generalizability of this study's findings is limited to the degree to which other populations resemble the one studied. The population in the current study

consisted of employees of a large healthcare organization. Thus, future studies should explore relationships between the antecedents and consequences of commitment to change in different populations and cultures (Meyer et al., 2007) to determine the extent to which findings could be replicated and generalized in wider populations and settings.

Recommendations for Practice

In this section, recommendations are made with regard to implications of this study for HRD practitioners. Based on the conclusions of this study, the following recommendations can be made.

First, this study's results indicate that employees' reactions to change-related training may influence attitudes and behaviors that are critical to the success of a change initiative. HRD practitioners should consider viewing training events, within the context of an organizational change initiative, as important windows to influence outcomes that will have consequences for the long term success of the change program. Attitude theory and research has suggested that once an attitude is formed, it can be very difficult to change (Lines, 2005). For the HRD practitioner and for the organization, this means that if initial change-related training events are not designed and delivered so as to elicit positive affective and cognitive reactions from the participants, significant additional effort and cost may be required in order to generate buy-in and behaviors that will support the change. Therefore, HRD practitioners can contribute significantly to the strategic objectives of the organization by designing change-related training events that result in positive affective and cognitive reactions. This is in contrast the position that training reactions are of little value and HRD practitioners should not concern themselves with these types of evaluations (Swanson & Holton, 2001). Rather, positive reactions to

change-related training events could be characterized as "early-wins" and create positive momentum for the change initiative as information about the change is diffused throughout the organization.

Second, HRD practitioners should keep in mind that there is no one-size-fits-all when it comes to managing change. It is important for HRD practitioners to remember that employee attitudes toward change are complex; there will be many different perspectives on the proposed change. HRD practitioners often focus too heavily on the managerial goals for the change initiative when framing messages that are delivered in training or communications. Use of messages reflecting the language of management, such as cost reduction, revenue growth, and profit targets, may do little to elicit positive affective reactions from line staff or shop-floor organizational members. Although HRD practitioners cannot cater and attend to all the individual beliefs and emotions when implementing change, HRD practitioners do have considerable discretion to help organizations choose and design change programs that are congruent with organizational members' concerns and organizational change objectives. Therefore, a primary role and first steps of the HRD practitioner in the context of change should be to encourage dialogue between groups and levels within the organization in order to gain insight into the often unspoken needs and wants of the various parties.

HRD practitioners should consider differences in employment characteristics or demographics when designing change programs. A case in point is this study's finding regarding employment status and volunteering behavior. Study participants who were full-time employees were 13 times more likely to engage in volunteering behavior than employees who were of part-time, pool, or temporary employment status. Significant

differences were not found by employment status in reactions to training or commitment to change. Therefore, it is reasonable to conclude that employment status is a constraint on volunteering behavior as employees who work less than full-time, although equally committed to change as their full-time colleagues, probably do not have the same time or opportunity to volunteer to take on additional change initiative-related responsibilities. However, if constraints such as these are not considered by HRD practitioners and options for participation or learning are not provided to these individuals, the organization may, over the long term, create ambivalence or resistance to the change for a large portion of organizational members.

As HRD practitioners seek to further their understanding of the relationships among HRD practices, employee attitudes, and behaviors within the context of organizational change, HRD practitioners will be better equipped to drive strategic competitive advantage by building the organization's capability to respond and adapt to change. Finally, an understanding of these relationships will also aid HRD practitioners in helping organizational members find greater fulfillment and meaning in the workplace as people are accounted for and considered as central to the realization of the organization's strategic goals and future success.

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APPENDIX A: SURVEY

Group ID #: 111
Survey Module #: 384

Module Description:
The following statements represent possible opinions that you may have about the (organization) Revenue Cycle Internal Controls Change Initiative and Training Program. Your participation in this survey is very much appreciated. Please note that:

- Your participation in this survey is voluntary
- Your responses to this survey will be used to improve the change program and training
- Responses to this survey will only be used in aggregate for reporting purposes. Therefore, no information will be included in any report that makes it possible to identify individuals.

Module Instructions:
Please indicate the degree of your agreement or disagreement with the questions by choosing the answer that best represents your point of view.

Scale:
- **A.** Strongly Disagree
- **B.** Disagree
- **C.** Slightly Disagree
- **D.** Neither Agree Nor Disagree
- **E.** Slightly Agree
- **F.** Agree
- **G.** Strongly Agree

#	Item	Scale
1.	I found this training program to be enjoyable	ART
2.	I was satisfied with the overall quality of the training	ART
3.	The training was informative and interesting	ART
4.	I am glad I participated in the training	ART
5.	The training has helped me understand what is expected of me in my day-to-day work activities	CRT
6.	The training was of little practical value (R)	CRT
7.	Participating in this training will help me perform my job better	CRT
8.	The training materials will serve as useful references for me when I am on the job	CRT
9.	I believe in the value of this change	ACC
10.	This change is a good strategy for this organization	ACC
11.	This change serves an important purpose	ACC
12.	I think that management is making a good decision by implementing this change	ACC

APPENDIX B: LEARNING MEASURE

Multiple-Choice Test Items

Group ID #: 111
Exam Module #: 384

The questions below relate to topics covered in the training session. Please select the best answer for each question by selecting the check box next to the answer options.

1. When the Registrar makes sure the patient's data is accurate in the patient accounting system, this is an example of a _____
    ☐ Control Objective
    ☐ Control Activity
    ☐ Assertion
    ☐ Material Weakness

2. The automated charge description master being properly approved within Mednet/Patcom is an example of _____
    ☐ Assertion
    ☐ Significant Deficiency
    ☐ Control Objective
    ☐ Control Activity

3. Which one of the following is part of the "Collection Phase" of the Revenue Cycle?
    ☐ Posting payments from a third party payer
    ☐ Coding accuracy and compliance
    ☐ Explanation of patient financing options
    ☐ Late charge tracking

4. When the Biller is processing a claim, she depends on the Registrar to have verified the patient's insurance before she admitted the patient to the facility. What type of internal control does the Registrar perform?
    ☐ Preventative
    ☐ Detective
    ☐ Significant
    ☐ None of the above

5. The revenue cycle includes all of the following, <u>except</u>?
    ☐ Pre-Registration
    ☐ Claims Processing
    ☐ Payroll
    ☐ Charge capturing

6. Internal Controls are important to [Company]'s Revenue Cycle because they help:
   - ☐ Ensure compliance with applicable laws and regulations
   - ☐ Increase operational efficiencies
   - ☐ Ensure reliability of reporting
   - ☐ All of the above

7. It is not necessary for the individuals who manage the Intake portion of the Revenue Cycle to understand Collection portion activities?
   - ☐ True
   - ☐ False

8. Charge Capture, Coding, CDM Pricing, and Claims Processing all fall under which portion of the Revenue Cycle?
   - ☐ Intake
   - ☐ Billing
   - ☐ Collections
   - ☐ Reporting