UNDERSTANDING SWIFT TRUST IN TEMPORARY INTERORGANIZATIONAL RELATIONSHIPS

by

TAMMY E. BECK, B.B.A., M.B.A.

DISSERTATION
Presented to the Graduate Faculty of
The University of Texas at San Antonio
in Partial Fulfillment
of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION
WITH AN EMPHASIS IN ORGANIZATION AND MANAGEMENT STUDIES

THE UNIVERSITY OF TEXAS AT SAN ANTONIO
College of Business
Department of Management
August 2006

UNDERSTANDING SWIFT TRUST IN TEMPORARY

INTERORGANIZATIONAL RELATIONSHIPS

APPROVED BY SUPERVISING COMMITTEE:

Cynthia A Lengnick Hall
Dr. Cynthia Lengnick-Hall, Chair

Mark L. Lengnick-Hall
Dr. Mark Lengnick-Hall

Tina M. Lowrey
Dr. Tina Lowrey

Donde Plow
Dr. Donde Plowman

Accepted: Judy Hannagan
Dean, Graduate School

DEDICATION

To my husband, Robert; your unwavering love and constant encouragement allowed me to achieve this dream. To my children, Danny and Hannah; thank you for being proud of your Mom. May you find as much joy in learning and education as I have found. To my parents, Tim and Mary; your support and faith in me continue to motivate my endeavors.

ACKNOWLEDGEMENTS

"The same Creator who names the stars also knows the names of the seven souls we mourn today. The crew of the shuttle Columbia did not return safely to Earth; yet we can pray that all are safely home." - President George W. Bush (Feb 1, 2003)

I want to first acknowledge the tremendous sacrifice the crew of STS-107 Space Shuttle Columbia made for our country. Their courage, bravery, and dedication to the pursuit of space exploration remain an inspiration for us all. In some small way, may this dissertation be an honor to their memory. I express my gratitude to the Federal Emergency Management Agency, Region VI and the Environmental Protection Agency, Region VI for allowing me access to the Columbia disaster recovery site and interview access to members of the response team. Similarly, I express my thanks to Dr. Greg White and the staff at the UTSA Center for Infrastructure Assurance and Security, for granting me access to their cyber-terrorism training exercises. Also, I am indebted to Executive Assistant Fire Chief Daniel Snell of the Houston Fire Department, and Bob McKee and Jim Yeager of the Texas Engineering Extension Service for allowing data collection within their respective organizations.

I am very grateful to my advisor, Dr. Cynthia Lengnick-Hall, for her exceptional support, guidance, insight, and most importantly for her friendship. I would like to extend my thanks to the rest of my committee, Dr. Mark Lengnick-Hall, Dr. Tina Lowrey, and Dr. Donde Plowman, for their invaluable direction and assistance in the completion of this dissertation.

I will remain forever indebted to the superb group of faculty, staff, and students at the University of Texas at San Antonio. Especially, I appreciate the camaraderie of my classmates, Stephanie Thomas Solansky, LaKami Baker, Robert Griffith, and Craig Armstrong. I received tremendous joy and personal satisfaction from these relationships and from this experience.

July 2006

UNDERSTANDING SWIFT TRUST IN TEMPORARY INTERORGANIZATIONAL RELATIONSHIPS

Tammy E. Beck, Ph.D.
The University of Texas at San Antonio, 2006

Supervising Professor: Cynthia Lengnick-Hall, Ph.D.

Increased understanding of collaborative activity among organizations is necessary given today's competitive environment. The rapid escalation of competition, the diminished opportunities for sustained competitive advantage, and prevalent resource constraints mean that multiple organizations must sometimes work together to achieve organizational objectives that no one organization could achieve independently. Thus, continued research is needed to understand more clearly possible factors that lead to synergy in interorganizational activity. One such factor, *swift trust*, is the focus of this research. Swift trust is a collective psychological state that is based on positive expectations of the intentions or behavior of another group. It develops in temporary systems and forms to manage conditions of situational vulnerability, uncertainty, and risk. The present research provides several contributions to the understanding of swift trust. First, the development and validation of the Swift Trust Scale resulted in a useful measurement tool for future studies on swift trust. Second, findings from two empirical studies suggest that swift trust influences behavioral intentions in ways that are similar, yet different, to conventional organizational trust. Third, the specification and acceptance of superordinate goals and deference to expertise appear to positively influence the behavioral consequences of swift trust in organizations, yet they do so in different ways. Ultimately, findings from the studies within this research project suggest that swift trust has the potential to play a key role for organizations involved in temporary collaborative efforts.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Chapter 1: Introduction, Background, and Research Questions

On February 1, 2003 the Space Shuttle Columbia broke apart over the skies of East Texas. The shuttle itself dispersed during the re-entry phase with material remains following patterns similar to those found in ballistics investigations. A search and response area of approximately 40,000 square miles resulted due to the pattern of dispersion, the number of Space Shuttle components, and the speed and altitude at which Columbia was traveling. The defined search area, extending throughout East Texas and into Louisiana, equated roughly to an area the size of the State of Tennessee. Within minutes of the tragic event, emergency responders were called to and arrived at multiple disaster scenes. An emergency response that started with tens to hundreds of personnel responding within the first few hours following the disaster peaked two months later with approximately 6,000 individual responders actively involved in the recovery and analysis. Combined, the initial responders and the personnel committed to the response throughout the almost three and one-half month's duration represented well over 100 federal, state, local, and volunteer agencies.

Although each of the represented agencies contributed different skills sets, expertise, and personnel to the response, their combined efforts contributed to the achievement of three common goals: 1) to locate and recover the remains of the seven astronauts, 2) to ensure the safety of the population resulting from exposure to potentially hazardous materials, and 3) to recover Space Shuttle Columbia components and material (evidence that was used to help determine the cause of the disaster). In the final assessment, the coordinated efforts were judged a success. " 'This time government worked like it's supposed to work,' a congressional staffer declared, but he was unable to 'pinpoint exactly *why* the recovery operation was so successful'." ("Successful shuttle recovery required massive coop effort", 2003).

The Columbia Shuttle recovery was marked by two important contextual conditions. First, due to the response size, complexity, and scope, multiple organizations were required to participate collaboratively in order to accomplish the goals. No single organization possessed the knowledge, skills, or resources to accomplish the task alone. Success (i.e., meeting the three response objectives) was contingent upon combining the skills of multiple organizations and doing so in a synergistic way. Second, the coordinated activity and engagement was temporary in nature. Emergency response efforts, by their very nature, last only for the duration of the response and then cease once the objectives are reached, the involved parties realize that the objectives are unattainable, or further activity is no longer deemed appropriate.

These two contextual conditions (required collaborative efforts and a temporary setting) are not limited to the response efforts of the Columbia Shuttle disaster or to other emergency responses, for that matter. Organizations competing for profits in the marketplace also confront these same contextual conditions. For example, theater and movie production (L. P. Goodman & Goodman, 1972), construction projects, auditing engagements, advertising campaigns, and biotech innovation represent organizational settings that increasingly rely on the joint and temporary effort of multiple organizations. The case of the Columbia Shuttle response included multiple organizations working together temporarily to achieve a common goal. Although the organizations involved with this incident were mainly comprised of governmental agencies, the manner in which these organizations were required to work together temporarily mirrors a variety of segments in today's competitive business environment.

Understanding the success of the Columbia Shuttle response effort and similar temporary, unplanned cooperative business strategies requires consideration of multiple research streams. The remainder of this chapter includes discussion of each of the following research streams. One,

a general review of interorganizational activity provides the foundation for why firms increasingly join forces to survive the competitive environment. Two, the action-set literature provides the definitional boundaries for temporary interorganizational activity. Three, a review of extant research on trust in organizations summarizes a general model of organizational trust and highlights the construct's inherent assumptions. Finally, evaluation of the swift trust literature concludes with a general model of swift trust and the accompanying research questions that guided this dissertation.

1.1 Competitive Environment

Research regarding interorganizational activity is not a new theme in organization studies. It has been long recognized that organizations exist within a system or network of interacting organizations (Aldrich & Whetten, 1981; Evan, 1966; Van de Ven, 1976). Although organizations are separate and distinct from the environment in which they operate, they are nonetheless dependent on this same environment for human, natural, informational, and financial resources, and for market outlets for their products and services (Evan, 1966; Van de Ven, 1976; Warren, 1967). Study of interorganizational relations extends the limited range of organization theory and strategic management concerns related to *intra*-organizational phenomena, and broadens the research scope to account for the interactions and exchanges *among* organizations.

Today's competitive environment often encourages temporary cooperative strategies among organizations. Cooperative strategies are used to gain or maintain competitive advantage by working in concert with, as opposed to against, other organizations and can be seen in organizational combinations represented by cooperative linkages, strategic alliances, joint ventures, partnerships, and consortiums (Kanter, 1994; Kumar, Stern, & Anderson, 1993; Tyler & Kramer, 1996). Changing environmental conditions are precipitating the formation of these

cooperative arrangements. According to Goes and Park (1997), "fundamental changes in regulation, global competition, and technology have made it more difficult for firms to successfully compete alone." (p. 673) For example, the removal of previous barriers to industry competition, the increasing access to new geographic markets, and the rapid replacement of technology have stretched the resource limits for any single organization attempting to respond efficiently.

Additionally, the current operating environment is marked by conditions where competition is increasingly dynamic. Competition may fluctuate between relatively steady states of participating firms and spurts of new entrants and exits from the playing field. Competition boundaries likely extend beyond 'similar' firms, to firms seeking to gain access to market penetration through either forward or backward integration. States of heightened, escalating, and more aggressive competition are not limited to a few "technology-related" industries but can be found across virtually all industries. Because of these conditions, old strategic practices of the structure-conduct-performance view based on existing technology, competitive position, and given assets are no longer sufficient to account for the way firms compete today. As a result, firms increasingly rely on temporary strategic alliances to enter markets more quickly, gain access to new technology and/or resources, counter competitor actions, and reduce uncertainty in product development.

An alternative, hypercompetition (D'Aveni, 1994, 1995), or action-based strategy (M. J. Chen, Smith, & Grimm, 1992; Ferrier, 2001; Ferrier, Smith, & Grimm, 1999; L. G. I. Thomas, 1996), takes into account the near constant disequilibrium, change, and innovation realized in the current competitive environment. The rapid escalation and relentless dynamics of competition redefines both the boundaries of and potential organizational players involved in competition

(D'Aveni, 1995). Increasing numbers of potential competitors, who are making more and more varied strategic moves, are changing the way firms must compete. Opportunities for competitive advantage are often fleeting under these conditions and firms often find that temporary collaboration with other organizations is essential for strong performance. Actions and reactions among competitors explain competitive positioning and ultimately the sustainability of a strong competitive position (Ferrier et al., 1999).

As these competitive conditions suggest, it is rare for a single organization to have sufficient resources, or resources possessing ample capability, to meet the challenges and needs posed by the existing and future environment. In addition, complexity in the environment is forcing organizations to face situations with which they have no experience. As a result, firms likely will be required to operate and survive in competitive situations with demands that exceed their available resource pools (Goes & Park, 1997; Hunger & Wheelen, 2001). To address these constraints, cooperative arrangements offer organizations access to new or different technologies and capabilities; access to expanded markets, knowledge, ideas, and points of view; improved positioning in terms of risk; and the benefits of resource pools residing within other organizations (Alter, 1990; Goes & Park, 1997; Hunger & Wheelen, 2001). The pooling of resources across organizations is often necessary, but not sufficient, to insure competitive success. These linkages obtained through cooperative arrangements become beneficial and productive only when synergies between the organizational parties result in effective and coordinated interorganizational activities and processes (Goes & Park, 1997; K. G. Smith, Carroll, & Ashford, 1995).

Increased understanding of coordinated, cooperative activity among organizations and across independent business units is necessary for three reasons. First, prevailing conditions

suggest interactive forms of conducting business are not going away. Organizations today are often required to combine their resources to accomplish work that no single organization could accomplish alone. Resource constraints mean that multiple organizations must sometimes work together, even if on a temporary basis, to achieve organizational objectives that no one organization could achieve independently. Second, although these cooperative strategies are most often seen between independent organizations, they are often also found across autonomous business units or departments within the same organization, thus expanding the need to better understand this coordinated activity. Third, rapid escalation of competition and the diminished opportunities for sustained competitive advantage are requiring that competing firms join forces in order to take advantage of fleeting opportunities. In addition, not all cooperative activities can be anticipated and planned in advance. Continued research is needed to understand more clearly possible factors that lead to synergy from these types of interorganizational activity.

1.2 Temporary Interorganizational Activity and Action Sets

Although temporary and unplanned conditions were identifying characteristics of the Columbia Shuttle disaster response, these elements are not considered unusual or even unique to the personnel involved in emergency response cases. By functional design, emergency responders' involvement begins with an unplanned event (e.g., an emergency) and ends once responders resolve the emergency situation. Involvement does not continue indeterminately. From the outset, the cooperative activities are intended to be temporary. These types of temporary/unplanned operating conditions are not limited to emergency responders or even governmental agencies (as in the case of the Columbia Shuttle disaster). Business organizations also often rely on temporary and unplanned cooperative strategies to achieve operating goals. For example, firms may turn temporarily to new sources for inputs when existing suppliers encounter

production disruptions; or competitors temporarily join forces to take advantage of fleeting revenue opportunities. Correspondingly, organizational research also considers informal, short-term cooperative associations. Several authors have focused on just these types of temporary interorganizational forms.

Goodman and Goodman (1976) defined these "sets of diversely skilled people working together on a complex task over a limited period of time" (p. 494) as *temporary systems*. Later empirical research examined the formation and/or use of these temporary systems. For example, some researchers found that interorganizational coordination was affected by the basis of the temporary relationships among the organizations (i.e., legal, formal, or voluntary) (Hall, Clark, Giordano, Johnson, & Van Roekel, 1977). Others examined the origins of these relationships and found that task complexity, task uniqueness, task significance, and goal-specificity lead to the increasing use of temporary systems (R. A. Goodman & Goodman, 1976). Goodman and Goodman (1976) also empirically evaluated the management strategies of temporary groups in theater production.

Borrowing from the terminology of anthropologists, Aldrich and Whetten (1981) alternatively labeled these types of non-formalized, cooperative temporary groups as action-sets, specifically, "a group of organizations that have formed a temporary alliance for a limited purpose" and applied the term to the activities of a collection of organizations. This definition refines the temporary system definition by focusing on the organization level and specifying more clearly the types of situations in which action-sets apply. The "interacting group of organizations" (Aldrich & Whetten, 1981) is not constrained by the contextual circumstances that join the group members. An action-set characterization may apply to groups operating in situations considered planned or unplanned, crisis or stable, and formal or informal. Instead, the

distinguishing factors of action-sets are the limited purpose for which they are formed, and the focus on goal-directed behavior of the groups as a whole (Aldrich & Whetten, 1981). The action-set literature provides a useful frame for the present study because it reflects the two contextual conditions providing the foundation for this research project.

The restricted objectives for the cooperative action-set arrangements translate generally into the formation of temporary and collaborative associations between organizations. Joint efforts to achieve objectives are created "to carry out a project no single organization could accomplish" (Aldrich & Whetten, 1981). As such, "action-set research examines the purposeful behavior of an entire aggregate of organizations" (Aldrich & Whetten, 1981). According to Phillips (1960), effective action-sets are characterized by the number of organizational members (fewer members increase efficiency), the existence of a single powerful organization among the subgroups, and common values among members. Action-sets typically disband once the agreed upon objectives are met (Aldrich & Whetten, 1981).

The agencies that banded together to respond to the Columbia Shuttle tragedy reflected an action-set orientation. First, the organizations temporarily joined forces to address a national disaster. Secondly, these agencies agreed to pool their resources temporarily and achieve the defined response objectives that none could have accomplished independently. Finally, once the defined objectives were met, the agencies disbanded the collaborative efforts and resumed operating orientations reflecting more traditional self-interested purpose. Alone, however, the identification of this example as an action-set is insufficient for understanding the resulting effectiveness of the coordinated activity realized in the Columbia Shuttle response. The action-set identification merely establishes the requisite definitional elements of the cooperative behavior (Aldrich & Whetten, 1981) and suggests possible management implications for such

arrangements (R. A. Goodman & Goodman, 1976). However, responses recorded through interviews conducted with post-disaster agency individuals[1] suggest that trust was a key factor sustaining their effective coordination. For example, interviewees expressed that "building trust is (the) first part of relationships" and that "trust was important in that developing relationship." Understanding the success of the Columbia Shuttle response effort requires an understanding of both an action-set orientation and the development of interorganizational trust.

1.3 Trust in Organizations

Trust has received considerable academic attention at the individual and organization levels. At the individual level, trust is "conceptualized as an orientation toward society and toward others that has social meaning beyond rational calculations" (Tyler & Kramer, 1996) or as "based on an individual's theory as to how another person will perform on some future occasion" (Gambetta, 1988). Empirical studies have demonstrated that organization level trust is different from interpersonal trust (Doney & Cannon, 1997). Researchers rely on multiple definitions when evaluating trust at this macro level. For example, Ring and Van de Ven (1994) defined trust as a "confidence in the good will of the others in a given group and belief that the others will make efforts consistent with the group's goals". Even more simply, trust is "the belief that a party's word is reliable and that a party will fulfill its obligation in an exchange" (Mohr & Spekman, 1994). Mayer, Davis, and Schoorman (1995) built upon Gambetta's (1988) often-referenced definition of trust by describing it as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party."

---

[1] I conducted these interviews in April, 2003 while the Columbia Shuttle response effort was still on-going. Chapter 3, Section One includes details of the qualitative study sample, data collection methods, and data analysis techniques.

Cummings and Bromiley (1996) relied on a definition that broadly encompasses all the "socially embedded, subjective, and optimistic" (p. 303) characteristics found in these prior definitions. According to these authors, organizational trust is "a common belief among a group ... that another ... group: (a) makes good-faith efforts to behave in accordance with any commitments both explicit or implicit, (b) is honest in whatever negotiations preceded such commitments, and (c) does not take excessive advantage of another even when the opportunity is available" (Cummings & Bromiley, 1996). This latter definition is sufficiently robust to incorporate the primary elements of its predecessors.

Trust is often considered necessary for effective relationships in organizational settings. It has been shown to be related to firms' intentions to collaborate (Mohr & Spekman, 1994), greater relationship adaptability (Williamson, 1985), increased ability to cope with complexity (Luhmann, 1979), lower transaction costs in the time and effort required to cooperate (Nooteboom, Berger, & Noorderhaven, 1997), and reduced structures and controls to monitor compliance (Ring & Van de Ven, 1994). These examples combined with other work on trust (R. Gulati, 1995a; Jones & George, 1998; McAllister, 1995; K. G. Smith et al., 1995), suggests that trust can indirectly affect performance effectiveness through cooperation and coordination.

Figure 1-1 provides a general model of the conventional view of organizational trust. The factors considered relevant and necessary for the development of trust vary by study. In an effort to provide an integrative model of organizational trust, Mayer and colleagues (1995) summarized more than thirty previously cited antecedent factors identified as necessary for the formation of trust (See Appendix A). In addition to the antecedent factors, researchers have identified two accompanying elements, *time and repeated interactions*, necessary for firms to realize the beneficial outcomes of trust relationships. Mayer and colleagues (1995) have discussed trust as

an evolutionary concept that builds and evolves over time between the parties in a relationship. Nahapiet and Ghoshal also recognize "it takes time to build trust" (1998). This requisite of time results from the "repeated (successful) ... transactions" Ring and Van de Ven (1992) view as essential to the emergence of trust. As such, trust was proposed as a "cumulative product of repeated past interactions among parties through which they come to know themselves and evolve a common understanding of mutual commitments." (Ring & Van de Ven, 1994) In research on governance mechanisms of cooperative activity, Ring and Van de Ven (1992) suggested that "reliance on trust by organizations can be expected to emerge between business partners only when they have successfully completed transactions in the past."

The coordinated activity following the Columbia Shuttle disaster realized some of the beneficial consequences of classical trusting interorganizational relationships - collaborative efforts, ability to cope with complexity, lower transaction costs, and minimal compliance controls. In fact, the interviews conducted with post-disaster agency individuals recognized trust as a key factor sustaining their effective coordination. The trust realized in this case, however, was observed almost immediately between agencies that had limited or no past history of working together. However, the interview respondents were unable to articulate the precipitating reasons why trust developed quickly and without repeated interaction. Although the displays of organizational trust encountered in the Columbia Shuttle disaster response met the prior definitional boundaries of trust, the case failed to exhibit the specific factors researchers previously identified as necessary for successful trust relationships to develop.

Interview responses suggest several possible reasons for the rapid development of trust in the shuttle response efforts. These include: a national mandate generated from citizens' concern for the lives of the astronauts and the future of the country's space program; the geographical

scope of the disaster area which translated into greater potential risk of injury to citizens; the number of people involved in the recovery which increased task complexity and interdependence; and the immediate potential environmental hazards resulting from the chemical components used in Columbia Shuttle materials. Although these conditions were idiosyncratic to the Columbia Shuttle disaster response and not likely generalizable to more traditional interorganizational relationships they can be viewed as examples of more generic factors that do have wide generalizability.

Neither the action set literature nor the research on interorganizational trust is sufficient alone to explain the rapid formation of trust and subsequent effective operations evident in the Columbia Shuttle disaster response. However, research literature on similar temporary, coordinated activities between and within business organizations may provide insight. Researchers have given recent, yet limited, attention to another type of organizational trust - swift trust. The concept of swift trust incorporates a blend of trust development in action-set relationships and may provide insight into the speed of trust development observed and the effectiveness of the rapid, temporary coordinated activity in the Columbia Shuttle response.

1.4 Swift Trust in Temporary Groups

The Columbia Shuttle response provides an example in which two literature streams, action-sets and organizational trust, may have intersected to explain the effective interorganizational coordination. Exactly *how* did trust form so quickly and lead to effective activity, given the new and temporary nature of the organizational relationship? According to Meyerson, Weick, and Kramer (1996), success in these temporary relationships is dependent upon a previously unrecognized form of trust - "swift trust". Meyerson and colleagues (1996), propose that swift trust forms in temporary groups as a means to manage the vulnerability,

uncertainty, and risk found in collaborative situations. Their work builds from Goodman and Goodman's (1976) definition of temporary systems (i.e., the "set of diversely skilled people working together on a complex task over a limited period of time." (p. 494))

Swift trust differs from conventional trust in terms of its relationship to situational vulnerability, uncertainty, and risk. First, the degree to which parties perceive their vulnerability in the relationship affects trust formation. In temporary groups (or action-sets), where the level of interdependence is high, "everyone is comparably vulnerable", and as a result, parties within the group perceive the need for trust (Meyerson et al., 1996). Organizations generally attempt to reduce situational vulnerability by reducing their dependence on others, effectively adapting to or distancing oneself from environmental conditions, or, of particular interest here, presuming the other organizations involved are trustworthy. Greater interdependence increases the likelihood that the option of a presumption of trust will be selected. The authors suggested this trust presumption often actually leads to trusting behavior.

Second, the very nature of situations requiring the use of temporary groups also creates a sense of high uncertainty which also contributes to swift trust formation. Recurring or routine conditions and events are served more efficiently through longer-term, stable, or formal relationships. These are the kinds of relationships that allow conventional trust to develop through repeated interactions. Temporary groups, in contrast, are often formed "to deal with transient events" (Meyerson et al., 1996, p. 176) where optimal processes, interactions, and outcomes are generally unknown or unprecedented. In order to deal with high levels of uncertainty, "people should be inclined either toward complete trust or distrust, both of which provide more certainty" (Meyerson et al., 1996). Therefore in temporary groups, where uncertainty is high, organizational parties are inclined to rely on choices of strict trust/distrust to

reduce the situational uncertainty. As a result, trust (or the contrasting distrust) is expected to form more quickly between members of temporary groups because of the heightened uncertainty. Because a choice must be made quickly, there is no opportunity to learn through repeated interactions whether the other party is trustworthy, so the judgment must be based on other factors.

Finally, use of temporary groups often occurs because a situation creates demands no single organization could satisfy. This occurs not only from the lack of sufficient organizational resource diversity, but also often from the magnitude and complexity of the task situation. According to Meyerson and colleagues, "the formation of a temporary system signals the unavailability of any existing structure to handle what has become a significant but non-routine issue that needs a novel set of specialists who can meet a deadline." (Meyerson et al., 1996, p. 179) These demand conditions translate to sizable risk from a cost/benefit perspective. Failure to achieve the joint objectives carries with it the potential to adversely effect all participating organizations.

The three conditions of vulnerability, uncertainty, and risk were clearly evident in the Columbia Shuttle response. This particular incident was distinguished by a high degree of organizational resource interdependence making each agency vulnerable to the choices and actions of others, a complex response never previously encountered, and the social risk of failing to meet nationally determined objectives. Response efforts reflected the requisite conditions proposed by Meyerson and colleagues, and actually lend support to their claim for the formation of swift trust.

1.5 The Gap in Existing Literature and Research Questions

The existing literature on organizational trust provides support for a direct and indirect relationship between trust and interorganizational effectiveness. Some studies of swift trust suggest similar performance benefits for groups involved in temporary relationships. For example, Coppola, Hiltz, and Rotter (2004) found that the development of swift trust was related to teacher effectiveness in a virtual classroom setting. Similarly, much of the other empirical research in this area is based on the formation of swift trust in virtual groups.

Swift trust is a collective psychological state (and not just quick forming 'conventional' trust) that is based on positive expectations of the intentions or behavior of another group. It develops in temporary systems and forms to manage conditions of vulnerability, uncertainty, and risk. In addition, swift trust is dependent on perceptions of contextual conditions, the intentions to behave under given conditions, and is focused on action and commitment to a task (Jarvenpaa, Knoll, & Leidner, 1998; Meyerson et al., 1996) rather than on ways of relating to others. Conversely, conventional trust includes the feelings and thoughts from personalized beliefs focused on the anticipated behavior of another party.

Prior empirical studies of swift trust do not adhere consistently to these definitional boundaries. Three definitional inconsistencies evident in existing swift trust literature include: level of analysis, measures of swift trust, and methods used to assess the relative 'swiftness' of trust formation. The following sections discuss each of these inconsistencies more fully.

First, swift trust manifests the perceptions of a collective body. It forms within temporary systems, or groups of interacting people and/or organizations, but does not depend on relating among the group. Instead, swift trust formation results from an understanding of contextual conditions. Thus, the precipitating need for joint effort drives the collective level of analysis. The

fact that researchers conducted the majority of empirical work at the group/team and organizational levels of analysis (with most research focusing on virtual teams) reinforces this conceptual level of analysis. However, some researchers (see Harrison, Dibben, & Mason, 1997) performed their analysis of swift trust at the individual level, albeit in a temporary setting. According to the original conceptualization, this extends beyond the definitional boundaries of swift trust.

A second definitional inconsistency in swift trust studies centers on the measurement of swift trust. Extant research relies on either existing measures of 'conventional' organizational trust or coding of communication as representative proxies of swift trust. Both of these options appear problematic. Prior validated measures of organizational trust were developed based on the definitional boundaries of conventional organizational trust (i.e., affective and cognitive personalized beliefs focused on the behavior of another party developed over time and through repeated interactions). These existing measures do not incorporate the unique, contextually-based elements of swift trust (such as the contextual elements of temporary systems capable of managing conditions of vulnerability, uncertainty, and risk). As such, measures of conventional organizational trust seem inappropriate for use in measuring swift trust. The use of multiple different organizational trust measures further compounds this limitation. Similarly, research found verbal protocol/communication coding results consistent with established types of organizational trust (Harrison et al., 1997) or weighted more heavily on social maintenance than task achievement (Coppola et al., 2004) (both of which are definitionally inconsistent with swift trust).

Finally, the methods used to assess the "swiftness" with which trust develops also challenges the definitional boundaries of swift trust. The label of "swift trust" incorporates both

the setting conditions (i.e., temporary systems established in response to significant, non-routine situations) and the unique form of trust to manage these contextual conditions. Perhaps a misnomer, "swift" does not relate to the speed with which the trust develops (although much of the existing research assesses swift trust in this relative term). Swift trust instead is merely a label used to identify a form of trust that, when present, develops as a result of defined contextual conditions in contrast to repeated interactions. "Temporary systems act as if trust were present" (Meyerson et al., 1996, p. 167) right from the start. According to Meyerson and colleagues; swift trust "is not simply conventional trust scaled down to brief encounter among ... groups" (p. 167). Rather, swift trust is a unique psychological state reflecting particular contextual and organizational conditions. However, this time-based distinction is exactly the manner researchers use to measure swift trust. This form of trust consistently has been inappropriately assessed based on relative speed of trust development, generally using conventional measures of organizational trust. One substantial contribution from this research is the development of a conceptually congruent measure of the construct.

Together, these empirical inconsistencies call into question what we actually know about swift trust. It appears we need improved measurement precision and consistency, as well as operationalizations of swift trust based on the established definitional boundaries.

Based on research to date, are we able to say definitely that swift trust is in fact a distinct form of trust as Meyerson and colleagues (1996) propose? Current research findings cannot help us answer this question since they are based on measures of conventional organizational trust and are assessed in time-relative terms. In addition, the available empirical research provides conflicting results. Some suggest that swift trust is fragile and diminishes quickly in temporary groups (Harrison et al., 1997; Jarvenpaa et al., 1998) while others find a persistent form of trust

when an action-orientation is maintained (Coppola et al., 2004). There is still much to learn about swift trust. To begin, we need to know: a) whether swift trust is in fact different from conventional organizational trust, b) whether the contextual antecedents proposed by Meyerson and colleagues (1996) actually contribute to swift trust formation, c) whether any other antecedent factors contribute to swift trust formation, and d) whether swift trust is associated with organizational performance benefits.

The present research is expected to provide several contributions to our understanding of swift trust. One, the present research addresses the definitional/measurement gaps in existing literature on swift trust in temporary groups. Two, the present research incorporates an agenda focused on greater understanding of the behavioral outcomes of swift trust in temporary organizational arrangements. Evidence supports the indirect performance benefit of conventional trust (through improved cooperation and coordination). However, the swift trust research stream lacks parallel conclusions and adequate consideration of antecedents to and effects of swift trust, particularly at the organizational level. Finally, the present research explores improved clarity regarding swift trust boundaries and potential performance effects related to this form of trust. The first step towards boundary precision must address the distinctiveness of swift trust.

Research question #1: Is Swift Trust a unique form of trust, which is different from conventional Organizational Trust?

The swift trust research conducted to date is insufficient to answer this question conclusively. Although Meyerson and colleagues (1996) indeed propose that swift trust is a distinct form of trust, empirical results are equivocal and based on inappropriate measures and, thus, are inadequate to support this claim. The lack of a swift trust measure contributes to this deficiency. The first step towards answering Research Question #1 requires the development of a

measurement tool designed to capture the unique definitional elements of swift trust. The present research attempts to address the measurement tool deficiency by taking the following steps:

1. Develop a scale of items (i.e., a questionnaire) that incorporates the defined boundaries of swift trust,
2. Combine the swift trust scale with a validated scale of conventional trust,
3. Randomly sort the swift trust and conventional trust items into one scale,
4. Administer the scale to individuals involved in temporary groups, and
5. Determine whether the swift trust items are in fact distinct from the conventional trust items.

The statistical results of this process should allow for a better understanding of swift trust boundaries, and an answer to Research Question #1. The answer to Research Question #1 leads to two possible research paths: 1) where swift trust *is* distinct from organizational trust, and 2) where swift trust *is not* distinct from organizational trust. Different research agendas are expected for each of these paths, as the fundamental assumptions are different under each. However, the present research is limited to the path where swift trust is assumed to be distinct from conventional organizational trust.

1.6 The Distinctiveness of Swift Trust

A research agenda in which swift trust is determined to be a unique form of trust assumes that the research process outlined above resulted in a valid and reliable measurement tool and that the results obtained with this measurement tool demonstrate a systematic difference between swift trust and conventional organizational trust. Following the assumption that swift trust is different from conventional organizational trust, Figure 1-2 provides a possible representation of the two distinct forms of trust based on existing literature and research.

Figure 1-2 incorporates the empirical results from existing literature and compares conventional organizational trust with the competing views of swift trust. The dotted line represents conventional organizational trust and depicts the view that this form of trust develops

over time and through repeated interactions. Conversely, the solid lines illustrate the two conflicting conclusions reached in prior swift trust studies. One depicts the findings that suggest swift trust develops quickly, but is fragile and diminishes over time (Harrison et al., 1997; Jarvenpaa & Leidner, 1999). The solid line (A) that declines over time (See Figure 1-2) shows this perspective. The second solid line (B) in Figure 1-2 remains constant over time and reflects the findings that support swift trust persistence (Coppola et al., 2004). Figure 1-2 is merely a conceptualized representation of the distinctive forms of trust and to some extent depicts hypothesized relationships. However, an accurate graphical representation of trust development (both swift and conventional) requires further longitudinal, empirical analysis.

The actual rate of decline for the "fragile" swift trust has not been established in the existing literature. McKnight, Cummings, and Chervany (1998) propose that organizational parties may experience high levels of initial trust in new relationships. Their model suggests that dispositions to trust and trusting beliefs will lead to trusting intentions. They also recognize that situational constraints or personal dispositions may prevent high initial trust levels. McKnight, Cummings, and Chervany (1998) suggest that initial high trusting intentions may be either fragile (unstable and quickly changeable) or robust (do not change dramatically over time). But the field lacks empirical analyses into how these alternative states relate to actual swift trust development and subsequent performance benefits.

A second goal of the present study (i.e., subsequent to the development of a measurement tool of swift trust) is to assess the relationship between swift trust and interorganizational effectiveness. In doing so, this study attempts to provide analysis parallel to that conducted in the conventional organizational trust literature. Achievement of this research ambition requires analysis of the previously proposed antecedents to swift trust formation (Meyerson et al., 1996),

an assessment of the relationship between swift trust and interorganizational effectiveness, and an assessment of possible moderating factors influencing this relationship. Figure 1-3 provides a generalized model of the variables of interest for a research agenda that accepts the distinctiveness of swift trust.

A review of Figures 1-2 and 1-3 suggests several interesting questions associated with a research agenda related to swift trust. Four specific research questions follow.

Research Question #2: Is Swift Trust related to organizational effectiveness?

Prior conventional organizational trust research identified beneficial outcomes that range from lower transaction costs (Nooteboom et al., 1997) to improved organizational performance and competitive advantage (Jones & George, 1998). Similarly, research supports success in virtual classroom settings that exhibit swift trust (Coppola et al., 2004). However, comparable research is lacking at the interorganization level. Specifically, research is lacking on swift trust between organizations involved in temporary collaborative efforts. The interview respondents from the Columbia Shuttle response cited high levels of initial trust as a key factor in sustaining their effective coordination. These qualitative findings suggest that swift trust may be associated with interorganizational effectiveness.

Much of the research in conventional organizational trust suggests an indirect link between organizational trust and performance (i.e., some mediating factors derive from organizational trust and subsequently relate to performance benefits). A similar indirect performance relationship may be expected for swift trust as well. The mere presence of trust (conventional or swift) is unlikely to relate directly to organizational performance. However, the presence of trust (conventional or swift) is more likely to affect behavioral intentions and actions because one party trusts another party (e.g., "We are willing to share information with you

because we trust you."). Ultimately, positive effects from behavioral intentions and subsequent actual behavior could directly affect organizational performance through improved management of the contextual challenges facing organizations involved in temporary systems. Therefore indirectly, the higher the level of swift trust, the higher the performance level expected.

Research Question #3: What factors influence the relationship between Swift Trust and organizational effectiveness outcomes?

It seems intuitive that swift trust does not always form between organizations involved in temporary collaborative efforts and anecdotal evidence supports this idea. In fact, interview respondents at the Columbia Shuttle response easily recounted other similar high-profile collaborative efforts marked by conflict, self-interested behavior, and less than optimal results. Interview respondents described less-than-effective interorganizational efforts during the anthrax threat at the Federal Hart Building and also during the 9-11 response at the World Trade Center. Similar sub-optimal, interorganizational performance is evident in the emergency response efforts associated with 2005 Hurricane Katrina. This particular disaster response suffers from poor interorganizational communication, finger pointing and/or blame assignment for poor performance, and local and national stakeholders expressing dissatisfaction and frustration towards the organizations involved.

Although swift trust does not appear always to form between organizations involved in temporary collaborative efforts, it has occurred within some temporary interorganizational settings. A review of interview transcripts from nineteen members, representing six different organizations, of the Columbia Shuttle response suggests that some form of trust developed between organizations during the initial days of this disaster response effort. Interviewee responses offer some potential factors that may have enhanced the presence of swift trust.

First, when asked what their organizational goals were, the interview respondents commonly identified the overall goals of the coordinated efforts and not the goals of their own organization. Each accepted and identified with higher-order superordinate goals (i.e., goals that could not be accomplished by one organization alone (Sherif, Harvey, White, Hood, & Sherif, 1961)). Findings from the Columbia Shuttle response suggest that identification with a superordinate goal may be associated with magnifying the relationship between swift trust and interorganizational effectiveness. The greater the proportion of involved organizations identifying the same superordinate goal, the higher the magnifying effect expected.

Second, several interview respondents suggested that they trusted others to take responsibility for decision making in areas where they were 'expected to' have expertise. Since most of the participating organizations had no prior experience working together, their expectations regarding others' expertise and/or knowledge came from other sources. These expectations originated most often from organizational functional reputations logically accepted within even the general population. For example, others deferred to the EPA to handle environmental issues and to NASA to project the Shuttle flight path and for debris identification – resulting in each organization retaining influence over their area of expertise. Weick and Sutcliffe (2001) offer this *deference to expertise* as one feature of successful, high reliability organizations (HRO's). They suggest that HRO's "push decision making down" where decisions are made by (and authority resides with) people who have the most expertise, regardless of rank. Columbia Shuttle response interview respondents noted a similar deference to expertise (although this deference to expertise was given externally to other organizations), which suggests that deference to expertise may also be associated with magnifying the relationship between

swift trust and interorganizational effectiveness. The higher the level of deference to expertise, the higher the magnifying effect expected.

Research Question #4: Is Swift Trust related to the development of conventional Organizational Trust?

Many researchers have identified factors associated with the development of organizational trust (See Appendix A). The search for contributory factors is valuable as organizational trust is associated with performance benefits. Since swift trust has not been examined empirically as a construct that is distinct from conventional organizational trust, the relationship between the two constructs has not been explored. The two forms of trust may be related or totally unrelated. We might expect that trust formed during the initial stages of temporary cooperative relationships (e.g., swift trust) is later associated with trust that builds through time and repeated interactions (e.g., conventional organizational trust). In effect, the initial encounter based on swift trust may provide one 'prior interaction' necessary for the development of organizational trust. Alternatively, since the basis of swift trust is more contextual and the basis of conventional trust is more relational, swift trust may be improbable as an antecedent factor to organizational trust formation. In fact, McKnight and colleagues (1998) suggest that the methods by which trust forms in new relationships differ from those by which it forms later. They propose that initial trust forms as a result of intentions and beliefs, while later-forming trust stems from knowledge gained through experience. Therefore, conclusions regarding the relationship between swift and conventional organizational trust require further analysis.

Research Question #5: Is Swift Trust temporal or persistent?

Swift trust literature to date provides conflicting results on whether swift trust is fragile and diminishes or whether it is persistent and enduring. Additional research is needed to provide resolution in this debate. An answer to this question requires measurement of swift trust over multiple points in time – particularly at the beginning and end of temporary organizational relationships. The 'shape' of swift trust may assume at least three different forms. First, swift trust may diminish over time due, perhaps, to changes in contextual conditions or the recognition that other involved parties are not trustworthy. Second, swift trust may persist as long as the contextual conditions that demand temporary collaborative effort remain. Third, it seems possible that swift trust might even increase further (i.e., strengthen) beyond initial levels (as conventional organizational trust typically does) due to the passage of time and the chance for further interaction. Conclusions regarding the temporal shape of swift trust require further analysis.

1.7 Potential Research Contributions

The present research addresses several of these research questions and seeks to make multiple contributions to the understanding of organizational trust. The first contribution includes the development of a measure of swift trust (i.e., included as part of the process outlined to answer Research Question #1). The measure will incorporate the definitional boundaries of swift trust as outlined by Meyerson, Weick, and Kramer (1996) and allow for more precise analysis of the distinction between swift trust and conventional organizational trust. In doing so, this measure extends prior theoretical development work (Meyerson et al., 1996) and also provides a uniform tool for use in future studies of swift trust. As the present study intends to demonstrate discriminant validity between swift trust and the Organizational Trust Inventory (OTI) (see the process outlined to answer Research Question #1), the process of scale creation and validation of

swift trust should also provide further validation for the OTI, which is often used to measure conventional organizational trust.

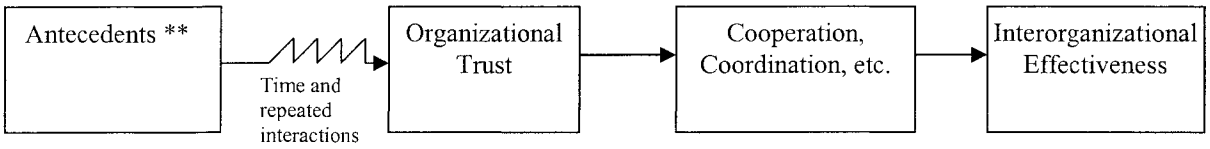
A research agenda based on the premise that swift trust is distinct from conventional organizational trust offers its own potential contributions. First, this research path proposes the identification and analysis of potential new factors that may enhance the presence of swift trust and its relationship to organizational outcomes. Additionally, this line of research seeks to assess the explanatory potential of swift trust and its effect on intermediate performance effects in temporary interorganizational efforts.

In addition, contributions include the practical managerial implications related to initial operating conditions between organizations involved in temporary efforts; specifically related to the identification and acceptance of superordinate goals and the willingness to defer to expertise. Organizational managers possess the ability to control or manipulate both of these potentially influential factors. Thus, the present study also will provide practical guidance for managers who want to increase their firm's potential for developing swift trust in future interorganizational relationships.

1.8 Overview of Remaining Chapters

Organization of the remainder of the present research study on swift trust in temporary organizational relationships follows in this format. Chapter 2 provides a literature review of the theoretical support for the variables of interest within this study. This literature review includes theoretical development and empirical findings from existing research that provide the necessary link and foundation for the propositions developed within this chapter. Specific variables of interest include: organizational trust, swift trust, contextual antecedents of swift trust (i.e., vulnerability, uncertainty, and risk), potential effectiveness outcomes (i.e., intentions to

communicate and cooperate/collaborate), superordinate goal, and deference to expertise. Chapter 3 provides the methodology used in the study and begins with a summary of testable research questions derived from the theoretical analysis of Chapter 2. The research sample and process of data collection and analysis are also included in Chapter 3. Chapter 4 reports the statistical analysis and related findings. Chapter 5 summarizes the overall research findings and offers both research conclusions and managerial implications as a result of this work.



** See Appendix A

FIGURE 1-1
A Model of Conventional Organizational Trust

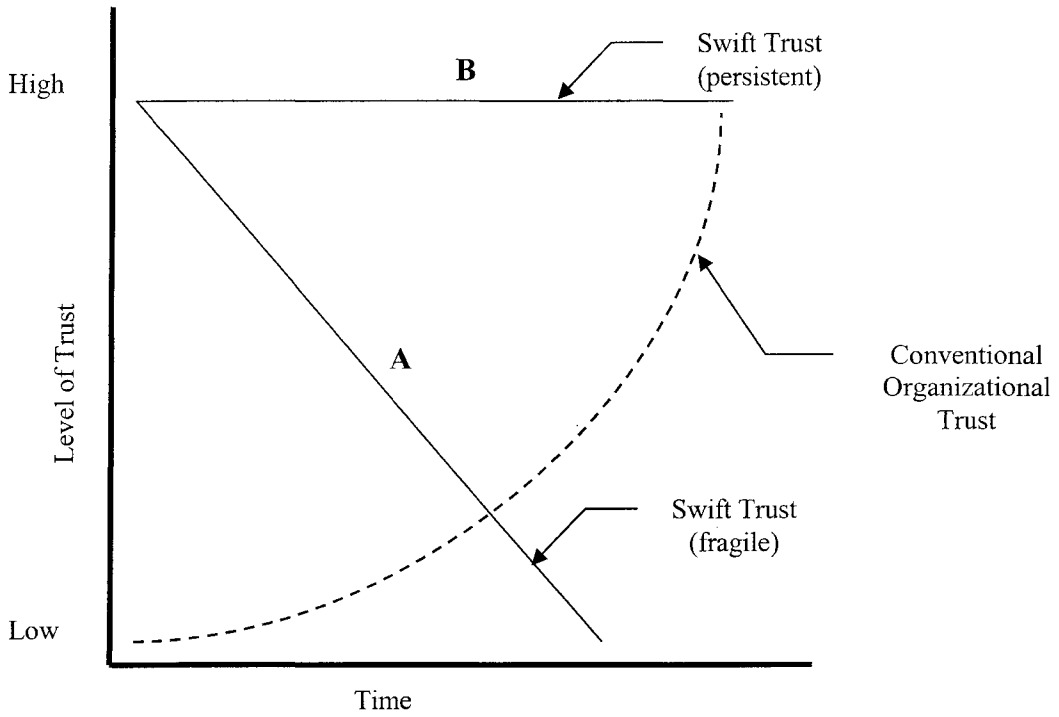


FIGURE 1-2
Swift Trust versus Conventional Organizational Trust

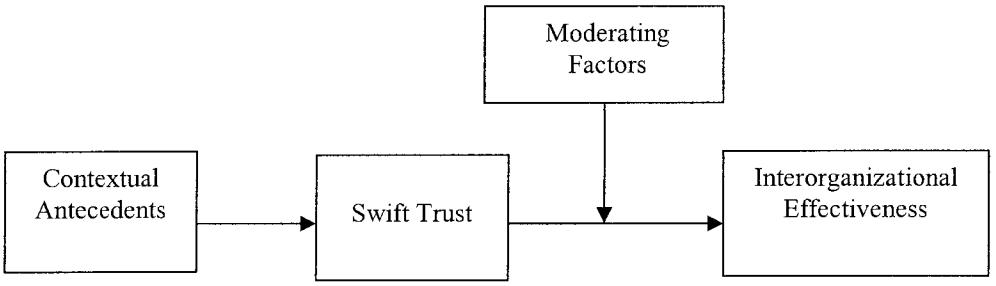


FIGURE 1-3
A General Model of Swift Trust

Chapter 2: Literature Review and Propositions

This chapter provides a literature review of the theoretical support for the variables of interest within this study. Specific variables of interest include: (1) organizational trust (i.e., conventional trust), (2) swift trust, (3) superordinate goals, and (4) deference to expertise. In addition, this chapter considers the relationship swift trust has with an organization's intention to communicate and intention to collaborate and the ultimate relationship of these intentions to interorganizational performance. The following sections discuss each of the variables of interest separately. Each section incorporates a summary of the existing literature on the subject matter and then identifies a link between existing literatures and the research questions posed in Chapter 1. Each section concludes with a proposition of the relationship between the variables of interest.

2.1 Trust

As noted in Chapter 1, trust has received considerable research attention. Trust at the organizational level has been found empirically to be different from interpersonal trust (Doney & Cannon, 1997). As detailed in Chapter 1 researchers have proposed a number of different definitions when evaluating trust at the macro level:

- "confidence in the good will of the others in a given group and belief that the others will make efforts consistent with the group's goals". (Ring & Van de Ven, 1994)
- "the belief that a party's word is reliable and that a party will fulfill its obligation in an exchange" (Mohr & Spekman, 1994).
- "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party." (Mayer et al., 1995)
- "a common belief among a group ... that another ... group (a) makes good-faith efforts to behave in accordance with any commitments both explicit or implicit, (b) is honest in whatever negotiations preceded such commitments, and (c) does not take excessive advantage of another even when the opportunity is available" (Cummings & Bromiley, 1996).

This last definition is sufficiently robust to incorporate the primary elements of its predecessors and encompasses all the "socially embedded, subjective, and optimistic" (p. 303) characteristics found in these prior definitions. Therefore, this study relies on the definition of organizational trust developed by Cummings and Bromiley (1996).

In addition to the definitional components of conventional organizational trust, researchers have identified two accompanying elements – time and repeated interactions – necessary for trust development. Mayer and colleagues (1995) discussed organizational trust as an evolutionary concept that builds and evolves over time between the parties in a relationship. Nahapiet and Ghoshal also recognize "it takes time to build trust" (1998). This requisite of time results from the "repeated (successful) … transactions" (p. 489) Ring and Van de Ven (1992) view as essential to the emergence of trust. These authors also suggest that in order for organizations to rely on trust, the business partners must have successfully completed transactions in the past.

In an effort to propose an answer to Research Question #1 (i.e., Is Swift Trust a unique form of trust, which is different from conventional Organizational Trust?), the following sections first focus on the definitional elements of both organizational trust and swift trust. Following these definitional reviews, the subsequent section provides a comparative summary of the two forms of trust and proposes an answer to Research Question #1 based on this comparison.

2.1.a Conventional Organizational Trust. This section reviews a single validated measure of organizational trust. The definition of organizational trust adopted within this study provides the basis for this measure. In an effort to assess the trust between units in organizations or between organizations, Cummings and Bromiley (1996) developed and validated the Organizational Trust Inventory (OTI). Prior empirical research related to organizational trust had

been either anecdotal, used single-item scales, or relied on non-validated measures of trust. The OTI was intended for use as a reliable and validated survey measure of organizational trust.

Cummings and Bromiley (1996) proposed organizational trust as a three-dimension construct comprised of:

1. belief that an individual/group makes a good-faith effort to keep commitments,
2. belief that an individual/group is honest in negotiations preceding commitments, and
3. belief that an individual/group does not take excessive advantage given opportunity.

In addition, the OTI was developed on the assumption that trust should be assessed across three components: an affective state (the way people feel), a cognitive state (the way people think), and as an intended behavior (the way people intend to behave). This multi-dimension, multi-component definition of trust resulted in a 3 X 3 (i.e., nine cell) matrix of trust as a belief. As such, the OTI survey was constructed to incorporate items reflecting each of the nine cells.

Although organizational trust is theorized at the macro level, the fundamental unit of analysis is the individual level within the organization. In effect, individuals as a collective comprise the representative link for the presence or absence of trust between organizations. This sequence is described as "emergence" and is a bottoms-up process that describes the manner in which lower-level properties emerge to form collective phenomenon (Klein & Kozlowski, 2000, pp. 15-17). Emergence can be characterized as two types: composition and compilation. Organizational trust is the composition type, based on the assumption of isomorphism, describing phenomena that are essentially the same as they emerge upward across levels. Organizational trust emerges from the shared, homogeneous perceptions of organizational members. Thus, individual trust and organizational trust are essentially the same construct, although there are some qualitative differences at higher levels.

Scoring of the OTI is calculated for each individual respondent who is completing the items on behalf of their organization. The scores obtained following OTI administration are intended to be summed across all items to result in a total organizational trust measure – higher total scores indicate higher levels of organizational trust. Although the sample used for OTI validation was limited to the organizational unit level, recent empirical studies evaluating the effects of organizational trust have relied on the OTI for between-organization analysis. Organization-level studies by Kostova and Roth (2002) and Kuhlmann and Schumann (2002) have incorporated use of modified items from the OTI and their significant findings provide additional support for use of the OTI at the organizational level.

2.1.b Swift Trust. According to Meyerson, Weick, and Kramer (1996), success in temporary groups is dependent upon a previously unrecognized form of trust – "swift trust" – that possesses unique properties and therefore should be considered a distinct construct. Although the authors failed to define swift trust explicitly, Meyerson and colleagues did propose explicitly that the formation of swift trust relates to contextual, social, and cognitive mechanisms. This research draws from their work to define swift trust as positive cognitive perceptions and expectations of behavior among groups within temporary systems formed to manage conditions of vulnerability, uncertainty, and risk.

Contextually, swift trust unfolds in temporary systems. Temporary systems are "sets of diversely skilled people working together on a complex task over a limited period of time"(R. A. Goodman & Goodman, 1976). There are two important distinctions within this boundary condition. One is that swift trust is a group or organizational level phenomenon (i.e., sets of people working together). The second is that swift trust develops despite the lack of time and repeated interactions. In fact, Meyerson and colleagues (1996) suggest that temporary systems do

not provide sufficient time "to engage in the usual forms of confidence-building activities that contribute to the development and maintenance of trust in more traditional, enduring forms of organization" (p. 176).

From a social and cognitive perspective, Meyerson and colleagues (1996) suggest that swift trust represents "a unique form of collective perception and relating that is capable of managing issues of:

(a) vulnerability (i.e., resulting from - interdependence with others, lack of role clarity, possible harm from another to goods/things we value, or likely future interactions)
(b) uncertainty (i.e., an estimation of how the other party will act before one can know for sure or the uncertainty inherent in the context in which action is taking place), and
(c) risk (i.e., exposing oneself to a situation where the possible damage may be greater than the advantage sought)." (p. 167)[2]

There are three important characteristics within these definitional boundary conditions. One, as with conventional organizational trust, is that swift trust occurs at the group or organizational level (i.e., is a collective phenomenon). Individuals as a collective comprise the representative link for presence or absence of swift trust between organizations. Therefore, swift trust is what Klein and Kozlowski (2000) describe as a shared unit property; that is, a construct that is shared by members of a unit. According to their research, "shared unit properties are presumed or hypothesized to originate in individual unit members' experiences, attitudes, perceptions, values, cognitions, or behaviors and to converge among group members as a function of attraction, selection, attrition, socialization, social interaction, leadership, and other psychological processes. In this way, shared unit properties emerge as a consensual, collective aspect of the unit as a whole." (Klein & Kozlowski, 2000)

---

[2]Developed from Meyerson, Weick, and Kramer (1996). Parenthetical phrases added.

The second is that swift trust develops less based on an affective state (the way people feel), and more based on cognition (the way people think) and as intended action (the way people intend to behave) (Meyerson et al., 1996, p. 191). The third is that *context* substantially controls the development of swift trust. According to Meyerson and colleagues (1996), "trust in temporary systems is disproportionately influenced by the context in which the system forms" (p. 175). The contextual setting includes the degree of vulnerability, uncertainty, and risk faced by the participating organizations. Thus, swift trust forms based upon a cognitive understanding of the setting rather than an affective or cognitive understanding of how other organizations might behave.

2.1.c Conventional Organizational Trust versus Swift Trust. To summarize, research in conventional organizational trust indicates that this form of trust is a collective assessment of how another organization will behave during interactions with a focal organization. Organizational trust is based on feelings, thoughts, and behavioral intentions of a collective of individual organization members. It is also relationship dependent. This type of trust develops over time and through repeated interactions between organizations. Comparatively, swift trust literature suggests that swift trust is also based on a collective assessment between interacting organizations. However, swift trust is situation and context based (i.e., dependent on recognizing the vulnerability, uncertainty, and risk within the environment). Swift trust forms during the initial contact between organizations, before significant interactions have occurred, and forms due to conditions within the environmental setting. In addition, swift trust is presumed to form as a result of cognitive understanding rather than feelings toward the other organization. Given the definitional differences between these two forms of trust, we should expect these two concepts to

be distinct. These definitional distinctions provide theoretical support to propose the following answer to Research Question #1:

Proposition #1: Swift trust is a distinct construct that is different from conventional organizational trust.

Figure 2-1 highlights the variable of interest (box in bold), with swift trust coded as "P1".

2.2 Contextual Antecedent Conditions

This section provides further detail related to the contextual conditions associated with the development of swift trust. Sufficient understanding of the antecedent factors to swift trust formation is necessary to propose possible performance outcomes associated with the presence of swift trust. Organizational outcome behaviors are expected to be associated with the conditions precipitating swift trust formation. The subsequent discussion begins with the theoretical foundation offered by Meyerson and colleagues (1996) pertaining to the antecedent factors of swift trust. Additional literature support for each of the antecedent contextual conditions (i.e., vulnerability, uncertainty, and risk) follows. Subsequent sections then propose performance consequence of swift trust and include discussion of why these performance consequences are expected given the antecedent contextual conditions.

The theoretical development of swift trust suggests that this type of trust forms under temporary conditions marked by a clear, common goal whose achievement depends on coordinated activity among participating members (Meyerson et al., 1996). Further, the temporary conditions depend on collaborative effort due to situational complexity, needs for diverse skill sets, and the lack of existing, permanent organizational structures to handle the situation. Under these defined conditions, "trust must be conferred presumptively or *ex ante*" (Meyerson et al., 1996, p. 170). Participating organizations trust each other because the situation

demands it. They must trust others (without assessing through repeated interactions if the others are actually trustworthy) in order to accomplish the common objectives. According to Meyerson and colleagues (1996), swift trust unfolds in these settings to manage the high degrees of situational vulnerability, uncertainty, and risk.

2.2.a Vulnerability. Vulnerability represents a state where one party has discretion over something of value to another party (Jacobs, 1974; Meyerson et al., 1996). For example, one organization becomes vulnerable when another organization could damage its reputation or adversely affect its productive output. Vulnerability presents itself along with the situational demands that accompany the use of temporary systems. Temporary systems are characterized by (Meyerson et al., 1996):

- participants that have limited prior working relationships,
- tasks that are complex and involve interdependent activity,
- task that are non-routine and not well understood by all, and
- continuous interrelating during the course of the collaborative activity.

As such, participating organizations are dependent on relative strangers for accomplishing a task that requires some form of interorganizational effort. Interdependence is central in the use of temporary systems, and interdependence is associated directly with vulnerability. As a result, under situations that call for temporary systems of organizations, "everyone is comparably vulnerable" (Meyerson et al., 1996, p. 172). According to Meyerson and colleagues, one way that organizations attempt to reduce the vulnerability is by presupposing that the other organizations are trustworthy and choosing to trust swiftly (partly because they have no other choice); with this swift trust formation being influenced by the context.

Vulnerability may also be associated with situations marked by conventional organizational trust. For example, 'non-temporary' or permanent organizational formations may experience vulnerability due to functional dependence or task ambiguity, with this vulnerability

found as related to organizational trust development (Costa, 2003; Jacobs, 1974; Mayer et al., 1995). Organizational trust (as defined by Cummings and Bromiley, 1996) is based on the belief that another will behave in accordance with commitments, is honest in negotiations, and/or does not take excessive advantage of another. Vulnerability under these conditions comes from allowing oneself to engage with another who may not behave according to these beliefs. There is an important distinction in the vulnerability associated with swift trust and the vulnerability associated with conventional organizational trust. Vulnerability under conditions demanding swift trust derives from the situation or context. Organizations become vulnerable *as a direct and inevitable result of the context*. Vulnerability under conditions associated with conventional organizational trust derives from choosing to engage in a relationship with another. Organizations become vulnerable *as a result of their choice* to trust, interact with, and potentially become dependent on another.

2.2.b Uncertainty. Uncertainty has been defined as an individual's perceived inability to predict something accurately (Milliken, 1987). For example, organizations may experience uncertainty when forecasting outcomes of novel environmental situations or when assessing the likely behavior of another organization. As with vulnerability, uncertainty presents itself along with the situational demands that accompany the use of temporary systems. Organizations participating in temporary systems are likely to encounter situations with which they have limited or no experience and where they are required to collaborate with unfamiliar organizations.

Under conditions of high uncertainty, organizations should move toward "complete trust or complete distrust" (p. 177) to provide greater certainty and better use of monitoring resources and efforts (Meyerson et al., 1996). According to Meyerson and colleagues (1996), one way that

organizations attempt to avoid the uncertainty inherent in these temporary settings is "to be more trusting or more distrusting than the data warrant, simply in the interest of ...getting on with the task" (p. 177). By choosing to trust 'blindly', organizations allow progression of the interorganizational effort and also forego cost of risk reduction mechanisms; that is, until the other organization engages in unacceptable behavior. Likewise by choosing not to trust initially, organizations may enter the collaborative effort by utilizing contractual safeguards. Either choice results in movement towards the goal of joint task achievement, but does so through different means.

Most organizations involved in the Columbia Space Shuttle response had no prior working interactions, but chose to 'blindly' trust the other participating organizations. For example, when NASA asked for volunteers (i.e., internal employees and the US military) to assist in the search for shuttle material, they received few. There were insufficient slack human resources within their own organization and the US military was engaged in Afghanistan. Therefore, when the National Forest Service volunteered the necessary manpower (approximately six thousand firefighters), NASA embraced the offer despite their lack of prior working relations. This choice allowed the search for material to begin immediately and to continue over the three and one-half months disaster response.

Uncertainty may also be associated with situations marked by conventional organizational trust. For example, 'non-temporary' or permanent organizational formations may experience uncertainty surrounding the appropriate methods for task performance (Costa, 2003), the use and choices of tactics in negotiated exchanges (Molm, Takahashi, & Peterson, 2000), and future behavior of organization collaborators (Bachmann, 2001). These sources of uncertainty have been found to relate to organizational trust development. Organizational trust (as defined by

Cummings and Bromiley, 1996) is based on the belief that another will behave in accordance with commitments, is honest in negotiations, and/or does not take excessive advantage of another. Uncertainty under these conditions comes from the possibility that another may not behave according to these beliefs. There is an important distinction in the uncertainty associated with swift trust and conventional organizational trust. Uncertainty under conditions demanding swift trust derives from the situation or context. Organizations experience uncertainty *as a direct and inevitable result of the context*. Uncertainty under conditions associated with organizational trust derives from choosing to engage in a relationship with another. Organizations experience uncertainty *as a result of their choice* to engage in an interdependent relationship with another and the possibility that the other may not behave in the organization's best interest.

2.2.c Risk. Risk is present when a party chooses to expose itself to a situation where costs or potential loss may be greater than advantages or potential gains. For example, an organization may risk survival by choosing to cease production of existing products in exchange for newly developed products, or by sharing technological innovations with competitors. As with vulnerability and uncertainty, risk presents itself along with the situational demands that accompany the use of temporary systems. Organizations participating in temporary systems subject themselves to large risks and potential damage just by their involvement in the temporary system. Under situations that call for temporary systems of organizations, "everything is risked every time" (Meyerson et al., 1996, p. 179). Although risk is great in these circumstances, temporary systems form despite these threats.

According to Meyerson and colleagues (1996), one way that organizations attempt to make the risk tolerable is by choosing to trust immediately the other involved organizations, thereby instilling some balance in the cost/benefit disparity. In situations that call for the use of

temporary systems, success is dependent upon effective collaborative effort while failure has repercussions for all involved. Ultimately, organizations choose to trust because the risk associated with misplaced trust is less than the risk associated with the situational demands. The risk of misplaced trust stems from potential opportunistic behavior by another, with the opportunistic party being a potential source of recourse. In contrast, the risk inherent in temporary systems stems from the significant conditions that cannot be adequately dealt with by a single organization – the situation is consequential for all.

The choice to trust others allowed organizations within the Columbia Space Shuttle response to bear the risk present in the extraordinary circumstances. For example, the National Forest Service volunteered to assist in search and recovery of shuttle material. This task entailed substantial risk to health, safety, and life. The Columbia Space Shuttle housed sixty-four tanks that contained fuels and gases of varying toxicity. NASA expected residuals from these fuels and gases to be present on some of the search material – a potential serious risk to the individuals involved in the search. As a result, the National Forest Service had to trust members of the EPA, with whom they had limited prior experience, to correctly evaluate the environmental dangers of shuttle material. This choice of trust allowed the National Forest Service firefighters to proceed with search and recovery efforts, and contributed to the ultimate recovery of 35% (by weight) of the Columbia Space Shuttle.

Risk may also be associated with situations marked by conventional organizational trust. For example, 'non-temporary' or permanent organizational formations may experience risk in exchange relationships due to the choice of trusting other parties (Bachmann, 2001; Mayer et al., 1995; Molm et al., 2000). Organizational trust (as defined by Cummings and Bromiley, 1996) is based on the belief that another will behave in accordance with commitments, is honest in

negotiations, and/or does not take excessive advantage of another. Risk under these conditions comes from allowing oneself to willingly engage with another who may not behave according to these beliefs. There is an important distinction in the risk associated with swift trust and conventional organizational trust. Risk under conditions demanding swift trust derives from the situation or context. Organizations become subject to risk *as a direct and inevitable result of the context*. Risk under conditions associated with conventional organizational trust derives from choosing to engage in a relationship with another in which opportunistic behavior may take place. Organizations become subject to risk *as a result of their choice* to put themselves in a position in which opportunistic behavior could create adverse effects for the focal organization.

2.3 Performance Relationship

This section considers the potential benefits related to the presence of swift trust. Specifically, this section addresses Research Question #2 – Is swift trust related to organizational effectiveness? The present study is based on two assumptions. First, the research assumes that swift trust and organizational trust are distinct constructs. The distinction between the two forms of trust originates from the definitional components and/or antecedents to each trust form's development. This assumption is tested in part one of the research project. Second, this study assumes that once trust is present between parties (whether the trust is organizational or swift), that this trust will guide organizational behavior. In other words, the outcomes of trusting relationships depend on the *presence* of trust, irrespective of *how* that trust developed. Thus, once trust is present (whether the trust is organizational or swift) participating organizations may realize benefits associated with trusting relationships. Therefore, swift trust outcomes are expected to mirror outcomes of conventional organizational trust.

This study assesses the outcome expectations related to the presence of swift trust. Existing research suggests that organizational trust can indirectly affect performance. For example, empirical analyses and theoretical development suggest that organizational trust is related to: firms' intention to collaborate (Mohr & Spekman, 1994), greater risk taking behavior (Mayer et al., 1995), increased ability to cope with complexity (Luhmann, 1979), lower transaction costs in the time and effort required to cooperate (Nooteboom et al., 1997), and reduced structure and controls to monitor compliance (Ring & Van de Ven, 1994). Research extends beyond just the relationships between trust and intermediary outcomes, and also considers the secondary relationship between the intermediary outcomes and performance. Ultimately, this research stream considers competitive advantage as one final outcome measure (Barney & Hansen, 1994).

Two intermediary outcomes associated with organizational trust appear particularly relevant when evaluating swift trust: (1) a firm's intention to communicate, and (2) a firm's intention to cooperate/collaborate. Each of these potential outcome variables is considered separately. The accompanying discussion includes the rationale as to why each of these outcomes might be expected in conditions associated with the development of swift trust.

2.3.a Intention to Communicate. Considerable research in organizational trust evaluates the relationship between trust development and communication. For example, communication frequency (Becerra & Gupta, 2003; Jarvenpaa & Leidner, 1999), the level of enthusiasm exhibited in communication (Coppola et al., 2004), the pattern and timing of communication (Jarvenpaa & Leidner, 1999), and the quality (e.g., accuracy, timeliness, credulity, etc.) of communication (Mohr & Spekman, 1994) are found to be related to trust

formation. In addition (and of interest here), trusting relationships exhibit increased likelihood for further communication between parties.

In their examination of prior empirical research on the main effects outcomes of organizational trust, Dirks and Ferrin (2001) suggest that high levels of trust between organizational partners have positive effects on workplace behavior including the increased likelihood of communication and information exchange. Their summary of empirical research highlights the positive and significant relationship between trust and the subsequent openness to communicate, amount of information sharing, and accuracy of information shared (Dirks & Ferrin, 2001). Similarly, Zand (1972) suggests that a lack of trust will be negatively associated with information exchange (i.e., communication) between parties. Combined, this literature suggests a direct relationship between organizational trust and the involved parties' likelihood of communicating.

Similar relationships between *swift trust* and intentions to communicate are expected for two reasons. First, parties that operate within the temporary systems distinguished by swift trust are likely to communicate to address the very nature of the associated contextual conditions. According to the definition of swift trust (Meyerson et al., 1996), this form of trust develops collectively and is capable of managing the vulnerability, uncertainty, and risk present in the temporary setting. Thus, involved parties may be expected to communicate with other parties in order to manage, or even attempt to reduce, the vulnerability, uncertainty, and risk they are experiencing. According to Van de Ven and Walker (1984), communication enables "individuals to develop collective meanings and definitions of their situation" (p. 602). Nahapiet and Ghoshal (1998) suggest that trust relationships are distinguished by parties who are more willing to combine and exchange information, and these behaviors appear particularly important in

situations marked by high ambiguity and uncertainty (Boisot, 1995). Others suggest that the frequency and pattern of communication is associated with uncertainty reduction (Jarvenpaa & Leidner, 1999) and effectiveness in high-reliability organizations (Eisenhardt, 1993; Weick & Roberts, 1993; Weick & Sutcliffe, 2001), and that the opening of communication channels promotes the creation of resilience capacity (Lengnick-Hall & Beck, 2005).

Secondly, both forms of trust incorporate similar behavioral and cognitive components. The formation process of organizational trust (i.e., how it developed) has not been considered essential in the prior literature on the link between organizational trust and intention to communicate. The results of prior research support the relationship that if trust was established between two parties particular behaviors are expected to take place. Thus, we should expect similar direct relationships between swift trust and intentions to communicate as have been found between conventional organization trust and intentions to communicate.

The existing literature support for the relationship between organizational trust and intentions to communicate combined with the evidence on the use of communication to reduce situational uncertainty, provide theoretical support to propose one answer to Research Question #2 – Is swift trust related to organizational effectiveness? Note that Figure 2-2 suggests an indirect relationship between swift trust and organizational effectiveness; mediated by an intention to communicate.

Proposition #2a: The presence of swift trust between parties involved in temporary relationships is likely to be positively associated with intentions to communicate between the parties.

2.3.b Intention to Cooperate/Collaborate. Considerable research in organizational trust evaluates the relationship between organizational trust and firms' intentions to work

together. This intention to work together is marked by a willingness to cooperate and/or collaborate. This literature stream suggests that in trusting relationships, people are more willing to interact cooperatively and collaboratively (Axelrod, 1984; Mayer et al., 1995; Nahapiet & Ghoshal, 1998; Pruitt, 1981; K. G. Smith et al., 1995). In fact, Nahapiet and Ghoshal (1998) propose that "trust may indicate greater openness to potential for value creation through exchange and combination" and that norms of cooperation are developed because "trust lubricates cooperation" (p. 255). In addition, Das and Teng (1998) propose that confidence in a partner's level of cooperative behavior is dependent on trust between the parties. However, it is important to note that although trust may lead to cooperative behavior, trust is not essential for cooperation to arise – parties may choose to cooperate without first trusting (Mayer et al., 1995).

Although trust is recognized as related to the likelihood of firm cooperation and/or collaboration, Jones and George (1998) suggest that the *type* of that trust drives the nature of organizational cooperation. When trust is conditional, the parties may enjoy sufficient levels of exchanges to achieve common goals. Conditional trust accommodates a willingness to conduct business as long as both parties behave properly. This type of trust is based on knowledge of prior interactions or positive expectations in future interactions (Jones & George, 1998). However, when trust is unconditional, parties' relationship expectations are based more on shared values and desires for a common outcome. Unconditional trust is socially constructed around shared values that create a common bond. According to Jones and George (1998) these "shared values result in strong desires to cooperate" (p. 539), and ultimately can lead to successful team relationships (i.e., superior performance) (p. 540). The contextual conditions present with swift trust align more closely with unconditional trust as outlined by Jones and

George (1998) and less closely with the repeated, favorable interactions required with conditional trust.

Hardy, Phillips, and Lawrence (1998) made similar proposals of the cooperative outcomes of trust as contingent upon the *type* of trust. They offer two types of trust, which are similar in definitional characteristics to the conditional and unconditional trusts mentioned above. First, spontaneous trust (similar to unconditional trust) includes settings where relationships based on trust emerge naturally without manipulation or management. Second, generated trust (similar to conditional trust) is intentionally created through the mutually constructed, reciprocal actions of all parties. According to Hardy and colleagues (1998), cooperation develops under both forms of trust but does so in different fashions. Cooperation emerges naturally with conditions evidenced by spontaneous trust and cooperation results through meaning management with conditions evidenced by generated trust. Consistent under both forms of trust is that cooperation between organizations is likely in trusting relationships.

Just as with intentions to communicate, parties that operate within the temporary systems distinguished by swift trust are likely to cooperate/collaborate to address the nature of the associated contextual conditions. According to the definition of swift trust (Meyerson et al., 1996), this form of trust develops collectively and is capable of managing the vulnerability, uncertainty, and risk present in the temporary setting. Thus, involved parties may be expected to cooperate/collaborate with other parties in order to manage, or even attempt to reduce the vulnerability, uncertainty, and risk. According to Costa (2003), contextual conditions distinguished by high functional dependence, ambiguity of tasks, and situational vulnerability and uncertainty were found as highly related to organizational trust formation. These contextual conditions are definitionally consistent with the elements of swift trust. In addition, empirical

findings support the relationship between task ambiguity, team interdependence and the need to collaborate (Costa, 2003). These empirical conclusions suggest "that, under uncertain conditions, there is increased need for contribution of others with complementary competence" (p. 120). This finding is consistent with others who suggest that collaborations are utilized to find innovative solutions to complex problems (Lawrence, Hardy, & Phillips, 2002).

The existing literature support for the relationship between organizational trust and intentions to work together, combined with the evidence on the use of cooperative behavior to reduce situational uncertainty, provide theoretical support to propose a second answer to Research Question #2 – Is swift trust related to organizational effectiveness? Note that Figure 2-2 suggests an indirect relationship between swift trust and organizational effectiveness; mediated by an intention to cooperate/collaborate.

Proposition #2b: The presence of swift trust between parties involved in temporary relationships is likely to be positively associated with intentions to cooperate/ collaborate between the parties.

The prior section addressed the relationship between swift trust and an organization's intentions to communicate and cooperate/collaborate. Although we might expect these behavioral intentions to occur, the strength of the relationship between the level of swift trust and an organization's intentions is likely to vary. The following section offers two variables as possible moderators to strengthen the relationship between swift trust and behavioral intentions. These two variables – (1) identification and acceptance of a superordinate goal and (2) deference to expertise – were observed and documented as present in the Columbia Shuttle recovery. In addition, existing literature offers further support for the potential moderating effect of these variables. Each variable is discussed separately below. The discussion includes the variable's

definitional characteristics, evidence from the Columbia Shuttle recovery interviews, and existing literature support. The following sections combine to address Research Question #3 – What factors influence the relationship between swift trust and performance outcomes?

2.4 Superordinate Goal

A *superordinate goal* is defined as a goal that cannot be ignored by members of participating groups, is of sufficient appeal value to motivate effort, and requires resources and efforts from more than one group alone (Sherif et al., 1961). Superordinate goals are of sufficient strength as to demand effort from more than one organization. Thus, the recognition and acceptance of a superordinate goal "creates a state of real and/or perceived interdependence" (Sherif et al., 1961, p. 46). The empirical results from Sherif and colleague's experiment found that the introduction and acceptance of superordinate goals was related to:

- reduced friction, conflict, and hostility between groups;
- increased cooperative and helpful behaviors;
- favorable conceptions of members from 'other' group; and
- joint movement toward a solution and execution of a plan to achieve the common goal.

Somewhat contradictory results were found in a collaborative response to a simulated bio-terrorism attack (Drnevich, Mehta, Chaturvedi, & Ramanujam, 2004). These findings suggested that organizations aligned strongly with their *own* goals in the initial stages of collaboration and later operated predominantly in response to *common*, situation goals. However, beneficial results of a superordinate goal (similar to those found in the Sherif et al., experiment) were observed and recorded through interviews during the Columbia Shuttle recovery response. Through interview responses, representatives from several agencies noted and recounted the overall common goals/objectives as essential to guiding their behavior. Example comments from some of the senior officers included:

- "(We) focused on one objective."
- "Had a very unifying mission – everyone had (a) part of mission."
- "Nature of incident precipitated (cooperation). It was a national tragedy – (everyone) came together rather than worrying about territory."
- "(The) four goals were integral – basis for all we did."
- "(We were) working for the same goal."

Members from three of the lead agencies established the common project goals/objectives the day following the disaster. These goals were clearly posted throughout the facilities and provided the metrics for operational success. Twice-daily briefing meetings were structured and organized to correspond with each of the goals. When asked about the project objectives, interviewees often cited the following four objectives verbatim:

1. Ensure public safety
2. Recover remains of the Shuttle crew
3. Retrieve evidence
4. Compensate costs incurred by local jurisdictions

These goals clearly guided organizational behavior.

Combined, these goals met the definition of a superordinate goal as established by Sherif and colleagues (1961). First, organizational participants could not ignore the objectives. Real and serious threats included potential health risks to members of the surrounding communities, resulting from toxic fuels/materials used within the Shuttle. Second, the attainment of the objectives was of sufficient appeal value to motivate effort. The disaster event was a national tragedy – heroes' lives were lost as was a spacecraft, which is a symbol of national pride and technological achievement. Third, achieving the objectives required resources and efforts from more than one group. No single organization possessed the financial, human, or technological resources to achieve the objectives alone. Several interview respondents noted these clear, common goals as essential to operational success.

It appears reasonable to expect that superordinate goals might be appropriate and effective under conditions associated with swift trust. Again, swift trust is a form of trust that develops collectively and is capable of managing the vulnerability, uncertainty, and risk present in the temporary setting (Meyerson et al., 1996). The recognition and acceptance of a superordinate goal further highlights the organizational interdependence already present under conditions characteristic of swift trust formation. Thus, the acceptance of a superordinate goal (and recognition of the heightened interdependence) should magnify the effects of swift trust on intentions to communicate and cooperate/collaborate.

Consensus, or the extent to which parties agree to specific goals, is considered as a potential antecedent factor to the formation of interorganizational relationships (Van de Ven, 1976; Van de Ven & Walker, 1984) and also to the formation of trust between groups (Rosen & Jerdee, 1977). According to Van de Ven (1976), this consensus may be aimed at achieving collective and/or self-interested goals. For example, two organizations involved in a temporary collaboration, may each desire the same collective goal of the highest level of consolidated profits. This goal may have been unachievable for either party operating independently. Thus, both parties make interorganizational commitments to this common goal.

Conversely, organizations may choose to participate in collaborative arrangements for purely self-interest purposes; for example, to access needed resources (Van de Ven, 1976). In fact, empirical analysis of dyadic relationships among fourteen Texas childhood development organizations suggests that a self-interested (internal) focus on securing resources was more highly related to interorganizational coordination than an external focus based on goal consensus (Van de Ven & Walker, 1984). Interestingly, all involved parties may agree to this same self-interested goal of interorganizational resource access, thereby achieving goal consensus. This

example highlights the fact that goal consensus does not necessarily equate to possessing a superordinate goal.

Consensus on goals may be sufficient to encourage the formation of interorganizational alliances and may promote collaboration, but goal consensus alone may be insufficient to achieve high levels of beneficial direct outcomes such as intention to communicate and intention to cooperate. One experimental study found just such a limitation of goal consensus in a study of group behavior (Sherif et al., 1961). However, within this same study, the introduction and acceptance of a superordinate goal by members of both groups was related to reduced conflict and increased cooperative behaviors (Sherif et al., 1961).

The existing literature support for identification and acceptance of a superordinate goal combined with interview evidence from the Columbia Shuttle disaster recovery, provide theoretical and empirical support to propose one possible answer to Research Question #3:

Proposition #3a: A firm's intentions to communicate and cooperate/collaborate are a function of swift trust along with the recognition and acceptance of a superordinate goal.

2.5 Deference to Expertise

A second factor that may influence the relationship between swift trust and behavioral intentions (and thus provide another answer to Research Questions #3) is a firm's deference to expertise. Deference to expertise means a willingness to grant decision-making authority to those within an organization who possess the most expertise in the subject matter of interest (Weick & Sutcliffe, 2001). According to Weick and Sutcliffe, expertise does not necessarily equate with experience. Experience does not guarantee expertise, nor does rank within the organization. Researchers have identified expertise as an antecedent factor to trust formation (Costa, 2003;

Giffin, 1967; Hovland, Janis, & Kelley, 1953; Mayer et al., 1995). In addition, the need for a particular expertise within an organizational setting may represent one form of resource dependence between organizations (with expertise being the desired resource).

One central reason interorganizational relationships form is due to resource dependence between the parties (Aldrich & Whetten, 1981; Geisler, 1995; Oliver, 1990; Sobrero & Roberts, 2001; Van de Ven, 1976). Resource dependence is established when one party relies on another party to obtain needed resources or for their specialization of skills or knowledge. Securing these resources allows the "needy" organization to fulfill some internal or external obligation placed on them. According to exchange theory, organizations are assumed to interact with other units to secure necessary resources, which places them in a position of dependency relative to the organization that provides the resources (Van de Ven & Walker, 1984).

Resource dependence is also prominent in the formation of temporary systems – those groups of diversely skilled people working collectively on a complex task over a limited period of time (R. A. Goodman & Goodman, 1976). Within these temporary systems, individuals are selected to participate precisely because of their capabilities and skills (R. A. Goodman & Goodman, 1976; Meyerson et al., 1996). Recall that swift trust represents "a unique form of collective perception and relating that is capable of managing issues of vulnerability, uncertainty, risk, and expectations" (Meyerson et al., 1996, p. 167). The situational vulnerability is expected to result partly from the interdependence with others. Within the temporary groups, participants are brought together "to enact expertise they already possess" (Meyerson et al., 1996, p. 169). System success relies on all parties contributing their respective expertise through continuous interrelating with others with the combined efforts directed towards addressing a complex task.

Thus, all parties are dependent on the other parties to achieve combined, feasible solutions. Specifically, they are dependent on others to apply their expertise appropriately.

Interview respondents at the Columbia Shuttle disaster response expressed evidence of just this type of resource dependence related to expertise. Some of the recorded comments regarding the realization of resource dependency and the reliance on other organizations for their particular skill and knowledge included:

- "NASA not accustomed to handle data quickly or access people. Therefore, EPA supplied data management and Forest Service supplied people."
- "Expertise of each agency was key. NTSB recognized EPA's expertise."
- "NASA brought knowledge, expertise to identify debris, but needed help from FEMA/National Guard/Forestry Service to do this. Forestry Service provided approximately 4800 people."
- "One person couldn't do it alone. (We) were all wearing different hats."
- "Every agency had some area of expertise."
- "Each agency brought skills to the table. For example, NASA (brought) creativity/technical skills."
- "Other agencies came to rely on FEMA's expertise."
- "No one agency could have handled project by itself. Everyone realized they couldn't do it alone."
- "Everyone experts in what they do."
- "Couldn't have done it without each other. NASA brought technical expertise. National Forestry Service brought people."

Although Weick and Sutcliffe (2001) propose that deference to expertise occurs *within* organizations at the individual level, the interview responses noted above suggest that a similar condition may be present *between* organizations. Participating organizations at the Columbia Shuttle disaster recovery suggested that they trusted others (individually and collectively) to take responsibility for decision making in their areas of expertise – irrespective of an organization's relative hierarchical order in relation to the response effort.

It appears reasonable to expect then, that an organization's deference to expertise might be influential under conditions associated with swift trust. First, resource dependence (whether the resource is financial, physical, one of skill and expertise, etc.) is central to the formation of

interorganizational relationships. Second, this resource dependence is one potential contributory contextual factor to the formation of organizational interdependence. The interdependence of organizations in terms of gaining access to others' expertise creates a situational vulnerability (Jacobs, 1974) that may require swift trust formation in order to achieve interorganizational success. Third, a need for resources and access to others' expertise stimulates interorganizational communications (Van de Ven, 1976; Van de Ven & Walker, 1984). Thus, when resource dependency is evident in swift trust situations, intentions to communicate are expected.

Interorganizational success may depend on the willingness to defer to experts. Weick and Sutcliffe (2001) found that successful high reliability organizations displayed a willingness to defer to individual experts when appropriate. For example, when Diablo Canyon (a nuclear power plant) experienced reactor problems, the plant manager turned to plant personnel for assessment of the problem (Weick & Sutcliffe, 2001). We might expect similar benefits at the organizational level. When organizations better understand the need for expertise (as called for by the situational challenges accompanying swift trust), they are more likely to exhibit a willingness to allow decision making authority to reside within organizations that possesses the most expertise, and more likely to communicate their need to the available experts. Thus, deference to expertise should magnify the effects of swift trust on intentions to communicate and cooperate/collaborate.

Proposition #3b: A firm's intentions to communicate and cooperate/collaborate are a function of swift trust combined with the firm's deference to expertise.

The proposed answers to Research Question #3 are labeled P3 (a, b) in Figure 2-3. The variables of superordinate goal and deference to expertise are depicted as moderators to the relationship between swift trust and a firm's intentions to communicate and

cooperate/collaborate. Prior research provides evidence of these variables as antecedents to interorganizational relationships and/or conventional organizational trust formation. However, the present study relies completely, and without modification, on the contextual antecedent factors associated with the development of swift trust in temporary systems (Meyerson et al., 1996). As such, swift trust is expected to form, or not form, based upon contextual conditions. Therefore, each of the other two variables, when present, is expected to strengthen the relationship between swift trust and a firm's intention to communicate and cooperate/collaborate. The present study is not proposing that the two variables *must* be present in order for the relationship between swift trust and behavioral intentions to become evident (as would be required in a mediated relationship).

The final relationships of interest in the above model are: 1) the ultimate, mediated relationship between swift trust and organizational and interorganizational performance, and 2) the possible association between swift trust and any subsequent development of conventional organizational trust. These relationships are depicted by the dotted line connections displayed in Figure 2-3. Given prior empirical findings, performance is expected to be directly related to a firm's intention to communicate and cooperate/collaborate. Performance effects may be realized within an individual organization, between two organizations, or also within a network of organizations. The resource based view, relational view of the firm, and network theory may offer theoretical support for the link between intentions to communicate and collaborate and their relationship to performance[3].

---

[3] Discussion regarding organizational and interorganizational performance effects, and the theoretical bases for such effects, is provided in the Future Research section of Chapter 5.

The performance variables complete the mediated relationship from swift trust, through behavioral intentions, as the final performance outcomes. The dotted line relationships displayed in Figure 2-3 are beyond the scope of the present study. However, they are included for illustrative purposes to incorporate the potential competitive benefits of swift trust and the "dynamic nature of trust" (Mayer et al., 1995, p. 728) development. Mayer and colleagues (1995) propose "that the outcome of trusting behavior will influence trust ... at the next interaction" (p. 728).[4] In addition, this feedback loop provides a possible association between swift trust and later development of conventional organizational trust.

Chapter 3 includes a summary of the research methodology used for the present study. The data collection process and instruments, method of data coding and aggregation, data analysis strategy, and data samples are included. In addition, the propositions within the current chapter are converted into hypotheses for empirical testing.

[4] The authors proposed that outcomes from trusting behavior would influence subsequent trust indirectly through perceptions of ability, benevolence, and integrity.

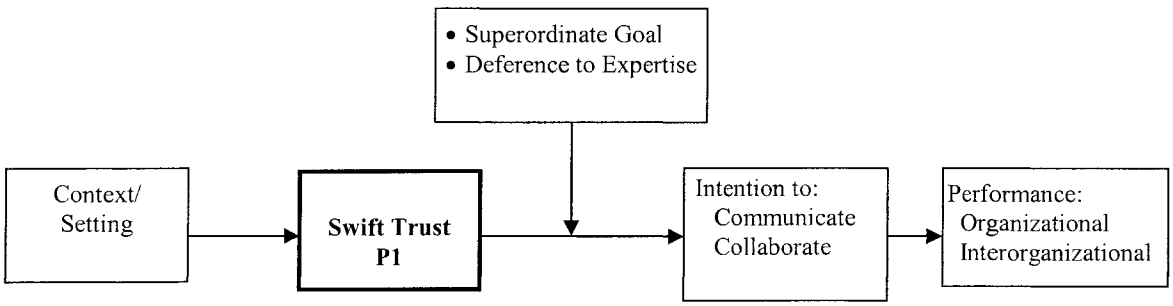


FIGURE 2-1
A Model of Swift Trust Highlighting Proposition #1

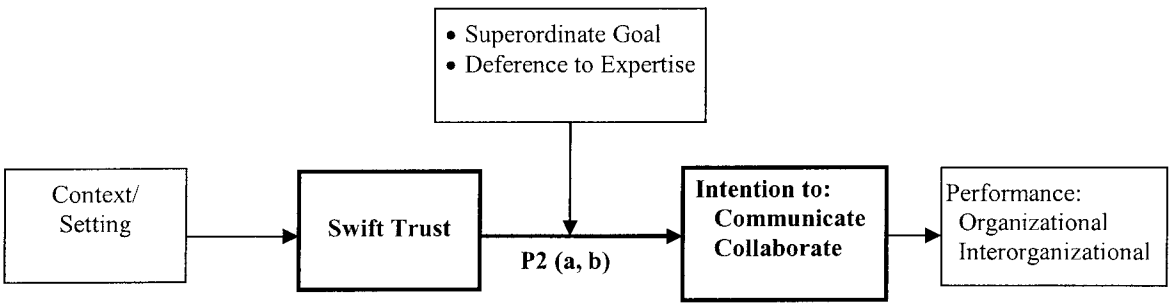


FIGURE 2-2
A Model of Swift Trust Highlighting Proposition #2

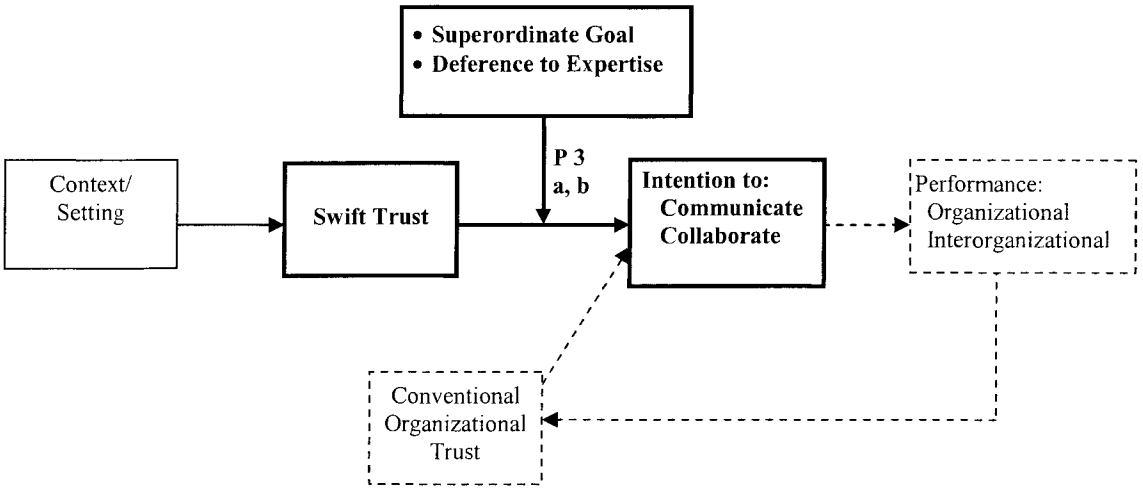


FIGURE 2-3
A Model of Swift Trust Highlighting Proposition #3

Chapter 3: Research Methodology and Hypothesized Relationships

The qualitative research I conducted at the Columbia Shuttle disaster provided the background for the present dissertation research project. A brief overview of this qualitative analysis is provided in **Section One** of this chapter. This section includes details of the study sample, data collection methods, and data analysis techniques. This information is provided merely as a reference for understanding the impetus for the current study and is not intended for inclusion within the present research project.

The remainder of this chapter details the research methodology used for the present study. The proposed data collection process and instruments, method of data coding and aggregation, data analysis strategy, operationalizations of variables, and data samples are included. **Section Two** includes the scale development and validation processes used in the creation of the swift trust measure. **Section Three** includes the quantitative analysis of the components and relationships of the variables within the swift trust model. Each section includes the relevant hypotheses for empirical testing. Methods limitations are also provided.

SECTION ONE

This section briefly describes the qualitative analysis conducted on-site at the Columbia Shuttle disaster response. The analysis occurred during April 2003 while the disaster response was on-going. The data collection was completed at that time, and no further data collection was conducted in relation to this portion of the present study. This exploratory, qualitative study was conducted to understand potential factors related to successful interorganizational relationships. This initial study was followed by a search for theoretical explanations of observations from the qualitative study and resulted in the discovery of the swift trust construct. While useful, the swift trust construct had not received much research attention or development, which is why the

present quantitative studies (Sections Two and Three below) were designed and conducted. The analysis of qualitative data provided the conceptual foundation and context of ideas for the remainder of this dissertation study. The following section describes the methods used to collect the data originally and summarizes the analysis of that data.

3.1 Research Design and Methods

The preamble study used a single case design to explore the effective coordination of multiple organizations. This methodology is often used to identify the central research domain and topics for consideration (McGrath, 1964). This single case, however, provided an opportunity to observe many series of interorganizational activities that served to confirm or disconfirm the findings observed in any single two-party interaction (Yin, 2003). The study also focused on both the strategic and operational levels of individual activities within the participating organizations, which added to the complexity of the analysis. This multi-level embedded design allows for richer and more reliable inductive findings (Eisenhardt, 1989; Yin, 2003). The initial phase of this qualitative study relied on an inductive approach, consistent with this study's research objectives and also with the methodology used in similar research (Eisenhardt, 1989; Isabella, 1990). The study was designed to explore the guiding fundamental question: Under temporary and unplanned conditions, what factors allow for and promote the effective coordination of interorganizational activity?

3.2 Case Description

The sample case was the multi-agency response to the Space Shuttle Columbia disaster that occurred on February 1, 2003. The emergency response that followed included more than 100 distinct federal, state, local, and volunteer agencies. This collaborative response continued

for nearly three and one-half months and concluded with the satisfactory achievement of the overall response goals.

The Columbia Shuttle disaster response was distinguished by two distinct phases. The first phase encompassed the emergency response to locate and recover the Columbia astronauts (i.e., search and rescue, which later became search and recover) and efforts to guard the public safety from potential environmental hazards (Goals 1 and 2). The national and international attention during this phase of the response was very high and numerous volunteer and local responders supported the federal and state agencies and participated in the search efforts. Once the astronauts' remains were located and recovered and the potential environmental hazards were controlled, the response entered the second phase - one of evidence collection. Although media and citizen interest remained attentive to the disaster response, the number of agencies needed to accomplish the stated response goals leveled out to a much reduced core group of agencies. These 'core agencies' that remained throughout the entire response effort provided the stable (yet temporary) relationships that were the focus of study.

The structure of the disaster response followed a hierarchical-type system. Headquarters operations were geographically located in the center of the disaster recovery zone and housed the leadership of all core agencies. The role of the headquarters operation was strategic in nature by providing the course of action for the overall response effort and by providing resource support for the field operations. Four field sites, or "camps", were located throughout Texas in areas distinguished by their proximity to Columbia Shuttle material, physical space requirements and logistics needs demanded by the recovery efforts, and efficient facilitation of material collection and re-distribution to Barksdale Air Force Base or Johnson Space Center. The role of the field sites was operational in nature (essentially material collection) and included carrying out the

directives issued by the strategic, headquarters level. Both the strategic and operational levels followed an Incident Command System (ICS) that emergency responders commonly use. The system supports a defined organizational structure consisting of financial management, logistics, operations, and planning. ICS facilitates rapid responses by dividing complex situations into manageable, agreed upon operating units. Although the overall emergency response relied on ICS to guide operations, the core responding agencies also adopted this structure. This resulted in individual agency organizations mirroring the organizational form of the combined response; similar to holographic structures (Morgan, 1997) where each part is a fractional reproduction of the whole.

3.3 Data Collection

3.3.a Personal interviews. Following the methods adopted in existing qualitative research (Eisenhardt, 1989; Isabella, 1990) and relying on qualitative research guidance (Bouchard, 1976; Yin, 2003), interviews were conducted with representatives from a number of the core agencies that responded to the Columbia Shuttle disaster. The objective during this initial interview phase was two-fold -- first, to gain an understanding of the working operations of the response and second, to identify possible factors that facilitated effective interorganizational activity. The interviews were conducted on-site at the response headquarters and one of the field camps during a time period when the response was in the final weeks of the evidence collection phase, yet still on-going.

The fact that the interviews were conducted during this active response time impacted the interview process in three ways. First, the interview process adapted to the demands created by the "live" organizational situations. Interviewees were often called away to address pressing operational needs (e.g. increased snake strikes on field search personnel, and modifications to

search locations based on incoming information). To accommodate these conditions, the interview process remained fluid and less structured and allowed for the 'starts and stops' with individual interviewees. Secondly, interviewees continued to incur time pressures throughout the disaster response. Sixteen-hour days were not unusual for many of the individuals involved. However, the evidence collection period was limited by environmental constraints - spring vegetation growth would occur in the search area and make location and retrieval of material difficult if not impossible. To acknowledge and accommodate the time demands experienced by the interviewees, the length of each interview was limited to between twenty and ninety minutes. Third, because the interview process occurred during the active response, interviewees were likely to have current and more accurate recollections for the responses.

During the three day research visit, nineteen semi-structured interviews were conducted with individuals representing five different federal and state agencies and one local government agency. See Table 3-1 for a list of the interviewed organizations. Included within the group of interview participants was the senior incident commander for the overall disaster response. The majority of interviews were tape-recorded; in addition, all interview responses were documented by hand. Upon completion of the interview process, the hand-recorded notes were crosschecked with the tape-recorded responses.

Two primary criteria facilitated the choice of appropriate key informant interviewees in order to address the selection problem when conducting interorganizational research using key informants (Kumar et al., 1993). One selection criterion for an interview data source required that the individual work for one of the core agencies - i.e., an agency that remained active during the life of the response. Combined, the core agencies provided the majority of human, technical, and financial resources employed in the response. Individuals from these core agencies should

possess the most knowledge about the initiation, growth, and maintenance of the interorganizational activity (i.e., the entire life cycle of the response). Two, the selected individuals' primary roles in the disaster response had to relate to strategic decision-making, operational planning and logistics, or the management of information or field personnel. These individuals should possess a clear understanding of the overall response goals and also interact with other agencies.

3.3.b Secondary data sources. A number of internally generated presentations, reports, maps, and meeting notes were examined as available. These sources aided the research process and enhanced understanding of the daily response operations, identification of strategic directives, and the extent of interorganizational activity present. Secondary data sources also provided a rich context for understanding and interpreting data collected through interviews. Daily inter-agency strategic operations meetings provided sources of further first-hand accounts of the coordinated activities utilized in this emergency response. Representatives from each of the core agencies attended these daily meetings and participated through self-reporting of current agency activity. Combined, the interviews, attendance at three daily operations meetings, and access to archival data sources allowed: 1) first-hand witness of the extent of interorganizational activity present, 2) an understanding of the working operations of the response, and 3) identification of the strategic directives.

3.4 Data Analysis

The interview responses were crosschecked between the tape and hand recordings, with omissions being resolved. The hand recordings were converted to word-processed text that allowed for the coding of the recorded text and identification of any patterns within the interview responses. The patterns of interest related to possible factors supporting the effective

interorganizational activity. All factors mentioned by the interviewees were recorded regardless of the frequency of mention. The final analysis resulted in nineteen factors[5] identified as potentially influencing the interorganizational operations. Ultimately the factors of interest selected for the present study included: trust, superordinate goal, and deference to expertise (each discussed previously in Chapter 2). These factors were selected for study since the interview respondents cited these three factors most frequently as influential to the effective operations.

The identification of interview responses that were common across multiple respondents allowed a more concentrated research effort towards a fundamental goal for the preamble, qualitative research -- to determine if existing literature is sufficient to explain the effective coordinated efforts displayed in the response to the Columbia Shuttle disaster. Comparisons between findings in the present case study and existing literature provided the starting point for further interorganizational research and analysis. This comparison process highlighted several potentially influential factors (some consistent with prior literature; some inconsistent) related to interorganizational performance. The research purpose for the present quantitative study (Section Two below) focuses on the counterintuitive, understudied, contradictory, and/or previously omitted variables that were identified during the comparison process.

The qualitative research outlined in Section One provided the impetus for this study as presented in Chapters 1 and 2. However, the data collected through interviews and secondary sources are not used in the following quantitative analysis of interorganizational performance.

---

[5] The nineteen factors identified included: use of Incident Command System, barrier-free work environment, domain specialty, common goals, lack of self-interested behavior, organizational culture, expert involvement, communication, clear objectives, extra-role behavior, emotional involvement, employee morale, standardization, leadership, technology implementation, community support and involvement, work products and services, outside stakeholders, flexibility, and training.

Instead, the details of the qualitative study were included in order to establish the research interest origins. As Yin (2003, p. 1) suggests, "case studies are the preferred strategy when 'how' or 'why' questions are being posed." Therefore, the sample case of the Space Shuttle Columbia disaster provided a useful precursor study in understanding how and why interorganizational relationships are successful.

SECTION TWO

This section details the scale development and validation processes used in the creation of a swift trust measure. Chapter 2 articulated the arguments drawn from the literature, (i.e., the definitional differences between organizational trust and swift trust) that suggest these two concepts are distinct. However, the swift trust research conducted to date is insufficient to answer conclusively the claim that swift trust is a distinct form of trust. Empirical testing of this proposed difference (see Chapter 2, Proposition #1) has not occurred due in part to the lack of a validated measure of swift trust.

The first step towards empirically testing Proposition #1 required the development of a measurement tool designed to capture the unique definitional elements and boundaries of swift trust. Validation of the swift trust measure developed in step one included a statistical comparison to a previously validated measure of conventional organizational trust – the Organizational Trust Inventory, or OTI (Cummings & Bromiley, 1996). This statistical comparison provided one means to ascertain discriminant validity (i.e., whether these two forms of trust are in fact distinct). The following sections begin with a review of the OTI creation and validation, follow with the swift trust scale development, and conclude with a hypothesis for the quantitative analysis of the two trust constructs.

3.5 Review of the Organizational Trust Inventory (OTI) Development Process[6]

The items included for use in the OTI were developed as part of the instrument's creation (i.e., none were taken from existing scales). Included items relate to the three dimensions of organizational trust (as proposed by Cummings and Bromiley (1996)) and also include measures of actual interorganizational behavior. The incorporation of actual behavior was intended to provide initial checks of the link between trust and self-reported behavior – in effect, an effort to assess predictive validity of the scale. Item development proceeded under the following constraints:

1. The questions could not use the word "trust"
2. Approximately equal numbers of items should be developed for each dimension
3. Questions were developed and worded to reflect the 3 components (affect – "We feel they ...", cognitive – "We think they ...", and behavior – "We will ...")
4. Items were to be kept simple - only one verb and avoiding conditional statements
5. Items needed to be phrased at the group or organization level

This initial phase of item construction resulted in 273 questions, which were reviewed for face validity and unnecessary redundancy. This review process resulted in retention of 121 items. Item construction relied on a seven-point Likert scale with some items negatively worded. The range of item response extended from: 1 – strongly disagree to 7 – strongly agree, with the midpoint of 4 represented as – neither agree nor disagree. Scale administration relied on self-report measures where individual respondents answered on behalf of their organization in relation to another designated organization. A population of 323 employees and students from undergraduate, MBA, and executive MBA programs served as scale respondents.

---

[6] A rather detailed review of Cummings and Bromiley (1996) OTI scale development is provided for comparative purposes, as a similar development procedure was used here for the Swift Trust Scale. See Section 3.7 for the process used in the Swift Trust Scale development.

The scale development stage conducted by Cummings and Bromiley (1996) included initial reliability tests of the measurement scale. Three doctoral students sorted the retained 121 OTI items plus fifteen items from another previously validated measure - The Organizational Commitment Questionnaire (a related construct and/or possible correlate). The doctoral students sorted the total 136 items into four categories: the three dimensions of trust and organizational commitment. This sorting process resulted in high inter-rater values – unanimous agreement for 85.3% of the items and two out of three students agreeing on the remaining 14.7% of the items. A calculated reliability coefficient (J. Cohen, 1960) concluded all agreement measures were well over 0.83, which is above the recommended level of 0.70. Thus, the authors concluded that the items reliably reflected the dimensions they were attempting to capture and also showed discriminant validity, as none of the trust items were sorted to the organizational commitment category. Following this initial reliability analysis, the number of items was reduced by again eliminating items with similar or redundant wording. The final scale included sixty-two trust items (with approximately equal representation across the three dimensions) and nineteen behavior items, for a total of eighty-one items.

Confirmatory factor analysis, used in combination with structural equation modeling, assessed the latent variables. This analysis incorporated three stages: 1) estimation of the items versus the three dimensions of trust, 2) estimation for each trust dimension across the three response-mode components, and 3) estimation of the model incorporating the trust factors and self-reported behavior. Results from the three stages of analysis indicated models with acceptable fit, although the "intent to behave" response mode consistently displayed the lowest composite reliabilities and the model incorporating the prediction of behavior exhibited the lowest overall goodness of fit.

The authors of the OTI used multiple methods to assess both the reliability and validity of the measure. Face validity, inter-rater reliability, composite reliability (i.e., internal consistency), discriminant validity, and predictive validity all pointed to a fairly reliable and valid measure of organizational trust. The results of these analyses lend support for the authors' claim that the OTI provides a measure of trust between units in organizations or between organizations.

Cummings and Bromiley (1996) concluded that the OTI items strongly relate to the three dimensions of trust with the three response components also proving reliable. They further refined the OTI measure by eliminating the "intended behavior" component (the component with the weakest item-to-factor correlations) and further reducing the items with redundant wording. This shortened form of the OTI resulted in a measure with twelve items and acceptable model fit. The internal reliability of the three trust dimensions remained high for this shortened scale form and the correlations between the trust dimensions and actual behavior were also high. This shortened version provides comparable reliability/validity measures with a length more conducive to scale administration. This shortened form provides the comparative referent for the validation of the swift trust measure developed for this study.

3.6 Swift Trust

The process used to develop the following new scale relies on the foundational theoretical work proposed by Meyerson and colleagues (1996). According to their conceptualization, swift trust represents "a unique form of collective perception and relating that is capable of managing issues of vulnerability, uncertainty, risk, and expectations" (p. 167). In addition, three definitional distinctions further distinguish the boundaries of swift trust. One is that swift trust occurs at the group or organizational level (i.e., is a collective phenomenon). The second is that swift trust develops less based on an affective state (the way people feel), and

more based on cognition (the way people think) (Meyerson et al., 1996, p. 191). The third is that *context* substantially controls the development of swift trust. The contextual setting includes the high degree of vulnerability, uncertainty, and risk faced by the participating organizations. Thus, swift trust is presumed to form based upon a cognitive understanding of the setting rather than an affective understanding of how other organizations might behave. The developed survey items incorporated these definitional requirements.

3.7 Development of the Items to Measure Swift Trust

This section details the careful process used to develop items for a measure of swift trust. This section also includes measures of assessed reliability and validity where available. The section concludes with the method for statistical validation of the swift trust measure based on survey responses.

3.7.a Step 1: Development of items. Items were developed subject to the definitional and conceptual requirements of swift trust as established by Meyerson, Weick, and Kramer (1996). Item development also followed restrictions similar to the development constraints imposed on the OTI items. The following rules guided item development:

1. The questions cannot use the words *trust* or *swift trust*.
2. Questions should be developed to reflect the cognitive and intended behavior components of swift trust. For example, some questions are phrased in terms of "We think ..." for cognitive and "We will ..." for intended behavior.
3. Items should be simple – using only one verb and avoiding conditional statements.
4. Items will be phrased at the organizational level (using *We* versus *I*).

This initial process resulted in a total of forty-seven items. Each question was evaluated in terms of its readability, simplicity, possible redundancy, and adherence to the above rules and definitional requirements.

3.7.b Step 2: Initial Reliability and Validity Assessment. As swift trust is proposed to be situation based (Meyerson et al., 1996) and not relationship based, administration of the swift

trust items required an accompanying "temporary situation" (i.e., scenario) that respondents would refer to when completing the scale. In contrast to the OTI, a swift trust measure requires an associated situational context. The OTI only requires the inclusion of a referent organization (selected and identified by the respondent) for completion of the scale. When using the OTI, respondents respond to each item in relation to the referent organization. When using the swift trust scale, respondents respond to each item in terms of the contextual setting. Thus, a contextual scenario was created to accompany the swift trust items.

The scenario created for this research project deliberately reflects the contextual conditions Meyerson and colleagues (1996) proposed (see Appendix B). That is, the scenario portrays a temporary interaction of organizations and demonstrates vulnerability, uncertainty, and risk. The content is an emergency response situation involving potential hazards to life, property, and the environment. This content is a familiar setting for the respondents who provided data for scale validation. As can be seen in Appendix B, the situation is of limited duration (temporary), depends on tightly-coordinated interorganizational effort (vulnerability), demonstrates a strong potential for loss of life and property (risk), and is an emerging problem with no guarantee of success (uncertainty).

The scenario is a modification of a situation used in a training exercise developed by an experienced director of emergency response training programs. The original scenario was used as the basis for instruction in the training program and consequently captures the factors of interest for the present research study on swift trust.

Four individuals (with subject matter expertise in temporary, emergency response situations) provided review and comments on the forty-seven items of swift trust and the modified scenario. Each of the four individuals had work experience with organizations such as

those participating in the Columbia Shuttle response. Further scale refinements incorporated the experts' comments and suggestions. This step provided a degree of face validity for both the scale items and the incorporated scenario. Further reliability assessments continued to include all forty-seven items.

The twelve items from the shortened form of the OTI were added to the forty-seven swift trust items to produce a combined scale with a total of fifty-nine items. The combined scale, which included randomly sorted items, was given to six doctoral students for item sorting. Appendix C includes the sorting instructions given to the doctoral students. Appendix D includes a copy of the combined, randomized scale with fifty-nine total items. An Excel file was created with the combined fifty-nine items (in rows in the left column) and the two categories of swift trust and organizational trust (in separate columns to the right of the fifty-nine items).

Using the prepared Excel file, the doctoral students each sorted the fifty-nine items into exactly one of the labeled categories (i.e., swift trust or organizational trust). The results of the sorting process are as follows:

Swift Trust measures	**Agreement**
26 of 47 items	100%
8 of 47 items	83.33%
7 of 47 items	66.67%
5 of 47 items	50%
1 of 47 items	33.33%
OTI measures	
9 of 12 items	100%
2 of 12 items	83.33%
1 of 12 items	66.67%

The present study included further analysis of sorter agreement and item reliability by assessing the internal reliability (J. Cohen, 1960) of the scale (these are presented in Chapter 4 results). The final scale used for validation and testing purposes does not include any swift trust

item that received less than 83% agreement. Thus, the final scale for testing includes thirty-four items for swift trust and twelve items for the shortened OTI for a total of forty-six items. The final scale (i.e., questionnaire) included some items where higher numbers correspond to higher levels of trust and some in which higher numbers correspond to lower levels of trust (i.e., some of the items rely on reverse scoring) in an attempt to minimize response bias.

According to DeVellis (2003), Likert scales are widely used in instruments measuring beliefs, opinions, and/or attitudes (p. 79). Because some constructs cannot be objectively "seen" or determined through direct means, researchers often utilize measurement scales to more easily assess the presence of a theoretical construct – here swift trust. The Likert scale seemed appropriate as the format allowed for gradations in responses, varying degrees of agreement, and is widely accepted for use in other organizational research.

Another advantage of the chosen format was the retention of the neutral point (response choice 4), which does not force respondents to express a position they may not actually maintain. Although the use of a seven-point Likert scale appeared appropriate in this circumstance, this format is not without weakness. One limitation of this format, as with some other scales, is the problem of summation. Simply summing the scores of all items can result in misleading total scores when compared to the total scores of other respondents. Radically different types of responses can result in the same total score. This effect could be the result of scales representing multiple dimensions. The use of this type of format benefits from a second measurement index that considers within-person variance in addition to individual total score response.

3.7.c Step 3: Pilot Study. To provide further face validity and to identify any scale administration problems, the combined trust scale (including case scenario and the forty-six remaining items) was administered to sixteen individuals experienced in emergency

environmental response. These individuals possessed characteristics representative of the final sample. The sample used for the pilot study included persons from Dallas, Houston, and Atlanta, all members of the same organization and performing similar tasks as related to emergency response. The pilot study participants provided feedback on the following questions:

1. Were the instructions clear and understandable?
2. Did the scenario include sufficient detail to allow you to answer the questions?
3. Were any questions confusing, ambiguous, poorly worded, difficult to answer given the information, etc.? If so, please identify and discuss.

In addition, the pilot study participants completed the survey. The solicited feedback provided further opportunity to refine the final questionnaire used in scale validation (i.e., step 4). Results from the pilot study indicated difficulty, concerns, and/or confusion with many of the items developed to assess behavioral intentions[7]. As such, the sixteen items designed to capture intentions to behave were removed from further analysis. This decision also resulted in maintaining separation from the cognitive understanding of the contextual conditions (i.e., swift trust dimensions) from the subsequent intentions to behave (i.e., the dependent variables within this study). The final scale, or survey, included a total of thirty items.

3.7.d Step 4: Data sample and data collection. The thirty-item survey (including scenario) was administered to groups of emergency responders familiar with contextual settings similar to the one detailed in the scenario. The present study required a usable sample of approximately 150 – 300 respondents. This range accommodates the minimum sample size requirements for factor analysis of 150 cases *and* five to ten cases for each item (Nunnally, 1978; Tabachnick & Fidell, 1996).

---

[7] These results are similar to what Cummings and Bromiley (1996) found in their development of the OTI scale.

Two sources of data were used. The first source included participants in training exercises for search and rescue teams. The training director for the exercises agreed to scale administration to a training class comprised of urban search and rescue teams. The class included approximately forty students. The second source included 377 participants of an emergency responder conference held October 13-16, 2005 in Houston, Texas.

3.7.e ***Step 5: Data Analysis.*** Cronbach alphas (Cronbach, 1951) were used to assess reliability of the swift trust measure. In addition, exploratory factor analysis (EFA) was used to assess how the items that were designed to measure each form of trust actually loaded. This analysis allowed assessment of convergent validity. Discriminant validity was also used to provide further clarification for the distinctiveness of swift trust. Subsequent factor analysis was conducted exclusively on the swift trust items to assess the potential multi-dimensionality of the construct. A second data set was used with confirmatory factor analysis to confirm the pattern, or relationships, observed within the EFA results. Analysis included review of model fit indices, t-statistics and item-to-factor correlations for all items, composite reliability for each dimension of swift trust, and covariances among the factors. The results of these analyses are intended to provide statistical support to address the following hypothesis:

Hypothesis #1: Swift trust represents a cognitive assessment of situational dimensions (i.e., vulnerability, uncertainty, and risk), whereas Organizational Trust indicates cognitive and affective assessments of relationship dimensions.

The models in Figure 3-1 depict this hypothesis – i.e., that swift trust and conventional trust include different dimensions. The models highlight the variables of interest (boxes in bold), with the two types of trust coded as "H1".

SECTION THREE

This section details the quantitative analysis of the hypothesized relationships within the swift trust model. Discussion includes the data source and collection process, operationalization of all variables, the measurement instruments utilized, method of data coding for all non-Likert variables, data analysis strategy, and testable hypotheses for each model relationship.

3.8 Hypotheses

Existing empirical research suggests that trust is often associated indirectly with organizational and interorganizational performance and directly with intermediate effectiveness measures. Some studies, for example, found trust to be positively associated with openness in communication (Boss, 1978) and the amount of information shared between parties (O'Reilly III, 1978), and negatively associated with conflict between team members (Porter & Lilly, 1996). Thus, higher levels of trust are positively associated with greater openness in communication, greater amounts of information shared, and less conflict between team members. This study argues that swift trust and conventional trust yield the same behavioral outcomes. Thus, swift trust is expected to have a positive relationship with two intermediate organizational effectiveness outcomes.

Hypothesis #2a: Swift trust will be positively associated with a firm's intention to communicate.

Hypothesis #2b: Swift trust will be positively associated with a firm's intention to collaborate.

Figure 3-2 depicts the above hypotheses – i.e., the main effect relationship between swift trust and a firm's behavioral intentions. The model highlights the variables of interest (boxes in bold), with the relationship coded as "H2".

The present study argues that the relationship between swift trust and a firm's behavioral intentions can be strengthened by the presence of certain variables. Two variables are introduced as possible moderators. Selection and inclusion of these variables is based on existing theoretical and empirical literature on superordinate goals and deference to expertise. In addition, preliminary findings from the data analysis from the Columbia Shuttle interviews provide support for testing these relationships. Therefore, based on Proposition #3 from Chapter 2 and the existing literature related to superordinate goals and deference to expertise, the following are hypothesized:

Hypothesis #3a: The relationship between swift trust and a firm's intention to communicate will be strengthened by the recognition and acceptance of a superordinate goal.

Hypothesis #3b: The relationship between swift trust and a firm's intention to communicate will be strengthened by a firm's deference to expertise.

Hypothesis #3c: The relationship between swift trust and a firm's intention to cooperate/collaborate will be strengthened by the recognition and acceptance of a superordinate goal.

Hypothesis #3d: The relationship between swift trust and a firm's intention to cooperate/collaborate will be strengthened by a firm's deference to expertise.

The model in Figure 3-3 depicts these four hypotheses. The model highlights the variables of interest (boxes in bold), with the relationship coded as "H3". The two variables of superordinate goal and deference to expertise are depicted as moderators to the relationship between swift trust and a firm's intentions to communicate and cooperate/collaborate. Each of these variables, when present, is expected to strengthen the relationship between swift trust and a

firm's intention to communicate and cooperate/collaborate. While a clear answer to the relationship between swift trust and performance (both organizational and interorganizational) is beyond the scope of this study, it is expected that the intermediate behavioral intentions being measured here are positively correlated with performance.

3.9 Sample for Quantitative Study

Data was collected in conjunction with cyber-terrorism table-top training exercises administered through the University of Texas at San Antonio Center for Infrastructure Assurance and Security (CIAS). The CIAS was formed to bring together representatives from local and state government, industry, the military, and academia in an effort to promote growth of security within the region. After the attacks on 9-11, security intelligence within the US recognized the potential threat to local community infrastructures at the city, county, and state levels particularly through cyber attacks. As such, representatives from the San Antonio area (including UTSA) conducted a cyber terrorist exercise to:

1. "Identify and test resources and capabilities to detect, prevent, and respond to a cyber terrorist attack.
2. Test the ability of federal, state, county, and local authorities to effectively communicate during and after a cyber terrorist attack." (White, 2005)

Other training exercises followed the original 2002 San Antonio exercise. The two cyber-terrorism training exercises that comprise the data source for the present study were conducted in: 1) Dayton, Ohio in December 2005, and 2) Virginia Beach, Virginia in February 2006.

The focus of the present study (i.e., the role swift trust plays in the behavioral intentions of temporary groups of organizations) presents certain challenges for possible data collection. First, the types of events that exemplify swift trust characteristics require the coordinated effort of multiple organizations. As a result, the complexity and magnitude of the conditions are likely high since interorganizational effort is needed. In addition, the coordinated efforts are temporary

in duration and develop in response to situational conditions demanding effort from more than one organization. Actual events of this type are fairly rare and infrequent. In addition, they generally cannot be anticipated. Therefore, reliance on a simulated event (through a training exercise setting) seemed an appropriate setting for data collection and analysis. This study's focus of attention is on the swift trust formation among the exercise participants and their subsequent behavioral intentions, and not on the cyber terrorist event.

The local emergency management coordinators made arrangements with UTSA's CIAS to conduct the cyber-terrorism training exercises for their respective communities. The local emergency management coordinators selected the community organizations/agencies to include in the training exercise. Each organization/agency was then responsible for selecting one or more employee representatives to attend the training. Participants in the training exercises included officials from community organizations/agencies. These individuals generally occupied high-level, decision-making positions within their respective organizations (e.g., city mayor, police chief, fire chief, etc.). As such, they have intimate operational knowledge of their respective organizations and were expected to be adequately qualified to answer questions on behalf of their organization. Participants ranged in age from approximately twenty-five to sixty-five years, and were predominantly male. Age demographics were not gathered directly from participants, but were estimated based on visual observation and survey responses to organizational tenure.

The Dayton, Ohio cyber-terrorism training exercise included seventy-two participants from the following groups of organizations:

1. Local media outlets
2. Local educational institutions
3. City government
4. County government
5. Local communications companies (e.g., telecommunications)
6. Local industry officials

7. Critical infrastructures (e.g., water, power, etc.) and medical facilities
8. Local Air Force base

The Virginia Beach, Virginia cyber-terrorism training exercise included 103 participants from the following groups of organizations:

1. City government *
2. City government *
3. City government *
4. Local fire department
5. Local law enforcement
6. Critical infrastructures (e.g., water, power, etc.)
7. Local military base *
8. Local military base *

* Note: representatives from multiple cities/jurisdictions and multiple military bases were present

At each training exercise, the participants were separated around the room in tables according to their organizational affiliation. An exercise moderator facilitated the training exercise at each table. Each training participant operated within the training environment as a representative for their actual functional responsibilities. For example, representatives from the city administration responded to the cyber-terrorism training scenario events and questions on behalf of city administration. Each participant received his or her own training manual, which was customized for each particular organization, and included a detailed account of recent, fictitious cyber-terrorist attacks on the local community. Different organizations received different cyber-terrorism scenario events throughout the course of the training exercise. However, certain scenario events affected all organizations equally. (For example, organizations' internal computer systems may have been adversely affected at different times during the training scenario, while all organizations may have been notified simultaneously of the mayor's response to the recent events). Participants from the different tables did not interact during the

training exercise. No information was shared between the tables in terms of the varying cyber-terrorism training events.

3.10 Measures – Independent Variables

3.10.a Level of Swift Trust. Swift trust, as perceived by respondents, was measured using the survey items developed during Phase 1 of the present research project. These data were collected during the cyber-terrorism training exercise. The final swift trust items (eighteen items) included within the administered scale were items with the highest reliability and validity (as determined during scale validation). The survey instrument was given to all exercise participants. A swift trust "score" was calculated for each respondent by combining scores for all eighteen swift trust items. All reversed-scored items were appropriately adjusted before combination. A higher total score indicates higher levels of swift trust.

3.10.b Control Variables. Three control variables were collected from each exercise participant prior to the start of the exercise. *Organization affiliation* (e.g., city administration, academic institution, etc.) may have a direct effect on a firm's intentions to communicate and cooperate/collaborate. Organizational culture or governance mechanisms (i.e., rules, policies) may restrict the flow of information outside the organization. Coding for this categorical variable corresponded to the organizations involved in the training exercises (e.g., 1 = city government; see Section 3.9 for the list of organizations).

An individual's *relative position within an organization* may have a direct effect on their perception for the need to communicate and cooperate/collaborate. Individuals at the highest level of the organization may routinely interact with external organizational members, while middle or lower level management may have different interaction patterns with the external community. Therefore, participants were asked for their relative hierarchical position within their

organization (1 = upper management; 2 = middle management; 3 = lower-level management). This control variable also provided necessary demographic data to assess whether respondents were adequately qualified to answer questions on behalf of their organization.

The third control variable collected from each participant prior to the start of the training exercise was the degree of *prior interactions with the other participating organizations*. This variable may have a direct relationship with existing trust between organizations. As conventional organizational trust is developed through time and repeated interactions, frequent prior interaction is likely associated with the existence of conventional organizational trust. Respondents were asked to estimate the degree (and typical form) of prior interaction between their organization and each of the other organizations. Each participating organization was listed and the respondents were asked to indicate the level of prior organizational interaction (1 = None; 7 = Frequent). In addition, the respondents were asked to record the typical form of interaction experienced with each other organization (e.g., email, telephone, cell phone, face-to-face, other). More frequent and more intimate interactions are likely to be associated with conventional organizational trust.

3.11 Measures – Moderating Variables

3.11.a Superordinate Goal. A firm's recognition and acceptance of a superordinate goal was assessed during the training exercise using exercise-based activity questions. These questions were formatted using a Likert scale and asked of all participants:

1. Can your organization ignore these cumulative events?
2. Would your organization classify these cumulative events as a serious problem?
3. To what degree would your organization believe that addressing these cumulative events requires coordinated activity across multiple organizations?

Questions #1 and #2 above required yes/no responses. Actual scores for these two questions displayed no variation, with responses overwhelmingly indicating the respondents' recognition

and acceptance of a superordinate goal[8]. Therefore, the final superordinate goal score was determined based solely on the response to question #3 above. In addition, question #3 best captured the requisite components of a superordinate goal as defined by Sherif and colleagues (1961). A higher score equated with recognition of a superordinate goal.

3.11.b Deference to Expertise. A firm's deference to expertise was assessed prior to the training exercise using a previously established, eight-item scale (Weick & Sutcliffe, 2001). The scale originally developed by Weick and Sutcliffe was modified from a three-point Likert scale to a seven-point Likert scale to retain consistent format across survey instruments and to provide for greater variation in response. The survey instrument was given to all exercise participants. The respondents were instructed to assess to what degree each item described the organization for which they work. The combination of all deference to expertise items resulted in a total deference to expertise "score" for each respondent. A higher total score indicated higher levels of a firm's deference to expertise. The items included in the deference to expertise scale are as follows (Weick & Sutcliffe, 2001):

1. People are committed to doing their job well.
2. People respect the nature of one another's job activities.
3. If something out of the ordinary happens, people know who has the expertise to respond.
4. People in this organization value expertise and experience over hierarchical rank.
5. In this organization, the people most qualified to make decisions make them.
6. If something unexpected occurs, the most highly qualified people, regardless of rank, make the decisions.
7. People typically "own" a problem until it is resolved.

---

[8] The survey instrument used at both the Dayton and Virginia Beach cyber-terrorism training exercises included the three superordinate goal questions listed in Section 3.11.a. Two additional questions (i.e., (1) To what extent would your organization classify these cumulative events as a serious problem, and (2) To what extent can your organization ignore these cumulative events?) were added to the survey instrument at the second training exercise (i.e., Virginia Beach) in an effort to allow for greater variation in response. Results from these two additional questions are not included within the present study as the questions were included in only one of the cyber-terrorism exercises, and thus would limit the available total sample size to the number of respondents at the Virginia Beach exercise.

8. It is generally easy for us to obtain expert assistance when something comes up that we don't know how to handle.

The deference to expertise scale represents one dimension (i.e., a subscale) within a larger scale that was developed by Weick and Sutcliffe and intended, in total, to assess organizational mindfulness. Limited prior research includes some attempts at assessing dimensionality of the mindfulness scale and calculating item-to-factor loadings (Baker & Plowman, 2004); however, the total mindfulness scale and corresponding subscales have not been formally validated.

3.12 Measures – Dependent Variables

3.12.a Intention to Communicate. A firm's intention to communicate was assessed during the training exercise using exercise-based activity questions. The exercise includes the following questions to be asked of all participants:

1. Would you share information regarding these events with any other agencies/organizations?
2. If yes, please list all agencies/organizations you intend to share with.
3. If yes, please list the communication method(s) you expect to use (i.e., email, telephone, cell phone, satellite phone, radio, face-to-face, other).

The reply to question #1 represented a dichotomous response that served as the dependent variable for logistic regression analysis whereby the natural log of the odds of an event occurring (i.e., whether an organization would share information) could be predicted. In addition, each table's moderator assessed the degree to which the organizations were willing to communicate. This assessment was based on organizational discussion observed during the training exercise. The facilitator was asked – Based on your observations, to what degree was Organization XX willing to communicate with other organizations (1 = Not at all; 7 = Frequent)? The facilitator response served as a check when compared to the organization responses.

*3.12.b **Intention to Collaborate.*** A firm's intention to cooperate/collaborate was assessed during the training exercise using exercise-based activity questions. The exercise includes the following questions to be asked of all participants:

1. Would you seek assistance from any other agencies/organizations in addressing these issues?
2. If yes, please list all agencies/organizations you intend to seek assistance from.
3. If yes, please list the communication method you expect to use (i.e., email, telephone, cell phone, satellite phone, radio, face-to-face, other).

The reply to question #1 represented a dichotomous response that served as the dependent variable for logistic regression analysis whereby the natural log of the odds of an event occurring (i.e., whether an organization would seek assistance) could be predicted. In addition, each table's moderator assessed the degree to which the organizations were willing to collaborate. This assessment was based on organizational discussion observed during the training exercise. The facilitator was asked – Based on your observations, to what degree was Organization XX willing to cooperate/collaborate with other organizations (1 = Not at all; 7 = Frequent)? The facilitator response served as a check when compared to the organization responses.

3.13 Data Collection

Data were collected from all exercise participants through survey instruments (See Table 3-2 for a summary) administered in conjunction with the training exercise and exercise-based activity that was recorded as part of the training. In addition, data were collected from facilitator/observer representatives who monitored training operations at each of the tables. Data were collected through survey instruments prior to the start of the exercise and near the end of the exercise. Exercise-based activity was recorded during the training exercise in training manuals designated for this purpose. The training manuals, which included participant responses,

were collected upon completion of the training exercise. Facilitator observations were collected through a survey instrument at the conclusion of the training exercise.

For all survey items, participants were instructed to answer on behalf of the organization for which they work. The cyber-terrorism exercise participants generally occupied relatively high (i.e., strategic) positions within their organization, and as such, were deemed capable of answering for their organization. The use of key informants as providing representative responses on behalf of their organizations is somewhat controversial (Kumar et al., 1993). However, use of this practice continues in organizational research , particularly research involving strategy and decision making (Hambrick, 1981; J. B. Thomas & McDaniel, 1990; Zajac & Shortell, 1989). Participants of the cyber-terrorism training were included in the exercises precisely because they held decision-making positions within their respective organizations. These individuals would be expected to make response decisions under real cyber-terrorism events. As such, each completed survey was considered a response on behalf of the respective organization and was treated separately for empirical analysis.

The present study, as designed, included recognized limitations. Particularly, the design was potentially limited by common source bias. The same individuals reported on behalf of their respective organizations for the independent and dependent variables. Design procedures were included to minimize the effects of this potential bias. Specifically, the exercise moderators were asked to also report on the dependent variables. Their responses were to be compared to the average organizational response (i.e., the average response for the combined organizational participants at their table) to assess whether the moderator response was significantly different from the average organizational response. However, actual participant responses (specifically,

the failure of respondents to answer certain questions) prevented application of the methods designed to minimize the effects of common source bias.

3.14 Data Analysis

The analysis used to empirically test the hypotheses (H2 and H3) rely on the combined data collected from the two cyber-terrorism training exercises – Dayton, Ohio and Virginia Beach, Virginia. However, the training exercises were marked by different sample sizes and different types of participating organizations. As such, analyses were required to assess potential response bias between the two training exercises. Descriptive statistics and independent sample t-tests were used to assess potential differences between the two sample sources. Statistical differences were controlled for by adding a dummy variable for exercise location (1 = Virginia Beach; 0 = Dayton).

The collected data were analyzed using binary logistic regression analysis with consecutive assessment of the two dependent variables – intention to communicate and intention to cooperate/collaborate. The logistic regression analysis on multiple models proceeded hierarchically according to the following steps (Hoffman, Cullen, Carter, & Hofacker, 1992):

1. include control variables only,
2. add swift trust measure to step 1,
3. add superordinate goal and deference to expertise measures to step 2, and
4. add the interaction effect of swift trust and each moderator variable to step 3 (i.e., ST x superordinate goal and ST x deference to expertise).

This process allowed clear analysis of the change in explained variance before and after each variable addition. Chapter 4 follows with the results from these analyses.

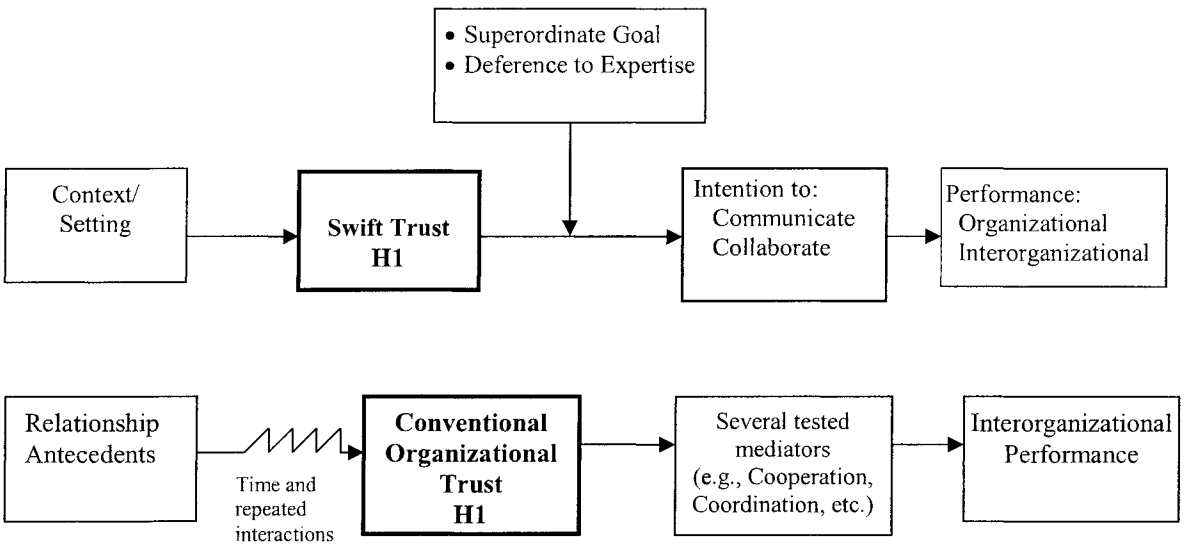


FIGURE 3-1
Models of Swift Trust and Conventional Organizational Trust

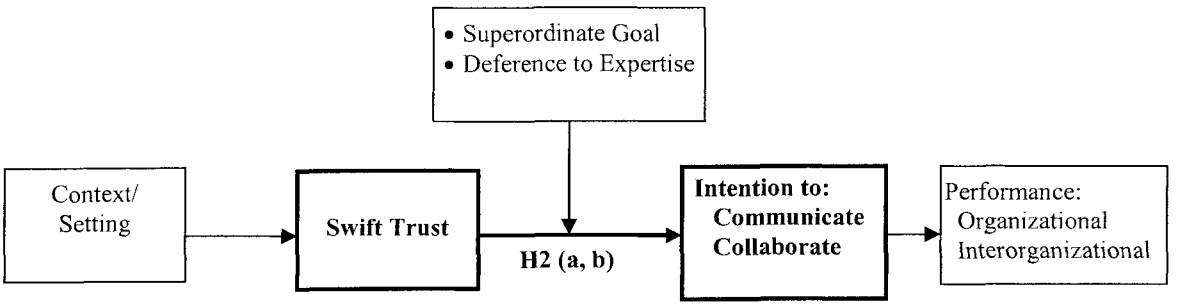


FIGURE 3-2
A Model of Swift Trust Highlighting Hypotheses #2

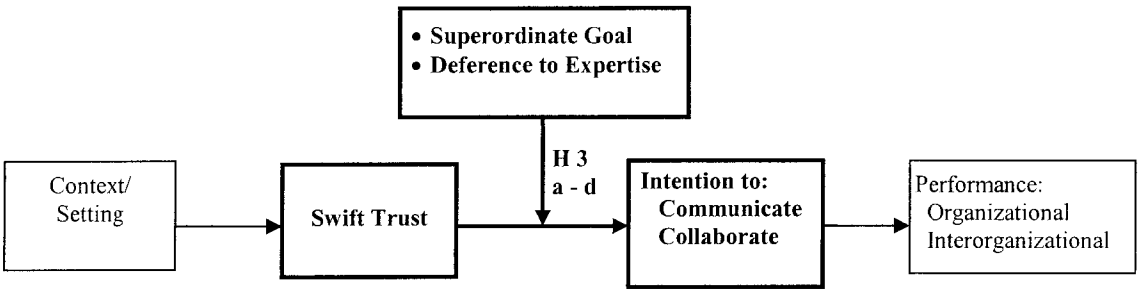


FIGURE 3-3
A Model of Swift Trust Highlighting Hypotheses #3

TABLE 3-1
List of Organizational Interviews

Federal Emergency Management Agency (FEMA)
U.S. Environmental Protection Agency (EPA)
National Aeronautics and Space Administration (NASA)
Texas Forest Service
U.S. Department of Defense
County Emergency Management

TABLE 3-2
Summary of Constructs/Concepts and Measures

Construct/Concept	Number of Items	Admin[9]	Description of Measure
Swift Trust	18	During	Likert, 7-point scales; Strongly disagree – Strongly agree[10]
Superordinate Goal	3	During	Likert, 7-point scales; Low degree – High degree
Deference to Expertise	8	Prior	Likert, 7-point scales; Not at all – A great deal[11]
Intention to Communicate	3	During	Exercise-based activity questions
Intention to Collaborate	3	During	Exercise-based activity questions
Organization affiliation	1	Prior/ During	Demographic response
Relative position within organization	1	Prior	Demographic response
Prior interactions and form of communication	2 per participating organization	Prior	Likert, 7-point scales; None – Frequent

[9] Admin represents the time period for variable measurement – during or prior to start of exercise.
[10] Items were taken from the Swift Trust Scale that was developed and validated for the present study.
[11] Modified from the Weick and Sutcliffe (2001) deference to expertise measure.

Chapter 4: Data Analysis and Results

This chapter details the data analysis conducted for the present study. The statistical methods used, the calculated results, and the levels of hypotheses support are included. The chapter organization incorporates two sections. **Section One** includes the reliability and factor analyses used in the validation of the swift trust measure and results pertaining to Hypothesis #1. **Section Two** includes the quantitative analysis of the components and hypothesized relationships of the variables within the swift trust model.

SECTION ONE

This section details the scale validation process used to assess the developed swift trust measure and compares it to a measure of conventional organizational trust. Based on the arguments put forth in Chapter 2, (i.e., the definitional differences between organizational trust and swift trust) we should expect these two concepts to be distinct. This expectation was articulated in Hypothesis #1:

> *Hypothesis #1: Swift trust represents a cognitive assessment of situational dimensions (i.e., vulnerability, uncertainty, and risk), whereas Organizational Trust indicates cognitive and affective assessments of relationship dimensions.*

Validation of the developed swift trust measure included a statistical comparison to a previously validated measure of conventional organizational trust – the Organizational Trust Inventory, or OTI (Cummings & Bromiley, 1996). This statistical comparison provided one means to ascertain whether these two forms of trust are in fact distinct and whether Hypothesis #1 is supported.

4.1 Results of Scale Validation Process

4.1.a Reliability and Validity of Swift Trust Measure. This section outlines how the Swift Trust Scale was validated. Data were collected from 182 participants of emergency response training sessions held during October 2005. Total attendance at the combined training

exercises totaled 417 (TEEX 40; HotZone 377) resulting in a completion response rate of 48.3%. Each participant was verbally asked to first read the fictitious emergency scenario and accompanying instructions, and then to complete the thirty-item survey. As outlined in the scale development section of Chapter 3, the final scale for testing included eighteen items for Swift Trust and twelve items for the shortened OTI, for a total of thirty items. The items used from the OTI are displayed in Table 4-1. The retained 18 Swift Trust items are displayed in Table 4-2. The actual instrument, which includes the randomly sorted thirty items, is found in Appendix E.

As one objective of this study was to develop a measurement tool designed to capture the unique definitional elements and boundaries of swift trust, the Swift Trust items were compared statistically to the OTI items. This statistical comparison provided one means to ascertain whether these two forms of trust are in fact distinct (i.e., demonstrate discriminant validity). The analysis and comparison process used multiple criteria to evaluate the Swift Trust measure and assess the degree of support for Hypothesis #1. First, the reliability of the overall survey instrument used in data collection and also the reliability of the Swift Trust scale and the OTI scale were assessed. Secondly, principal components factor analysis (exploratory) was conducted to assess how the items that were designed to measure each construct, actually loaded. This analysis allowed assessment of convergent validity. Finally, discriminant validity was assessed by measuring how well each item discriminates between constructs. Table 4-3 reports descriptive statistics for each of the items making up the thirty-item scale, and the correlation matrix for the scale items.

4.1.b Reliability. A survey instrument is considered reliable it if produces consistent measurements. One way to evaluate reliability is to assess the internal consistency (i.e., homogeneity) of the items within a scale. Internal consistency was assessed through multiple

methods. First[12], Cronbach coefficient alphas (Cronbach, 1951) were calculated to obtain reliability estimates for the overall scale and each subscale (i.e., the OTI and Swift Trust scales). The thirty-item combined scale resulted in an alpha of 0.856. Review of each item's correlation to the total scale, and the estimate for the Cronbach coefficient alphas subsequent to item removal, resulted in three of the Swift Trust items being removed from further analysis (leaving fifteen Swift Trust items and a combined scale of twenty-seven items). The removed items are noted in Table 4-2. Coefficient alpha for the OTI subscale was calculated as 0.874[13]. The Swift Trust subscale resulted in an alpha of 0.813[14]. Conventionally, coefficient alphas greater than 0.60 – 0.70 are considered reasonable for new scales (Nunnally & Bernstein, 1994). Therefore, the overall scale and each of the subscales demonstrated internal consistency.

Table 4-4 provides these data and also provides data on the average item-scale correlation and the range of coefficient alphas that resulted when, for each subscale, each item was removed from the subscale. The range of coefficient alphas for each subscale was reasonably consistent, lending support for scale construction. In addition, the coefficient alpha for the Swift Trust subscale was only moderately lower than the total scale and the OTI scale. Overall, these tests indicate that the OTI and Swift Trust scales are internally consistent.

4.1.c Exploratory Factor Analysis – Combined, Overall Scale. As a statistical technique, factor analysis facilitates reduction and/or grouping of variables into smaller sets of components. Exploratory factor analysis identifies information about the inter-relationships

---

[12] All negatively worded items were reversed before assessing reliability.

[13] The calculated coefficient alpha compares well with the coefficient alpha calculated by Cummings and Bromiley (1996) during the OTI scale development. The composite reliability ranged from 0.90 to 0.94 for the three dimensions of OTI.

[14] Subsequent to exploratory factor analysis (detailed in Section 4.1.c), two of the remaining Swift Trust items failed to load strongly and were removed from further analysis. This final modification resulted in a Swift Trust Scale comprised of thirteen items with a Cronbach coefficient alpha of 0.827.

between variables (or items in this study), especially during the initial stages of research surrounding a construct. Although a review of the correlation matrix, as presented in Table 4-3, indicates significant relationships among many of the items, it is difficult to manually "group" the items in a meaningful way. Therefore, exploratory factor analysis is appropriate to obtain better understanding of the items developed for the Swift Trust Scale. Exploratory factor analysis showed how the items that were designed to measure both the OTI and Swift Trust actually loaded. This analysis allowed assessment of convergent validity.

Principal components analysis (PCA) using SPSS was applied to the twenty-seven combined items of the OTI scale (twelve items) and the Swift Trust Scale (retained fifteen items). Prior to performing PCA, the suitability of the data for factor analysis was determined. Inspection of the correlation matrix revealed the presence of many coefficients of 0.30 and above. The Kaiser-Meyer-Oklin value was 0.83, exceeding the recommended value of 0.60 (Kaiser, 1970, 1974) and the Barlett's Test of Sphericity (Bartlett, 1954) reached statistical significance (p=.000), supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of eight components with eigenvalues exceeding 1 (Rummel, 1970); explaining the following percent of variance:

Component 1 – 25.2% of variance
Component 2 – 11.5% of variance
Component 3 – 6.0% of variance
Component 4 – 4.7% of variance
Component 5 – 4.5% of variance
Component 6 – 4.3% of variance
Component 7 – 3.9% of variance
Component 8 – 3.8% of variance

for a cumulative percent of variance totaling 63.9%. An inspection of the screeplot revealed a clear break after the second component. Two components were retained for further investigation based on Catell's (1966) scree test and a review of the unrotated component loadings (see

Appendix F-1 and F-2). Varimax rotation was used to aid in the interpretation of these two components. As is frequently done (Finkelstein, 1992), items with factor loadings ≥ |.40| were treated as meaningful for interpretation. Two of the Swift Trust items failed to load strongly on either Component (see Table 4-2 for the specific items), and were removed from further analysis (leaving thirteen Swift Trust items). The rotated solution (presented in Table 4-5) revealed the presence of a simple structure (Thurstone, 1947), with both components showing a number of strong loadings, and most variables loading substantially on only one component. The two-factor solution explained a total of 36.7% of the variance, with Component 1 contributing 19.9% and Component 2 contributing 16.8%. The interpretation of the two components followed the two proposed forms of organizational trust. The OTI items loaded strongly on Component 1, and the Swift Trust Items loaded strongly on Component 2.

Theoretically, the two underlying factors are assumed to be independent – the OTI relationship based, and Swift Trust contextually based. As such, Varimax rotation seemed appropriate. However, interpretation of the two factors was also assessed using oblique rotation to test for an improved solution. The item loadings were similar for the oblique rotation with no material difference in loadings compared to those found with Varimax rotation.

Discriminant validity was evaluated in multiple ways. First, results of the exploratory factor analysis (using Varimax rotation) indicate that each item loaded only on one factor in a manner consistent with scale development expectations. Secondly, as displayed in the "Median Correlations" column of Table 4-4, the median correlation between items of the same scale was greater than the median correlation of each item with items making up the other scale. Although no cutoff value exists for this test of discriminant validity, Campbell and Fiske (1959) suggest that any positive difference in median correlations is enough to establish discriminant validity.

Both scales (i.e., the OTI and Swift Trust) meet this requirement. Additionally, the last column of Table 4-4 illustrates that each item was more strongly correlated with its own scale than with the other scale.

The results of the above factor analysis and discriminant validity checks provide support for: 1) the validity of the scale used within this study, 2) the discrimination between the OTI and Swift Trust scales, and 3) the use of the Organization Trust Inventory (OTI) items and the Swift Trust items as separate scales. Therefore, Hypothesis #1 is *supported.* The situation-based scale items (i.e., those capturing situational vulnerability, uncertainty, and risk) displayed higher loadings with Swift Trust, while the relationship-based items exhibited higher loadings with Organizational Trust.

4.1.d Exploratory Factor Analysis – Swift Trust Scale only. Principal components analysis (PCA) using SPSS was applied to the final thirteen items of the Swift Trust Scale to assess the multi-dimensionality of the construct. As previously discussed in Chapter 3, the process used to develop the Swift Trust Scale relied on the foundational, theoretical work proposed by Meyerson and colleagues (1996). According to their theoretical development, *context* substantially controls the development of swift trust. The contextual setting includes the degree of vulnerability, uncertainty, and risk faced by the participating organizations. Thus, swift trust forms based upon a cognitive understanding of the setting rather than an affective or cognitive understanding of how other organizations might behave. As such, the items within the Swift Trust Scale were designed to incorporate these elements. Factor analysis provides a means to assess the underlying latent variables within a set of items, and allows evaluation of the potential multi-dimensionality of the Swift Trust Scale. The following discussion outlines the

factor analysis conducted on the HotZone/TEEX data set, but simply in relation to the thirteen remaining swift trust items.

Prior to performing PCA, the suitability of the data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of 0.30 and above. The Kaiser-Meyer-Oklin value was 0.852, exceeding the recommended value of 0.60 (Kaiser, 1970, 1974) and the Barlett's Test of Sphericity (Bartlett, 1954) reached statistical significance (p=.000). Together, these results support the factorability of the correlation matrix.

Principal components analysis revealed the presence of four components with eigenvalues exceeding 1 (Rummel, 1970); explaining the following percent of variance:

Component 1 – 33.4% of variance
Component 2 – 9.6% of variance
Component 3 – 8.1% of variance
Component 4 – 7.8% of variance

for a cumulative percent of variance totaling 58.9%. An inspection of the screeplot revealed a clear break after the first component (see Appendix G-1). However, two, three, and four components were retained for further investigation based on theoretical expectations, the investigative nature of the research when developing a new measurement tool, and a review of the unrotated component loadings (see Appendix G-2). Again, due to the investigative orientation of this research and the possibility of related contextual dimensions of swift trust, Varimax and oblique rotation were both used to aid in the interpretation of the multiple components. As is frequently done (Finkelstein, 1992), items with factor loadings $\geq |.40|$ were treated as meaningful for interpretation.

The rotated solutions (presented in Appendix G-3) revealed the presence of a simple structure (Thurstone, 1947) for the Varimax loadings, with both components showing a number of strong loadings, and all variables loading substantially on only one component. The two-factor

Varimax rotation solution explained a total of 43.0% of the variance, with Component 1 contributing 22.1% and Component 2 contributing 20.9%. The rotated solutions (presented in Appendix G-3) using oblique rotation revealed a similar simple structure (Thurstone, 1947), with both components showing a number of strong loadings, and all variables loading substantially on only one component[15].

The interpretation of the two components appears somewhat consistent with the swift trust definitional characteristics as proposed by Meyerson and colleagues (1996). Table 4-6 displays the grouping of the swift trust items as based on the component results from the exploratory factor analysis. Seven items loaded strongly on Component 1. These items appear to incorporate situational risk and uncertainty evident under conditions requiring swift trust. The remaining six items loaded strongly on Component 2, and appear to incorporate the organizational interdependence and accompanying vulnerability associated with conditions requiring swift trust.

The results of this initial exploratory analysis point to three general findings. First, although swift trust, by definition, incorporates three contextual conditions (vulnerability, uncertainty, and risk); the above findings propose at most a two-dimension construct. Secondly, these findings suggest that either: 1) the risk of the particular environmental conditions is indistinguishable from the associated uncertainty and/or vulnerability, 2) the risk is intertwined with environmental uncertainty and/or vulnerability, or 3) the swift trust items developed within this study were unable to capture a statistical difference between situational risk and the other two contextual conditions. Finally, the resulting two dimensions of swift trust may or may not be

---

[15] Use of oblique rotation assumes the components are correlated. As a result, the sums of the squared loadings cannot be added to obtain a total variance explained.

independent. The similar loadings between the oblique and Varimax two-factor rotations support this proposition. In fact, no theoretical basis exists to imply that the two factors would be independent. Due to their mutual relationship to swift trust, the two dimensions may be strongly correlated. In an effort to provide further clarification as to the dimensionality of swift trust and support for the initial exploratory findings, confirmatory factor analysis was also conducted on an alternate data set.

4.1.e Confirmatory Factor Analysis – Swift Trust Scale only. Confirmatory factor analysis (CFA) is often used to confirm a particular pattern of relationships predicted on the basis of theory or exploratory factor analysis. In order to provide further support for my initial exploratory findings, a second data source was used to assess the structure of swift trust (i.e., two dimensions) as proposed through the exploratory factor analysis.

Data were collected in conjunction with two cyber-terrorism tabletop training exercises administered by the University of Texas at San Antonio Center for Infrastructure Assurance and Security (CIAS). The exercises took place in Dayton, Ohio in December 2005 and Virginia Beach, Virginia in February 2006. Participating individuals generally occupied high-level positions within their respective organizations (e.g., city mayor, police chief, fire chief, etc.). As such, they possessed intimate operational knowledge of their respective organizations and were deemed qualified to answer the Swift Trust items on behalf of their organization. For the purposes of CFA, the responses from the two groups were consolidated into a single data source, as any differences between the two groups would have no impact on the assessment of Swift Trust dimensionality[16]. Combined, the training exercises included a total of 175 participants.

---

[16] Subsequent t-tests analyses for use in logistic regression indicated no significant differences between the two training groups.

Overall, 141 participants responded for an overall response rate of 80%. The thirteen Swift Trust items were included as one section within a larger survey instrument. The complete survey instrument was used to test the relationships as outlined in Section Two, which follows the present discussion.

The objective of conducting confirmatory factor analysis on a second data set was to assess the two-dimension model that resulted from the earlier exploratory factor analysis on the thirteen-item Swift Trust Scale. Table 4-7 presents the goodness-of-fit indices for the alternate models that were examined using LISREL 8.51. Model 1 represents the two-dimension model as determined through exploratory factor analysis. Specifically, Model 1 follows the item-to-dimension relationships as documented in Table 4-6. Models 2 and 3 included modifications to the original Model 1 based on the modification fit indexes suggested through LISREL calculations. Model 4 represents a one-dimensional model with all thirteen items associated with a single dimension of Swift Trust.

As shown in Table 4-7, several models fit the data reasonably well. Conventionally, "favorable" values of the indexes included within Table 4-7 are as follows: 1) GFI, AGFI, CFI, and NNFI all in excess of 0.90 (Bentler, 1990; Bentler & Bonett, 1980; Kelloway, 1998; Kline, 1998); 2) SRMR less than or equal to 0.05 (Kelloway, 1998); and 3) $\chi^2/df < 3$ (Kline, 1998). However, because no single index is adequate to assess goodness of model fit, the more criteria listed above that a model satisfies the better.

As the purpose in this research was simply to confirm the plausibility of the two-dimension model of Swift Trust found through EFA, no respecification of the model was deemed appropriate. As such, Model 1 was the only model under true consideration. Models 2 and 3 resulted from LISREL inspired modifications for improvement to the initial Model 1. The cross-

loadings and error correlations specified through LISREL for Models 2 and 3 improved the overall goodness-of-fit, but have no theoretical foundation and inflate the model fit (MacCallum, 1986) purely through data-driven modifications. A theory-based explanation should drive any modifications and/or adjustments; consequently further refinement of the model is beyond the scope of this research project.

The theoretical foundation of Swift Trust suggests a three-dimensional construct (i.e., based on situational vulnerability, uncertainty, and risk) (Meyerson et al., 1996), while the present quantitative analysis suggests at most a two-dimensional construct. In fact, the Model 1 results in Table 4-7 suggest that, based on the high correlation between the two dimensions, Swift Trust is more likely best represented as a one-dimensional construct in which the three situational elements are inextricably intertwined. According to Kline (1998), inter-factor (i.e., inter-dimension) correlations that are excessively high (e.g., > 0.85), fail to support discriminant validity. Therefore, given the correlation of 0.93 between the two EFA-proposed dimensions, the thirteen Swift Trust items can hardly be said to measure two distinct dimensions of Swift Trust. The second data set used in CFA does not completely support the model developed through EFA.

Further analysis is needed to adequately assess the dimensionality of Swift Trust. Since results of factor analysis may be sample specific, it is necessary to cross-validate the measure of swift trust using additional samples. The present research provides only tentative conclusions, but does question the theoretical specification of the construct as identified by Meyerson and colleagues. More construct validation research is needed before this construct and its current measurement instrument can be confidently used in substantive research (Schwab, 1980).

SECTION TWO

This section details the quantitative analysis of the hypothesized relationships within the swift trust model. Discussion includes the data analysis methods used and the levels of support for each of the hypothesized relationships in the model.

4.2 Results of Hypotheses Testing

Two data sources were used to test the relationships of the swift trust model defined through Hypotheses #2 (a-b) and Hypotheses #3 (a-d) and shown in Figure 4-1. Data were collected through the Dayton and Virginia Beach cyber-terrorism exercises described earlier (see Appendix H for the survey instrument used in data collection). Statistical analysis was conducted to determine whether the two data sources were significantly different, or whether the scores from the two separate exercises could be combined. Specifically, a test was needed to assess whether a statistical difference existed between the mean scores obtained from the Dayton and Virginia Beach exercises. If responses from the two exercises are statistically different, model testing must be conducted for each exercise separately. If responses from the two exercises are not statistically different, the two sets of scores may be treated as coming from the same population and combined for model testing purposes.

Independent-sample t-tests were conducted to compare the swift trust, deference to expertise, and superordinate goal scores for the Dayton and Virginia Beach exercises. Similar calculations cannot be made in regards to the Intention to Communicate and Intention to Collaborate variables, as these dependent measures are categorical variables, and as such, violate the t-test assumption requiring continuous variables. Table 4-8 includes the results of these tests.

As shown in Table 4-8, there are no significant differences in mean scores for Dayton and Virginia Beach participants. The Levene's test for equality of variances indicates that the

variations of scores between the two exercises are the same for each variable (i.e., the Levene's significance value is greater than 0.05), and the assumption of equal variances has not been violated. The corresponding t-tests and two-tailed significance tests indicate there are no significant differences between the two exercises on any of the variables as measured. Additionally, a review of the effect size statistics signifies that the magnitude of differences between the exercises is small. As a result, the scores from the two exercises are combined for all subsequent model/hypothesis testing.

4.2.a Logistic Regression. Logistic regression is a statistical method well suited for use with dichotomous dependent variables, and allows for prediction of outcome category membership. This method allows for single or multiple independent variables. Instead of predicting a "score" or outcome based on various input measures as is done in multiple regression, logistic regression allows prediction of whether a participant will belong to one category or another. For example, in the present study, logistic regression allows prediction of whether the participating cyber-terrorism training organizations will exhibit intentions to communicate and/or collaborate.

The strength of multiple models of swift trust based on all combinations of independent, moderator, and dependent variables was assessed. This analysis resulted in assessment of twelve models (i.e., six models with Intention to Communicate as the dependent variable and six models with Intention to Collaborate as the dependent variable). The results from these analyses are displayed in Tables 4-11 and 4-12. Although twelve models were evaluated, discussion of the results in this chapter is limited to the six models used to test Hypotheses #2 (a-b) and #3 (a-d). All other noteworthy results are discussed in Chapter 5. The six models and included variables are summarized in Table 4-9, while Table 4-10 provides the correlation matrix.

Logistic regression analysis was conducted on Model A with Intention to Communicate as the dependent variable and the level of swift trust as the predictor variable. Control variables (relative position within organization, and degree of prior interactions with the other organizational exercise participants) were also included. Of the 141 total cases, 119 cases were completed fully and could be used at this phase of analysis. Seven of the 119 cases indicated no intentions to communicate. The full model was significantly reliable ($\chi^2 = 15.764$, df = 6, $p < .015$). This model accounted for between 12.4% and 34.4 % of the variance in intention to communicate, with 99.1% of those with intentions to communicate successfully predicted. However, none of the predictions for those not intending to communicate were accurate. Overall, 93.3% of predictions were accurate. Table 4-11 provides the probability values for each of the predictor variables. The data show that none of the individual variables reliably predict intentions to communicate. Thus, Hypothesis #2a is not supported.

Similarly, logistic regression analysis was conducted on Model B with Intention to Collaborate as the dependent variable and the level of swift trust as the predictor variable. Control variables (relative position within organization, and degree of prior interactions with the other organizational exercise participants) were also included. Of the 141 total cases, 113 cases were completed fully and could be used at this phase of analysis. Fourteen of the 113 cases indicated no intentions to collaborate. The full model was moderately reliable ($\chi^2 = 11.699$, df = 6, $p < .069$), but not significant at the 0.05 level or below. This model accounted for between 9.8% and 18.7 % of the variance in intention to collaborate, with 99.0% of those with intentions to collaborate successfully predicted. However, only 14.3% of the predictions for those not intending to collaborate were accurate. Overall, 88.5% of predictions were accurate. Table 4-12 provides the probability values for each of the predictor variables. The data show that the level of

swift trust was close to statistical significance ($p = .068$) in predicting intentions to collaborate. Thus, Hypothesis #2b has moderate support. The value of the coefficient reveals that the odds of not intending to collaborate decline with increasing levels of swift trust. Therefore, the intention to collaborate increases as swift trust increases. However, this result requires substantiation with further research.

Logistic regression analysis was conducted on Model C with Intention to Communicate as the dependent variable and the level of swift trust, recognition and acceptance of a superordinate goal, and the interaction of these two elements as predictor variables. Control variables (relative position within organization, and degree of prior interactions with the other organizational exercise participants) were also included. Of the 141 total cases, 119 cases were analyzed and the full model was significantly reliable ($\chi^2 = 18.869$, $df = 8$, $p < .016$). This model accounted for between 14.7% and 40.6 % of the variance in intention to communicate, with 99.1% of those with intentions to communicate successfully predicted. However, only 28.6% of predictions for those not intending to communicate were accurate. Overall, 95.0% of predictions were accurate. Table 4-11 provides the probability values for each of the predictor variables. The data show that none of the individual variables reliably predict intentions to communicate. Thus, Hypothesis #3a is not supported.

Model D was analyzed using logistic regression analysis with Intention to Communicate as the dependent variable and the level of swift trust, the firm's deference to expertise, and the interaction of these two as predictor variables. Control variables (relative position within organization, and degree of prior interactions with the other organizational exercise participants) were also included. Of the 141 total cases, 113 cases were analyzed and the full model was significantly reliable ($\chi^2 = 20.692$, $df = 8$, $p < .008$). This model accounted for between 16.7%

and 45.0 % of the variance in intention to communicate, with 99.1% of those with intentions to communicate successfully predicted. However, only 28.6% of predictions for those not intending to communicate were accurate. Overall, 94.7% of predictions were accurate. Table 4-11 provides the probability values for each of the predictor variables. The data show that the interaction between swift trust and a firm's deference to expertise was close to statistical significance ($p = .053$) in predicting intentions to communicate. Thus, Hypothesis #3b has moderate support. The value of the coefficient reveals that the odds of not intending to communicate decline with increasing levels of swift trust as long as a firm demonstrates significant levels of deference to expertise. Therefore, the intention to communicate increases as swift trust increases and is accompanied by a firm's deference to expertise.

Likewise, logistic regression analysis was used to assess Model E with Intention to Collaborate as the dependent variable and the level of swift trust, recognition and acceptance of a superordinate goal, and the interaction of these two elements as predictor variables. Control variables (relative position within organization, and degree of prior interactions with the other organizational exercise participants) were also included. Of the 141 total cases, 113 cases were analyzed and the full model was significantly reliable ($\chi^2 = 15.519$, $df = 8$, $p < .05$). This model accounted for between 12.8% and 24.3 % of the variance in intention to collaborate, with 99.0% of those with intentions to collaborate successfully predicted. However, only 28.6% of predictions for those not intending to collaborate were accurate. Overall, 90.3% of predictions were accurate. Table 4-12 provides the probability values for each of the predictor variables. The data show that the interaction between swift trust and the recognition and acceptance of a superordinate goal was close to statistical significance ($p = .075$) in predicting intentions to collaborate. Thus, Hypothesis #3c has only minimal support.

Finally, logistic regression analysis was used to evaluate Model F with Intention to Collaborate as the dependent variable and the level of swift trust, the firm's deference to expertise, and the interaction of these two elements as predictor variables. Control variables (relative position within organization, and degree of prior interactions with the other organizational exercise participants) were also included. Of the 141 total cases, 108 cases were analyzed and the full model was not significantly reliable ($\chi^2 = 13.117$, df = 8, $p < .108$). This model accounted for between 11.4% and 22.8 % of the variance in intention to communicate, with 99.0% of those with intentions to communicate successfully predicted. However, only 8.3% of predictions for those not intending to communicate were accurate. Overall, 88.9% of predictions were accurate. Table 4-12 provides the probability values for each of the predictor variables. The data show that none of the individual variables reliably predict intentions to collaborate. Thus, Hypothesis #3d is not supported.

Table 4-11 details the results of the logistic regression analyses for the dependent variable Intention to Communicate. Table 4-12 details the results of the logistic regression analyses for the dependent variable Intention to Collaborate. Table 4-13 provides a summary of the level of Hypotheses support.

4.2.b Test for Mediation. Two conditions suggest that further clarification of the possible influence of the two moderator variables is desirable. One, swift trust research is in the preliminary stage of development. Two, some of the observed results of logistic regression raise intriguing questions. Specifically, it seems useful to investigate whether the variables (i.e., a firm's deference to expertise and the recognition and acceptance of a superordinate goal) might alternately function as mediating variables in the relationship between swift trust and behavioral intentions.

Moderating variables "affect the direction and/or strength of the relation between and independent or predictor variable and a dependent or criterion variable" (Baron & Kenny, 1986, p. 1174). Moderators, therefore, influence the relationship between two other variables. For example, the results provided above suggest that the relationship between swift trust and a firm's intention to communicate will be strengthened by a firm's deference to expertise. In this case, a firm's deference to expertise is acting as a moderator.

Mediating variables, on the other hand, "account for the relation between the predictor and the criterion" (Baron & Kenny, 1986, p. 1176). Mediators, therefore, must be present in order for an independent variable to have an indirect effect on the dependent variable. Although debate exists within the field on the proper methods for testing mediation[17], the often used mediation tests of Baron and Kenny (1986) were applied to clarify the role of a firm's deference to expertise and the recognition and acceptance of a superordinate goal. The following tests were used[18]:

1. Show that X is a significant predictor of Y.
2. Show that X is a significant predictor of M.
3. Show that M is a significant predictor of Y when we control for X.

If mediation is found, further analysis is needed to determine whether the mediation is complete or partial. Complete mediation is present when the effect of X when controlling for M equals zero. Partial mediation is present when the effect of X when controlling for M is greater than zero, but less than the effect of X alone.

Table 4-14 includes the results of the mediation analysis. According to these results, neither of the two variables functions as a mediator. The relationship between swift trust and

---

[17] Further discussion of alternate mediation tests is provided in Chapter 5, Discussion section.
[18] X represents the independent variable. Y represents the dependent variable. M represents the moderating variable.

intentions to communicate are significant only when considering the influence of a firm's deference to expertise (i.e., a moderated relationship). The second mediation relationship (i.e., Swift Trust → Superordinate Goal → Intention to Collaborate) does meet the first two tests detailed above, but fails to meet test #3.

Chapter 5 concludes the present research with a summary of the overall research findings, organizational/managerial implications of the findings, and limitations of the study. In addition, an agenda for future research is offered.

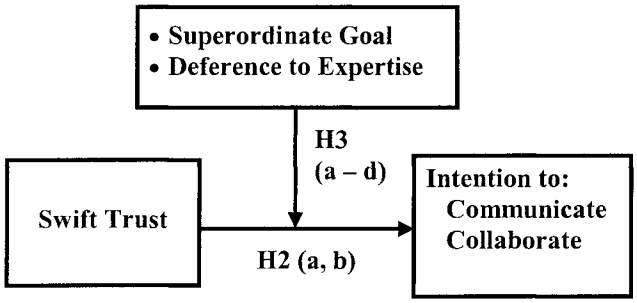


FIGURE 4-1
Swift Trust Model - Hypothesized Relationships

TABLE 4-1
Organizational Trust Inventory (OTI) Items[19]

1. We feel that the other organizations try to get out of their commitments.
2. We feel that the other organizations take advantage of people who are vulnerable.
3. We think that the other organizations do not mislead us.
4. We think that the other organizations take advantage of our problems.
5. We feel that the other organizations try to get the upper hand.
6. We feel that the other organizations negotiate with us honestly.
7. We think the people in the other organizations tell the truth in negotiations.
8. In our opinion, the other organizations involved are reliable.
9. We think that the people in the other organizations succeed by stepping on other people.
10. We feel that the other organizations negotiate joint expectations fairly.
11. We think that the other organizations meet their negotiated obligations to us.
12. We feel that the other organizations will keep their word.

[19] The Organizational Trust Inventory (OTI) requires the inclusion of a referent organization (selected and identified by the respondent) for completion of the scale. When using the OTI, respondents complete each item with their response based in relation to the referent organization. For the present study, the OTI was modified to reference all other organizations expected to participate in the scenario developed for use in this dissertation.

TABLE 4-2
Swift Trust (ST) Items

1. We must work with other organizations to accomplish our objectives in a timely manner.
2. We know with certainty the outcome of this activity. [a]
3. We know the deadline for completion of this activity. [a]
4. We know our reputation could be damaged by a poor outcome on this activity.
5. We are unsure of the roles to be performed by other organizations. [a, b]
6. We can observe the skills/abilities of the other organizations. [a, b]
7. We understand that the consequences are severe if all organizations do not work well together.
8. We understand that time is of the essence regarding completion of this activity.
9. We understand that the consequences of not meeting our objectives are severe.
10. We know how long each step in the process takes to complete. [a]
11. We recognize the importance of this activity for the livelihood of our organization.
12. We expect the working conditions to change over the course of this activity.
13. We recognize that success depends on effective coordination among all organizations.
14. We realize this activity requires the coordination of multiple organizations.
15. We know that immediate action is needed for the success of the activity.
16. We must rely on other organizations to achieve our objectives.
17. We know clearly the roles needed to accomplish this task.
18. We must participate in this activity despite the chance of a poor outcome.

[a] Removed from subsequent analysis based on item-factor analysis.
[b] Removed from subsequent analysis based on non-loading on factors.

TABLE 4-3
Descriptive Statistics and Correlations of Items within Combined Scale[a]

			Correlations														
Items	**Means**	**s.d.**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	6.64	0.81	1.00														
2	4.92	1.43	.178	1.00													
3	5.28	1.45	.142	.652	1.00												
4	4.48	1.57	.183	.197	.165	1.00											
5	4.66	1.67	.020	.180	.010	-.026	1.00										
6	5.00	1.48	.055	.447	.533	.270	.121	1.00									
7	4.64	1.76	-.041	.240	.123	.008	.408	.107	1.00								
8	4.70	1.56	.152	.467	.571	.281	.080	.531	.217	1.00							
9	4.97	1.31	.121	.271	.295	.289	.046	.391	.081	.107	1.00						
10	4.75	1.31	.098	.260	.222	.227	.040	.288	.010	.531	.217	1.00					
11	5.95	1.22	.269	.076	-.009	.034	-.015	-.009	-.054	.391	.081	.085	1.00				
12	4.13	1.46	.073	.193	.162	.049	-.181	.165	-.089	.288	.010	.142	.049	1.00			
13	5.28	1.14	.021	.189	.071	.034	-.040	.162	-.003	-.009	-.054	.201	-.039	.139	1.00		
14	6.35	0.96	.310	.129	.025	.181	.096	.054	-.024	.165	-.089	.167	.373	.153	.268	1.00	
15	5.96	1.24	.203	-.005	-.008	.025	-.002	.018	-.137	.162	-.003	.042	.205	.075	.190	.350	1.00
16	6.09	1.21	.290	.090	.043	.208	-.045	.009	-.014	.054	-.024	.068	.197	.045	.050	.406	.484
17	4.18	1.52	-.110	.184	.028	.019	.301	.044	.418	.018	-.137	-.121	-.072	-.197	-.163	-.039	-.174
18	5.47	1.21	.240	.083	.020	.146	.034	.112	-.082	.009	-.014	.256	.223	.220	.125	.294	.390
19	6.06	0.94	.209	.122	.028	.044	.182	.123	.031	.044	.418	.175	.305	.003	.177	.312	.276
20	5.08	1.15	.062	.222	.280	.227	-.016	.164	-.134	.112	-.082	.297	.008	.183	.152	.132	.014
21	5.11	1.46	.001	.424	.475	.190	.113	.321	.108	.123	.031	.234	.010	.181	.061	.212	.124
22	6.47	0.77	.268	.190	.289	.130	.047	.282	.047	.164	-.134	.210	.162	.187	.045	.441	.172
23	6.38	0.99	.204	.135	.157	.032	.075	.189	-.078	.321	.108	.211	.099	.064	.189	.306	.220
24	5.08	1.13	.111	.382	.383	.300	-.023	.372	.082	.282	.047	.434	.060	.143	.156	.111	.007
25	5.01	1.08	.235	.293	.338	.225	-.057	.336	.062	.189	-.078	.442	.097	.238	.120	.160	.107
26	5.95	1.08	.207	.066	.043	.213	-.059	.098	-.046	.372	.082	.142	.127	.135	.096	.317	.381
27	5.24	1.09	.191	.313	.380	.311	.000	.412	.008	.336	.062	.487	.039	.096	.241	.261	.118
28	5.63	1.20	.222	.041	.017	.104	.094	.072	.088	.098	-.046	.145	.140	.127	.032	.170	.164
29	5.31	1.06	.266	.012	.028	.080	-.135	.094	-.161	.412	.008	.269	.184	.243	.200	.292	.184
30	5.97	1.21	.208	.088	.098	.085	-.116	.056	-.053	.072	.088	.198	.124	.124	.133	.273	.121

[a] N = 182. Correlations greater than 0.145 are significant at $p < 0.05$; correlations greater than 0.190 are significant at $p < 0.01$.

TABLE 4-3 (*continued*)
Descriptive Statistics and Correlations of Items within Combined Scale[a]

	Correlations														
Items	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16	1.00														
17	.052	1.00													
18	.369	-.248	1.00												
19	.253	-.066	.354	1.00											
20	.103	-.074	.200	.158	1.00										
21	.182	.014	.143	.180	.384	1.00									
22	.324	-.066	.285	.174	.206	.278	1.00								
23	.397	-.071	.280	.308	.262	.212	.507	1.00							
24	.137	-.031	.204	.168	.429	.307	.223	.250	1.00						
25	.262	-.076	.321	.218	.461	.235	.277	.314	.673	1.00					
26	.395	-.085	.434	.259	.258	.109	.292	.335	.165	.371	1.00				
27	.231	-.021	.249	.169	.438	.295	.246	.212	.583	.658	.354	1.00			
28	.180	-.030	.285	.284	.173	.107	.181	.319	.277	.373	.287	.288	1.00		
29	.187	-.312	.333	.171	.248	.041	.282	.315	.250	.302	.356	.240	.269	1.00	
30	.245	.009	.247	.138	.230	.033	.339	.318	.100	.255	.431	.246	.276	.373	1.00

[a] N = 182. Correlations greater than 0.145 are significant at $p < 0.05$; correlations greater than 0.190 are significant at $p < 0.01$.

TABLE 4-4
Reliability and Validity of Organizational Trust Measures

Variables and Items	Cronbach Alphas	Average Item-Scale Correlations	Range of Alphas	Average Alphas	Median Correlations[a]	Differences in Correlations[b]
Organizational Trust Inventory (n=163)	**.874**	**.523**	**.857-.874**	**.864**	**.214**	
#1						.367
#2						.498
#3						.192
#4						.445
#5						.461
#6						.336
#7						.291
#8						.213
#9						.353
#10						.367
#11						.198
#12						.218
Swift Trust Items (n=177)	**.827**	**.406**	**.808-.825**	**.816**	**.124**	
#1						.240
#4						.290
#7						.338
#8						.390
#9						.321
#11						.257
#12						.207
#13						.083
#14						.209
#15						.314
#16						.166
#17						.199
#18						.223

[a] Median correlation of items in scale minus median correlation of items in scale with all non-scale items.
[b] Correlation of item with scale minus the correlation of item with other scale

TABLE 4-5
Exploratory Two-Factor Analytic
Results with Varimax Rotation

Factors and Items	1	2
Organizational Trust Inventory (α = .874, n=163)		
We feel that the other organizations try to get the upper hand.	**.754**	.007
We feel that the other organizations take advantage of people who are vulnerable.	**.731**	-.094
We feel that the other organizations negotiate joint expectations fairly.	**.718**	.161
We think that the other organizations take advantage of our problems.	**.688**	-.027
We feel that the other organizations will keep their word.	**.683**	.296
We feel that the other organizations try to get out of their commitments.	**.662**	-.021
We feel that the other organizations negotiate with us honestly.	**.661**	.102
We think that the other organizations meet their negotiated obligations to us.	**.638**	.369
We think the people in the other organizations tell the truth in negotiations.	**.596**	.191
We think that the people in the other organizations succeed by stepping on other people.	**.562**	.090
In our opinion, the other organizations involved are reliable.	**.505**	.226
We think that the other organizations do not mislead us.	.395	.139
Swift Trust Items (α = .827, n=177)		
We know that immediate action is needed for the success of the activity.	.130	**.664**
We understand that the consequences of not meeting our objectives are severe.	.033	**.658**
We understand that the consequences are severe if all organizations do not work well together.	.085	**.650**
We recognize the importance of this activity for the livelihood of our organization.	.153	**.636**
We understand that time is of the essence regarding completion of this activity.	-.071	**.596**
We realize this activity requires the coordination of multiple organizations.	.225	**.567**
We know clearly the roles needed to accomplish this task.	.162	**.552**
We must participate in this activity despite the chance of a poor outcome.	.127	**.527**
We expect the working conditions to change over the course of this activity.	.123	**.508**
We recognize that success depends on effective coordination among all organizations.	.343	**.487**
We must rely on other organizations to achieve our objectives.	.170	**.471**
We must work with other organizations to accomplish our objectives in a timely manner.	.115	**.469**
We know our reputation could be damaged by a poor outcome on this activity.	-.045	**.432**
Eigenvalue (after rotation)	5.372	4.536
Cumulative % of Variance = 36.7%	19.9%	16.8%

TABLE 4-6
Swift Trust (ST) Items Grouping based on Factor Analysis

Component 1 - Situational Risk and Uncertainty
We must work with other organizations to accomplish our objectives in a timely manner.
We know our reputation could be damaged by a poor outcome on this activity.
We understand that the consequences are severe if all organizations do not work well together.
We understand that time is of the essence regarding completion of this activity.
We understand that the consequences of not meeting our objectives are severe.
We recognize the importance of this activity for the livelihood of our organization.
We expect the working conditions to change over the course of this activity.
Component 2 - Situational Interdependence and Vulnerability
We recognize that success depends on effective coordination among all organizations.
We realize this activity requires the coordination of multiple organizations.
We know that immediate action is needed for the success of the activity.
We must rely on other organizations to achieve our objectives.
We know clearly the roles needed to accomplish this task.
We must participate in this activity despite the chance of a poor outcome.

TABLE 4-7
Goodness-of-Fit Indices for Alternative CFA Models

Model and Dimensions	χ^2	*df*	*GFI*	*AGFI*	*SRMR*	*CFI*	*NNFI*	*Factor Correlation*
Model 1 – Two Dimension	143.99	64	.84	.78	.066	.87	.84	.93
Model 2 – Two Dimension	82.23	55	.91	.84	.054	.96	.94	.91
Model 3 – Two Dimension	62.01	52	.93	.88	.047	.98	.98	.89
Model 4 – One Dimension	148.11	65	.84	.78	.067	.87	.84	--

Notes: The composition of each model is further described in the text. GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; SRMR = standardized root-mean-squared residual; CFI = comparative fit index; NNFI = nonnormed fit index.

TABLE 4-8
Results of Independent-sample t-tests

			Levene's Test for Equality of Variance					
Variable	Mean	Std Dev	F	Sig.	t	df	Sig. 2-tailed	Effect Size
Swift Trust			.071	.790	-1.502	122	.136	.0182
- Dayton	73.35	8.75						
- Virginia Beach	75.73	8.40						
Deference to Expertise			.834	.363	-1.027	132	.306	.0079
- Dayton	42.94	7.43						
- Virginia Beach	44.26	7.14						
Superordinate Goal			2.546	.113	-1.687	129	.094	.0216
- Dayton	5.81	1.36						
- Virginia Beach	6.17	1.03						

TABLE 4-9
Models Subject to Logistic Regression

Model #	Dependent Variable	Independent Variables
Model A (Int to Comm #2)	Intention to Communicate	Position within Organization Prior interaction with others firms Level of swift trust (ST)
Model B (Int to Coll #2)	Intention to Collaborate	Position within Organization Prior interaction with others firms Level of swift trust (ST)
Model C (Int to Comm #5)	Intention to Communicate	Position within Organization Prior interaction with others firms Level of swift trust (ST) Superordinate goal (SOG) ST * SOG
Model D (Int to Comm #4)	Intention to Communicate	Position within Organization Prior interaction with others firms Level of swift trust (ST) Deference to Expertise (DTE) ST * DTE
Model E (Int to Coll #4)	Intention to Collaborate	Position within Organization Prior interaction with others firms Level of swift trust (ST) Superordinate goal (SOG) ST * SOG
Model F (Int to Coll #5)	Intention to Collaborate	Position within Organization Prior interaction with others firms Level of swift trust (ST) Deference to Expertise (DTE) ST * DTE

TABLE 4-10
Means, standard deviations, and inter-correlations

Variable	Mean	s.d.	1	2	3	4	5	6
Position	2.37	1.40						
Prior Interaction	4.65	1.36	-.057					
Swift Trust	74.90	8.58	-.084	.247**				
Superordinate Goal	6.03	1.17	-.157	.296**	.633**			
Deference to Expertise	43.78	7.28	-.146	.281**	.324**	.280**		
Intention to Communicate	1.05	.23	.192*	-.105	-.104	-.065	-.172	
Intention to Collaborate	1.12	.33	.170	-.183*	-.242**	-.276**	-.071	.337**

* Correlation is significant at $p < .05$ level.
** Correlation is significant at $p < .01$ level.

TABLE 4-11
Logistic Regression Analysis Results for Intention to Communicate

	Intention to Communicate					
Model	**1**	**2**	**3**	**4**	**5**	**6**
Control						
Org position						
1	.000	.000	.000	.000	.000	.000
2	.341	.330	.229	.767	.441	1.766
3	8.899	11.012†	7.205	21.122	25.112†	96.770
4	2.459	2.449	1.598	7.100	2.084	7.612
- Prior Interaction	.927	1.071	.999	1.166	1.075	1.150
IV – Main effect						
- Swift Trust		.965	.951	1.751†	.649†	1.116
Moderator						
- Superordinate Goal			1.309		.019	.001†
- Deference to Expertise			.966	2.605†		3.068†
Interaction						
- ST x SG					1.067	1.111†
- ST x DTE				.986†		.983†
Model χ^2 sig.	.011	.015	.039	.008	.016	.005
Constant	.091	.703	3.340	.000†	1.2E+10	.000
psuedo R^2	11.1-31.8%	12.4-34.4%	13.4-36.0%	16.7-45.0%	14.7-40.6%	19.9-53.6%
n	126	119	113	113	119	113

†$p < .10$, two tailed test
*$p < .05$, two tailed test
**$p < .01$, two tailed test

TABLE 4-12
Logistic Regression Analysis Results for Intention to Collaborate

	Intention to Collaborate					
Model	**1**	**2**	**3**	**4**	**5**	**6**
Control						
- Org position						
1	.339	.581	.363	.722	.359	.598
2	.157	.259	.139	.406	.137	.271
3	.626	1.114	.950	1.851	.944	1.962
4	.497	.621	.648	.659	.697	.847
- Prior Interaction	.643*	.712	.680	.725	.671	.669
IV – Main effect						
- Swift Trust		.939†	.966	.732†	1.055	.880
Moderator						
- Superordinate Goal			.844	.031†		.014*
- Deference to Expertise			1.032		1.227	1.470
Interaction						
- ST x SG				1.050†		1.061*
- ST x DTE					.998	.995
Model χ^2 sig.	.102	.069	.107	.050	.108	.056
Constant	2.762	116.228†	14.359	2.9E+009*	.013	3027.747
psuedo R^2	7.5-14.0%	9.8-18.7%	11.5-22.8%	12.8-24.3%	11.4-22.8%	15.3-30.4%
n	118	113	108	113	108	108

† $p < .10$, two tailed test
* $p < .05$, two tailed test
** $p < .01$, two tailed test

TABLE 4-13
Hypotheses Summary

Hypotheses	Level of Support
Hypothesis #1 Swift trust represents a cognitive assessment of situational dimensions (i.e., vulnerability, uncertainty, and risk), whereas Organizational Trust indicates cognitive and affective assessments of relationship dimensions.	Supported
Hypothesis #2a Swift trust will be positively associated with a firm's intention to communicate.	Not Supported
Hypothesis #2b Swift trust will be positively associated with a firm's intention to collaborate.	Moderate Support (p=.068)
Hypothesis #3a The relationship between swift trust and a firm's intention to communicate will be strengthened by the recognition and acceptance of a superordinate goal.	Not Supported [a]
Hypothesis #3b The relationship between swift trust and a firm's intention to communicate will be strengthened by a firm's deference to expertise.	Moderate Support (p=.053)
Hypothesis #3c The relationship between swift trust and a firm's intention to cooperate/collaborate will be strengthened by the recognition and acceptance of a superordinate goal.	Miminal Support (p=.075) [a]
Hypothesis #3d The relationship between swift trust and a firm's intention to cooperate/collaborate will be strengthened by a firm's deference to expertise.	Not Supported

[a] The significance of these relationships improves when both interaction terms (i.e., ST x SOG and ST x DTE) are considered. These results are included in Chapter 5 as these relationships were not hypothesized.

TABLE 4-14
Tests for Mediation

Mediation Relationship	Sig. Results
Swift Trust → Deference to Expertise → Intention to Communicate	
1. Swift Trust → Intention to Communicate	p = .260
2. Swift Trust → Deference to Expertise	p = .000
3. Swift Trust and Deference to Expertise → Intention to Communicate	p = .627 (ST) p = .115 (DTE)
4. Swift Trust x Deference to Expertise → Intention to Communicate	p = .038 (ST) p = .041 (DTE) p = .025 (STxDTE)
Swift Trust → Superordinate Goal → Intention to Collaborate	
1. Swift Trust → Intention to Collaborate	p = .013
2. Swift Trust → Superordinate Goal	p = .000
3. Swift Trust and Superordinate Goal → Intention to Collaborate	p = .329 (ST) p = .186 (SOG)
4. Swift Trust x Superordinate Goal → Intention to Collaborate	p = .049 (ST) p = .042 (SOG) p = .064 (STxSOG)

Chapter 5: Discussion and Conclusions

This dissertation research was designed to accomplish three main objectives: 1) to address the definitional/measurement gaps in existing literature on swift trust in temporary groups, 2) to seek greater understanding of the performance benefits of swift trust in interorganizational arrangements, and 3) to explore factors that might influence the relationship between swift trust and potential performance effects. Three separate studies were used to achieve these goals. First, the qualitative study conducted at the Columbia Space Shuttle disaster provided a setting where, based on interview responses, some form of immediate trust formed between participating organizations. The interviews also led to the consideration of possible factors that may have positively influenced the performance effects of the coordinated efforts. Second, surveys of emergency responders provided a means to test the reliability and validity of a measure developed, as part of this study, to capture swift trust. Finally, two separate cyber-terrorism training exercises provided an opportunity to empirically test a model of swift trust.

This chapter is organized into the following sections. The **Discussion** section summarizes the overall research findings from the scale development and validation process, and the empirical analysis of a swift trust model. The **Management Implications** section offers practical suggestions for managers seeking to realize benefits from operating in temporary, coordinated efforts with other organizations; particularly those with which the firm has limited prior working experience. The **Limitations** section details the limitations within the present research design and methodology. The **Research Implications** section identifies a potential research agenda that follows logically from the results found here, while the **Conclusion** section brings closure to this study.

5.1 Discussion

Findings from the three studies within this research project suggest that swift trust has the potential to play a key role for organizations involved in temporary collaborative efforts. Existing research in organizational trust generally acknowledges the performance benefits associated with 'conventional' trust. However comparable empirical findings are not available for swift trust because of the absence of a precise, validated measure of the construct. An important factor inhibiting the development of such a measure is the definitional inconsistency across conceptual studies. Therefore, a substantial contribution of this study is the development, validation, and use of an instrument to measure swift trust. The results of this research provide strong support for the validity and reliability of the Swift Trust Scale as a measure of this important construct.

The first quantitative phase of this research study demonstrated that the swift trust measure was distinct and unique. Discriminant analysis was used to compare the swift trust measure to an established measure of conventional organizational trust. The Swift Trust Scale demonstrated internal consistency and convergent validity. Contrary to expectations drawn from prior conceptual work, statistical support was found for at most a two-dimensional construct. While these two dimensions (i.e., situational risk and uncertainty, and situational interdependence and vulnerability) incorporated most of the definitional boundaries of swift trust proposed by Meyerson, Weick, and Kramer (1996), they did not support the notion of three distinct and independent facets of the concept. Therefore, the measure developed in this study extends prior theoretical work and offers important refinements in assessing measurable dimensions of swift trust.

The results of this study raise questions regarding the dimensionality of swift trust and, instead, offer logical support for a uni-dimensional construct. While the conceptualization presented by Meyerson and colleagues (1996) suggested three separate dimensions reflecting three antecedent conditions, the results of this study suggest that uncertainty, risk, and vulnerability may operate synergistically to create conditions that foster swift trust. This raises interesting questions regarding potential threshold levels of each condition that must be present in order for swift trust to develop. While the development of the Swift Trust Scale is only the first step in the process of understanding swift trust in a comprehensive way, it offers a solid foundation for future empirical studies of swift trust.

A second set of contributions from this research provides a better understanding of the role that swift trust plays in relation to behavioral intentions. The results from this study suggest several important implications related to the finding that swift trust formed based on an understanding of contextual conditions may, in fact, have consequences for behavioral intentions that are similar in some ways to those found in more traditional trusting relationships. Specifically, swift trust was found to be positively related to firms' intentions to collaborate. This result is reassuring. Conditions associated with the development of swift trust (i.e., temporary events marked by vulnerability, uncertainty, and risk) require organizations to work together to achieve success. Thus, these findings support prior theoretical development of swift trust and suggest that the formation of swift trust is a reasonable and effective organizational response to specific prevailing environmental conditions.

In addition, findings from this study demonstrate that the behavioral intentions supported by swift trust are quite specific. The results for the relationship between swift trust and a firm's intentions to communicate did not parallel the results between swift trust and intentions to

collaborate. One explanation is that organizations involved in temporary combined efforts may recognize the need for multi-party involvement, but choose not to share information until: (a) conditions demand it, (b) another party specifically requests information, and/or (c) the first achieves assurances that others will use the information in appropriate ways. A reluctance to share information may also stem from tension between the recognition that protecting proprietary information can be a potential source of influence or advantage and the understanding that shared information can be an effective basis for joint action. Organizations may wait for signals that they have accurately diagnosed the circumstances leading to collaboration and correctly assessed other organizations' intentions before disclosing what they know.

Notwithstanding the lack of findings for the relationship between swift trust and intentions to communicate, the results of the present study dispute much of the existing literature on organizational trust that calls for the passage of time and repeated interactions among parties before any realization of beneficial interorganizational outcomes (Mayer et al., 1995; Nahapiet & Ghoshal, 1998; Ring & Van de Ven, 1992, 1994). This presents a third substantial contribution from the present research. These findings are important because they challenge the assumption of *time and repeated interactions* as a requirement for a relationship between trust and beneficial organizational behaviors or intentions. In addition, these findings suggest that future research into conventional organizational trust might benefit from consideration of contextual, operating conditions between organizations. It may be that prevailing perspectives on trust formation are too narrow.

A fourth contribution comes from an examination of two potential moderating factors: superordinate goals and deference to expertise. While both factors contribute positively to desired organizational behavioral intentions, the roles these two factors play are quite different.

The results of the studies reported here suggest that the recognition and acceptance of a superordinate goal does matter when organizations work together in temporary, unplanned, collaborative efforts. Specifically, the recognition and acceptance of a superordinate goal strengthened the relationship between swift trust and a firm's intention to collaborate. This result contributes meaningfully to the equivocal, previous findings in research on superordinate goals. Prior empirical evidence varies on the benefits of superordinate goals. For example, some studies found that the pursuit of a superordinate goal was associated with improved group relations (Sherif et al., 1961) and positive intergroup behaviors (Deschamps & Brown, 1983). Conversely, others found no relationship in early stages of interorganizational encounters (Drnevich et al., 2004) or even opposite results (Bettencourt & Dorr, 1998; Marcus-Newhall, Miller, Holtz, & Brewer, 1993). Thus, the present findings provide further evidence of interorganizational benefits when there is mutual recognition and acceptance of a superordinate goal. In doing so, this research also contributes to the call for further empirical attention to the role of superordinate goals (Hornsey & Hogg, 2000). Additionally, since the majority of prior superordinate goal studies have been conducted at the group level, this research adds support at the organization level.

Likewise, a firm's level of deference to expertise does appear to matter when organizations work together in temporary, unplanned, collaborative efforts. However, in contrast to the influence of superordinate goals, a firm's deference to expertise strengthens the relationship between swift trust and the firm's intentions to communicate. This relationship was suggested by Weick and Sutcliffe (2001) in their discussion of *intra*-organization activity for high reliability organizations, where they found members willing to defer to individual experts within the firm when appropriate. The findings of the present study suggest similar support at the

inter-organization level. These results are not surprising given the precipitating contextual factors central to the formation of interorganizational relationships. One such factor is the degree of resource dependence between the parties, with the skill and/or expertise of another firm being a possible needed resource. A need for resources and access to others' expertise stimulates interorganizational communications (Van de Ven, 1976; Van de Ven & Walker, 1984). Thus, we should expect firms to more willingly communicate with others when: 1) the environmental conditions are sufficiently uncertain and risky that success for anyone requires collaborative efforts, and 2) they recognize the value and need for others' skill sets and information resources and are willing to defer to them.

Interestingly, the effect strength of a superordinate goal increases when simultaneously considering a firm's deference to expertise. Specifically, the moderating effect of a superordinate goal on the relationship between swift trust and a firm's intention to communicate and collaborate are stronger when a firm's deference to expertise was also considered. In fact, Hypothesis #3a more closely approaches significance (at $p = .067$) and Hypothesis #3c became significant (from $p = .075$ to $p = .045$) under this condition. These findings are important to consider even though the relationships were not originally proposed or hypothesized (i.e., in Chapters 2 and 3). Although no previous theoretical arguments were proposed for combining these variables or for the subsequent findings, the results are not necessarily unexpected.

As outlined by Meyerson and colleagues (1996), swift trust forms in collaborative conditions marked by situational vulnerability, uncertainty, and risk. The vulnerability stems from the high level of organizational interdependence, uncertainty from the unprecedented, non-recurring environmental conditions, and risk from the potential 'cost' of not achieving success. The findings within this study suggest that once a firm assesses the environmental conditions,

accepts and recognizes a superordinate goal, *and* is willing to defer to others with needed expertise they are more willing to communicate and collaborate. In fact, successful collaboration is likely dependent on the presence of both moderating variables. For example, a firm may recognize the need to work with other firms towards a higher-order goal, but unless they are willing to exchange information with the other parties it is unlikely that the participating organizations will be able to realize many benefits from working together on tasks and processes. Effective information sharing is expected to be a necessary ingredient for high quality collaboration. However, if the participating firms correctly assess the situational conditions of required collaborative efforts and are willing to defer to whomever retains authoritative expertise, then they are more likely to share necessary, relevant information with others as needed. This also increases the probability that the information which is shared is useful and accurate.

In addition to the primary contributions focused on swift trust in temporary collaborative efforts, the results of this study also achieved a secondary benefit. The empirical steps used to demonstrate discriminant validity of the created swift trust measure also provided further validation for the Organizational Trust Inventory (OTI) (Cummings & Bromiley, 1996). The OTI scale is used to measure 'conventional' organizational trust. The results of the present study provided additional support for the internal consistency and convergent validity of this previously validated measure. Thus, future researchers in 'conventional' organizational trust have added confidence when using the OTI.

In summary, the findings from this research study provide four important observations that have noteworthy implications for management practice and for future research.

1. Swift Trust is a distinct construct with unique, measurable properties that distinguish it from conventional organizational trust. However, the original conceptualization of swift trust, which argues for three separate dimensions, may not be accurate.
2. Swift trust influences behavioral intentions in ways that are somewhat similar to conventional organizational trust. However, the behavioral consequences of swift trust are not uniform across behaviors and may reflect a sequenced reaction pattern.
3. The observed relationship between swift trust and behavioral intentions presents a challenge to prevailing assumptions that time and repeated interactions are needed for the beneficial outcomes of trusting relationships to materialize. A corollary implication is that research on organizational trust might benefit from consideration of contextual conditions.
4. Both the specification and acceptance of superordinate goals and deference to expertise appear to positively influence the behavioral consequences of swift trust in organizations. However, these two factors have a somewhat different influence on intended behaviors. Superordinate goals are most closely linked to collaborative behaviors, whereas deference to expertise is tied more directly to intentions to communicate. An interaction effect in which deference to expertise augmented the influence of a superordinate goal on an organization's willingness both to collaborate and to communicate also was observed.

The implications of these findings will be discussed in the subsequent sections of this chapter.

5.2 Management Implications

In addition to the improved theoretical understanding of swift trust, contributions from the present study also include practical implications related to the management of organizations.

Specifically, managers need to recognize and accurately diagnose the initial operating conditions that exist between their organization and others in the action set when involved in temporary, collaborative efforts. Since recognition of vulnerability, uncertainty, and risk in the interorganizational relationship is a prerequisite condition for generating swift trust, it is important that managers in organizations that are likely to find themselves engaged in temporary interorganizational relationships develop competency in recognizing the signals of these conditions. As was discussed in Chapter 1, observations of interorganizational interactions at the Federal Hart Building and at the World Trade Center following the 9-11 terrorist activities demonstrated that not all managers arrive at the same diagnosis of environmental conditions. Anecdotal evidence suggests that those at the Columbia Space Shuttle disaster site recognized the vulnerability, uncertainty, and risk in the environmental context requiring an interorganizational response, and that those at the Federal Hart Building and World Trade Center sites did not.

Second, an ability to promote the identification and acceptance of superordinate goals and the willingness to defer to outside expertise is an additional managerial competence having important benefits for interorganizational activities. Fortunately, organizational managers possess the ability to control or manipulate both of these potentially influential factors. Therefore, managers who want to increase their firm's potential for realizing the behavioral benefits of swift trust in future interorganizational relationships will benefit from improved understanding of managing these variables.

Several specific managerial capabilities appear relevant. First of all, managers must possess the ability to establish and/or recognize an appropriate superordinate goal given the environmental conditions. According to Sherif and colleagues (1961), a superordinate goal is

defined as a goal that cannot be ignored by members of participating groups, is of sufficient appeal value, and requires resources and efforts from more than one group alone. The incident commanders at the Columbia Space Shuttle disaster recovery accomplished this task effectively. Members from three of the lead agencies established the interorganizational project goals the day following the disaster. The goals at the Columbia Space Shuttle disaster recovery were thereby established early in the process and developed collaboratively, thus achieving multi-organization acceptance. These goals were clearly posted throughout the operation facilities, provided the metrics for operational success, and unmistakably guided organizational behavior. Meetings were structured and organized around these clear goals.

Managers seeking to realize similar interorganizational success from the acceptance of a superordinate goal can use the Columbia example for guidance. From the outset managers garnered everyone's attention by applying the basic tenets of goal-setting theory. The superordinate goals they established were clear, measurable, difficult but achievable, and relevant to the participating organizations (Locke, Latham, & Erez, 1988; K.G. Smith, Locke, & Barry, 1990). To compliment this, managers ensured that the four established goals took precedence over the objectives that any particular organization might have by meeting the criteria for effective superordinate goals. That is, organizational participants could not ignore the objectives because they captured real and serious threats including potential health risks to members of the surrounding communities. In addition, the disaster event was a national tragedy that triggered a strong desire to respond. These well-understood threats and personal emotional connections to the stated objectives made the goals particularly compelling. Moreover, the established set of goals was sufficiently demanding, broad, and complex that it was abundantly

clear that no single organization possessed the financial, human, or technological resources to achieve the objectives alone.

Although most managers will unlikely face similar conditions, they can develop superordinate goals that achieve the same effect by considering several questions. Is the superordinate goal salient to all involved organizations? Does the goal garner all parties' attention? Do others recognize the benefit from achieving this goal? Is the goal motivating to others? Does the goal engage all participating organizations? Does the goal demand everyone's participation?

The second variable under management influence is a firm's deference to expertise. Managers might assess the deference to expertise level *within* their organization by administrating the eight-item DTE scale (Weick & Sutcliffe, 2001) to all members. The outcome from this analysis provides a measurement of existing levels of deference to expertise. Higher levels indicate greater willingness to allow decision making authority to reside with those individuals possessing the most subject matter expertise. It appears reasonable to expect that firms with high levels of deference to expertise *within* their organizations would be likely to extend this practice to interorganizational relationships. That is, organizations with high deference to expertise would be willing to extend decision-making authority to other organizations that possessed specific, relevant expertise that they did not have.

However, members of a single organization have more opportunities to know about and evaluate the expertise of others within the same firm than do organizations operating in temporary situations involving firms and agencies with which they have not developed prior relationships. Because of this, members from organizations involved in temporary, coordinated efforts with other organizations, especially those with which the firm has limited prior working

experience, may not fully appreciate the expertise possessed by other institutions or groups. Since managers must be capable of fostering or promoting members' willingness to defer to the expertise of outside organizations, they must develop the ability to quickly learn about and understand the knowledge, skills, abilities, and available resources within other participating organizations. It is incumbent upon managers to obtain this knowledge and then clearly communicate the information to internal organization members since deference to expertise is contingent upon knowledge of others' expertise.

Several streams of research seem particularly relevant to increasing our understanding of deference to expertise among organizations engaged in temporary, unplanned, vulnerable, uncertain, and risky interactions. For example, absorptive capacity (W. M. Cohen & Levinthal, 1990) provides a foundation for understanding and seeing the relevance of new information. Likewise a better understanding of weak ties in social networks (Granovetter, 2005; Hansen, 1999) may provide insights into how firms can quickly assess the expertise of unfamiliar organizations. Similarly research into organizational signals (Feldman & March, 1981) may provide guidance on how firms can better indicate their own expertise to organizations when they first begin working together.

Finally, managers must recognize that the formation of trust does not always require time and repeated interactions with another organization. Instead, swift trust may form based upon certain environmental conditions of temporary collaborative efforts. This realization is particularly important for managers involved in strategic alliances. Strategic alliances are subject to substantial competitive risks. These risks include potential opportunistic behavior by partner organizations or their misrepresentation of resources available for contribution to the collaborative effort. To limit these risks, managers often rely on either detailed contracts with

accompanying control mechanisms to insure behavior, or conventional organizational trust developed through prior successful interactions with the other organization. However, temporary and unplanned collaborative efforts may form without the benefit of successful prior interactions or adequate time for development of detailed contracts with behavioral control mechanisms.

The good news for managers is that these risk reduction options may not be necessary under certain environmental conditions conducive to swift trust formation. When collaborative efforts include sufficient operational vulnerability, uncertainty, and risk, participating organizations instead may be able to rely on swift trust as a less costly and time-consuming risk reduction method. To promote swift trust development, managers must take steps to ensure that the environmental conditions are salient and obvious to all participating organizations. When involved parties recognize that success is uncertain and depends on the combined efforts of multiple organizations, and that failure includes substantial possible damage, then swift trust more likely forms. To benefit from the positive behavioral intentions associated with swift trust, managers must encourage all organizations to recognize these operating conditions.

The recognition of swift trust as an alternative for guiding interorganizational relationships highlights the need for further exploration of the duration of swift trust and its relationship to conventional organizational trust. As introduced in Chapter 1, it is not known whether swift trust erodes when the temporary relationships are completed or whether swift trust can be a precursor to developing conventional organizational trust by providing both an opportunity and a rationale for repeated interactions.

5.3 Limitations

Although this study made substantial progress towards better understanding of a relatively new and understudied organizational phenomenon, the study findings are somewhat

tempered by certain limitations. First, the theoretical source for the concept of swift trust originated from a single book chapter and has been elaborated upon in a small number of studies (Coppola et al., 2004; Drnevich et al., 2004; Harrison et al., 1997; Jarvenpaa et al., 1998; Jarvenpaa & Leidner, 1999; Robins, 2004). The concept of swift trust is a relatively new concept and is limited in prior empirical application and testing. However, the qualitative findings from the Columbia Space Shuttle disaster recovery and the empirical findings from the present study go a long way in providing confirmatory evidence for the initial theoretical development offered by Meyerson, Weick, and Kramer (1996).

Secondly, the present study was potentially limited by common source bias[20]. The same individuals reported on behalf of their respective organizations for each of the independent and dependent variables. Design procedures were included to minimize the effects of this bias. Specifically, the cyber-terrorism exercise moderators (i.e., table facilitators) were asked to also report on the dependent variables. Their responses were to be compared to the average organizational response (i.e., the average response for the combined organizational participants) to assess whether the moderator responses were significantly different from the average organizational response. However, the failure of training participants to answer sufficiently certain dependent variable questions prevented the assessment of agreement with the table moderator, and thus, prevented minimization of the common source bias.

Third, although the present study found no evidence of mediating effects for the variables superordinate goal and deference to expertise, the method used to test for mediation is subject to debate. Stone-Romero and Rosopa (2004) have challenged and identified problems with the

---

[20] Recently, the extent and seriousness of consequences of common method variance have been questioned (Spector, 2006).

widely used hierarchical multiple regression (HMR) procedure (Baron & Kenny, 1986) to test for mediation. Instead of HMR, Stone-Romero and Rosopa suggest that the only way to truly establish mediation is through two separate experiments; one manipulating the independent variable and observing the effects on the mediator, and the other manipulating the mediator and observing the effects on the dependent variable. The present study relied on the HMR procedure for mediation testing. While this study found no support for the mediating effects of a superordinate goal or deference to expertise, future studies should rely on experimental research manipulating swift trust to establish causal linkages.

Fourth, the lack of strong, significant findings related to the moderating role of deference to expertise may result from the choice of scale for data collection. A firm's deference to expertise was assessed using the previously established (yet non-validated), eight-item scale developed by Weick and Sutcliffe (2001). This scale was developed for use in assessing the willingness to defer to expertise *within* organizations. As a result, present use of the scale for assessing the willingness to defer to expertise *outside* the organization may be inappropriate. In addition, the scale as originally developed asked respondents to provide their opinion for each item as it relates generally to the organization for which they work. As such, the scale provides a mental measurement and represents a psychometric scale. Alternatively, a more appropriate scale for use in future swift trust studies may need to incorporate contextual elements and be situation-based. Thus, deference to expertise levels would relate to the specific environmental demands called for by a given situation.

Fifth, the basic, non-experimental field study design is beset with inherent limitations (Kerlinger & Lee, 2000). Non-experimental research studies lack control over variable manipulation and randomization of participant assignment to groups. In addition, because field

studies are conducted in realistic, life situations they risk contamination by uncontrolled extraneous environmental variables. The present study suffered from these limitations. The lack of direct control over the actual cyber-terrorism training exercises compounded these limitations. The training exercise design, objectives, participant selection, participant table assignments, and table facilitator assignments resided outside the control of this researcher.

Another weakness with the present field study was that the exercises merely simulated real cyber-terrorism events, and may not have generated a sufficient sense of urgency and fear to be equivalent to a real emergency; thus, failing to achieve experimental realism (Rosenthal & Rosnow, 1991). The focus of the present study (i.e., the role swift trust plays in the performance effects of temporary groups of organizations) presented certain challenges for data collection. The types of events that exemplify swift trust characteristics require the coordinated effort of multiple organizations. In addition, the coordinated efforts are temporary in duration and develop in response to situational conditions demanding effort from more than one organization. As such, the magnitude of the conditions is likely high. Events of this type are fairly infrequent. Therefore, reliance on a simulated event seemed an appropriate setting for data collection and analysis.

Sixth, the cyber-terrorism training exercises, although simulated, did incorporate the required environmental elements of situational vulnerability, uncertainty, and risk as required by definition (Meyerson et al., 1996). Thus, the exercises did provide an appropriate setting for the study of swift trust. High total swift trust scores provided evidence of this fact. However, limited variation in both dependent variables – intention to communicate and intention to collaborate – occurred. Response distributions for both dependent variables skewed negatively. This perhaps resulted from a social desirability response bias. When asked if they would share information or

seek assistance from others, respondents overwhelmingly answered 'yes' to both. Respondents may have selected the affirmative response because it represented a "commonly recognized desirable idea" (Kerlinger & Lee, 2000, p. 719).

Finally, some concern over the generalizability of the present findings remains. This research relied on a single qualitative study as the foundational basis for many of the variables of interest. The Columbia Space Shuttle disaster recovery provided the impetus for the proposed model of swift trust. However, due to the national attention, large scale and scope, and unprecedented conditions of the disaster, this single case may not effectively represent other interorganizational efforts[21]. Additionally, data collected for the scale validation and model testing studies drew solely from individuals working in governmental agencies (e.g., city/county administration, emergency responders, military, etc.). Thus, obtained results may not effectively represent the population of profit-seeking organizations. Replication of these studies in non-governmental organizations is required.

5.4 Research Implications and Opportunities for Future Research

The present research offers a foundation to help advance future research related to trust between organizations involved in temporary, unplanned collaborative efforts, and more generally, to swift trust. Possibly the most important impact is the availability of a reliable and validated measure of swift trust. Although several researchers have investigated swift trust (Coppola et al., 2004; Drnevich et al., 2004; Harrison et al., 1997; Jarvenpaa et al., 1998; Jarvenpaa & Leidner, 1999; Robins, 2004), none have developed or used a measure based on the definitional elements of swift trust (Meyerson et al., 1996). Instead, most rely on conventional

---

[21] However, Yin (2003) argues that a revelatory case study is appropriate when an investigator has an opportunity to observe and analyze a phenomenon previously inaccessible to scientific investigation. It could be argued that the Columbia Space Shuttle disaster provided one of those rare opportunities.

measures of organizational trust and its underlying assumption of the passage of time and repeated interactions, and are assessed in time-relative terms instead of the appropriate context-relative terms. As the present study represents the first attempt at a swift trust measure, additional measurement applications and refinements will be important in developing this research stream.

A research agenda based on the premise that swift trust is distinct from conventional organizational trust, offers its own potential contributions. First, this research path proposes the identification and analysis of potential new factors that may enhance the presence of swift trust and its relationship to organizational outcomes (i.e., beyond the requisite situational vulnerability, uncertainty, and risk). For example, the present research did not consider other potential antecedents to the formation of swift trust. The theoretical antecedents proposed by Meyerson and colleagues (1996) was relied on exclusively. However, results of the variable inter-correlations (see Table 4-10) suggest significant relationships between the recognition and acceptance of a superordinate goal, a firm's deference to expertise, and the level of swift trust. As such, these two moderators may in fact contribute to swift trust formation. Testing of these relationships was beyond the scope of the present study, but may warrant further analysis.

Additionally, future lines of research should seek to assess the explanatory potential of swift trust and its effect on performance in temporary interorganizational efforts. Specifically, several relationships depicted in Figure 2-3 (see Chapter 2) that were beyond the scope of the present study are nonetheless deemed worthy of future research. Two research questions are offered for future consideration: (1) What is the ultimate relationship (either direct or mediated) between swift trust and interorganizational performance? and (2) Is swift trust related to the development of conventional organizational trust?

5.4.a Swift Trust and Interorganizational Performance. Research in organizational trust suggests that trust can be a source of competitive advantage (Barney & Hansen, 1994) and also can indirectly affect performance. For example, when considering interpersonal trust *within* organizations, researchers find that this form of trust is associated with cooperative behaviors and teamwork (Axelrod, 1984; Mayer et al., 1995; McAllister, 1995), with these factors then being associated with organizational effectiveness (S. G. Cohen, Ledford, & Spreitzer, 1996; Dunphy & Bryant, 1996). Similar beneficial joint performance effects were found for cooperation *between organizations* (Contractor & Lorange, 1988; Mohr & Spekman, 1994). To consider whether or not swift trust relates to individual firm performance, we must evaluate "how" swift trust (or the recognition of it) might be a source of competitive advantage.

Swift trust develops as a unique form of collective perception and relating that is capable of managing issues of vulnerability, uncertainty, and risk present in the temporary setting (Meyerson et al., 1996). Two key elements exist within this definition when evaluating potential competitive advantage. First, the ability to perceive correctly the situational conditions underlies swift trust development. Thus, we should expect variation in the ability of organizations to discern the environmental conditions within the temporary setting as being vulnerable, uncertain, and risky. Second, it is reasonable to expect variation across organizations in their ability to generate swift trust and mobilize subsequent behaviors.

Combining these two organizational capabilities (i.e., accurately discerning the environmental conditions and generating swift trust without a conventional relationship of repeated interactions) should be associated with higher levels of behaviors typically associated with effective interorganizational relationships. Correspondingly, based on the findings in this study, the presence of swift trust should be associated with higher intentions to collaborate and

communicate (with accompanying willingness to defer to others) for the organization. Existing empirical literature already provides support for the relationship between these behavioral intentions and organizational performance (McAllister, 1995; Mohr & Spekman, 1994; Nooteboom et al., 1997) and for a connection between trust and performance (Child & Mollering, 2003). Thus, we should expect that organizations that exhibit swift trust should enjoy competitive performance benefits and should be able to raise the level of performance across the temporary organization set in which they operate.

Therefore, although an *individual* organization may achieve indirect performance benefits related to swift trust, the *collective* benefits of organizations working collaboratively remain the primary focus of swift trust outcomes. The contextual characteristics surrounding the development of swift trust, demand that organizations work together to "succeed". Tasks are too complex, require diverse skill sets, and involve interdependent organizational effort. Thus, performance evaluation should occur more properly at the aggregate level, rather than at an individual organization level. In the contextual situations surrounding swift trust, competitive advantage comes from the synergy between the organizations. The resource-based view does not provide the appropriate theoretical lens with which to evaluate competitive advantage for a collective of organizations. The RBV is limited to its internal focus on the resources and capabilities *within* a single firm, and not on the collective relationships outside the firm. As a result, an alternative theoretical lens is needed to consider the performance benefits of swift trust. Two perspectives – the relational view and network theory – are offered as potential theoretical lenses with which to consider interorganizational performance.

5.4.a (1) Relational View. Dyer and Singh (1998) proposed a "relational view of competitive advantage that focuses on dyad/network routines and processes as an important unit

of analysis for understanding competitive advantage" (p. 661). These authors recognized the limitation of the RBV in focusing on advantages gained through resources within a firm; as many resources may reside outside the firm in interorganizational linkages. Dyer and Singh (1998) propose that the "*idiosyncratic interfirm linkages* may be a source of relational rents and competitive advantage" (p. 661) instead of the resources gained through the interfirm linkages. Their analysis suggests that the collaborative competitive advantage comes from: 1) relation-specific assets, 2) substantial knowledge exchange, 3) the combination of complementary resources and capabilities, and 4) lower transaction costs.

Although an individual firm may achieve performance benefits through these same sources, there is a subtle distinction when we consider the performance benefits at the interorganizational level. Under a relational view, performance benefits are generated only within the joint relationship. Neither participating firm can generate performance advantages alone. Therefore, the network of organizations becomes the focus of attention and performance benefits are achieved through the synergistic combination of participating organizations' resources. The network of organizations "produce(s) stronger competitive positions than those achievable by the firms operating individually" (Dyer & Singh, 1998, p. 667).

The relational view argues that the performance benefits are generated and adhere to the collective of organizations. Mere membership within the network of organizations is not sufficient for a single organization to realize competitive performance benefits (Dyer & Singh, 1998). The performance advantages come through synergistic interorganizational relationships. Another theoretical perspective, network theory, offers a complementary and useful view for analyzing interorganizational relationships (Aldrich & Whetten, 1981).

5.4.a (2) Network Theory. Social network theory contends that a firm's strategic actions are influenced by the social context within which the firm operates (Ranjay Gulati, Nohria, & Zaheer, 2000). This context includes the network of relationships, ties, or linkages among organizations (Stern, 1979). According to Stern (1979), "a network consists of organizational units and the linkages between them, and the unit of analysis is the totality of the network" (p. 244). Networks encompass multiple forms of coordinated activity. In a business sense, networks are "modes of organizing economic activities through inter-firm coordination and cooperation" (Grandori & Soda, 1995). The network research centers not on the duration or focal point of the relationships employed, but instead on the ties between all the organizations involved (Aldrich & Whetten, 1981). Within the network formations, organizations agree on resource allocations/exchange and divisions of labor in order to achieve "the maximum benefit for the system as a whole" (Aldrich & Whetten, 1981, p. 404).

A network of organizations represents the appropriate unit of analysis for evaluating performance levels of the collective effort. The bases for analyses of network performance vary. For example, Dyer and Nobeoka (2000) found that strong ties among the network more effectively facilitated knowledge transfer among a network, and this strong-tie network enjoyed superior performance. Strong ties are characterized by frequent contacts among familiar parties (Hansen, 1999; Nelson, 1989). Conversely, Hansen (1999) found that weak tie networks (i.e., based on distant and infrequent interactions) are more effective when transferred knowledge is codified and independent, but less effective when complex knowledge needed to be transferred. Regardless of the "strength" of relationship focus used, these studies establish the network as an appropriate unit of analysis when evaluating performance of a collective of organizations.

When we view the indirect performance effects of swift trust through the RBV lens, we are able only to consider whether swift trust relates to an individual firm's performance. Under a relational view or using network theory, however, we are able to consider whether the presence of swift trust relates to the collaborative network performance. Thus, we should expect that temporary groups of organizations that exhibit swift trust among the group should enjoy competitive performance benefits. The question remains, though, whether all organizations in the temporary system must exhibit swift trust in order for the collective to achieve the benefits of cooperation, communication, and system-wide performance.

5.4.b Swift Trust and Conventional Organizational Trust. Many researchers have identified factors associated with the development of organizational trust (See Chapter 1, Appendix A). The search for contributory factors is valuable as organizational trust is associated with performance benefits. Since swift trust has not been examined empirically as a construct that is distinct from conventional organizational trust, the relationship between the two constructs has not been explored. The two forms of trust may be related or totally unrelated. We might expect that trust formed during the initial stages of temporary cooperative relationships (e.g., swift trust) is later associated with trust that builds through time and repeated interactions (e.g., conventional organizational trust). In effect, the initial encounter based on swift trust may provide one 'prior interaction' necessary for the development of organizational trust. Alternatively, since the basis of swift trust is more contextual and the basis of conventional trust is more relational, swift trust may be improbable as an antecedent factor to organizational trust formation. In fact, McKnight and colleagues suggest that the methods by which trust forms in new relationships differ from those by which it forms later (McKnight et al., 1998). Therefore, a

better understanding of the relationship between swift and conventional organizational trust suggests a useful research agenda.

5.4.c Other Items of Research Interest. In addition to the above interorganizational performance effects and possible relationship between swift trust and conventional organizational trust, there are likely several other relationships not depicted in Figure 2-3, but worthy of future study. For example, other variables may moderate, or even mediate, the relationship between swift trust and behavioral intentions. One such potential interacting variable – propinquity effect – was evident at the Columbia Space Shuttle disaster recovery and may provide insight into prospective swift trust research. Additionally, due to the fact that the present data support the distinctiveness of swift trust, further study is needed to understand the 'form' or 'structure' of swift trust. Each of these topics is discussed further below.

5.4.c (1) Propinquity Effect. Propinquity refers to the spatial proximity (Pierce, Byrne, & Aguinis, 1996) of individuals and/or organizations. Research on propinquity incorporates at least two types of proximity – physical and functional. Physical proximity refers to "the actual physical distance between two individuals" (Pierce et al., 1996: 10). Functional proximity "refers to how easy it is for a dyadic interaction to occur" (Pierce et al., 1996: 10).

In organizational settings, researchers have studied propinquity in relation to workplace romances (Pierce et al., 1996), job satisfaction and performance (Dixit, 1985), and communication patterns among team members (Allen, 1977). Results suggest that the physical and functional spacing of individuals can have significant effects on workplace behaviors and outcomes. Evidence supports a direct, negative correlation between the distance separating employees and the interaction patterns between them (Thompson, 2003) and also the probability of communicating (Allen, 1977). The structure of the physical environment (i.e., the spatial

arrangement) within which employees work allows for some individuals to come in greater contact and allows for more frequent interactions.

The levels of analysis used in extant propinquity research cross the individual, team, group, and organizational levels. At the individual level, greater proximity to another employee was related to increased chance of frequent interactions (Pierce et al., 1996). This repeated exposure enhanced the interpersonal attraction between employees and also facilitated the development of trust (Collins, 1983). At the team level, evidence suggests that teams working in close proximity (e.g., face-to-face) achieved significantly higher performance benefits related to decision making than did their virtual team counterparts (Martins, Gilson, & Maynard, 2004).

Group research recognizes the performance benefits of eased information exchange and improved output for organization units co-located in the same physical space (Whitney, 1994). In addition, evidence suggests that groups linked through common physical locations exhibited stronger group identity (Hatch, 1997). At the organization level, co-location of organizational parties was expected to enhance information processing through: 1) increased exposure to key stimuli, 2) improved understanding of partner trustworthiness, and 3) more effective dissemination of information across multiple organizational levels (Carson, Madhok, Varman, & John, 2003) although results did not achieve statistical significance. However, close organizational proximity was expected to relate to higher levels of organizational cooperation (C. C. Chen, Chen, & Meindl, 1998) and empirical evidence supports this claim and establishes a further relationship with enhanced organizational performance (Dyer, 1996). Combined, these multi-level results suggest that the propinquity effect allows for more intimate relating (e.g., face-to-face), a greater chance of interaction and communicating, and improved performance benefits.

These propinquity outcomes were evident in the Columbia Space Shuttle disaster response. The early stages of the disaster response were distinguished by a rather unusual contextual condition – co-location of all participating organizations. This particular emergency response started with tens to hundreds of personnel responding within the first few hours. To accommodate the growing number of emergency responders and local volunteers, the mayor of a local community offered the use of the city's Civic Center. The involved agencies were co-located in this Civic Center for the first 10 days of the disaster response. (After the first 10 days, the response headquarters moved to vacant office space, which served as a permanent location for the remainder of the response.) The Civic Center facility mainly consisted of one, large, undivided room. Tables and chairs were set up to accommodate operations for the multiple agencies and organizations. Interview respondents cited this initial co-location as critical to the collaborative operation's success.

Columbia Shuttle response interviewees noted a high degree of face-to-face communications during the early stage of the disaster response. Physical space conditions seemed to facilitate this high degree of face-to-face communications. The spatial proximity, or propinquity of the organizations, benefited from no physical barriers separating emergency responders during the first week of the response. Interview respondents could not recall similar unencumbered contact on other collaborative emergency response efforts. Findings from the Columbia Shuttle response suggest that close proximity, and barrier-free contact may have magnified the performance effects of swift trust. Both of these conditions allow for a greater chance of interaction and communicating. The closer the spatial proximity, the higher the magnifying effect expected.

It appears reasonable to expect that the degree of organizational propinquity might be influential under conditions associated with swift trust. As empirical evidence suggests, propinquity allows for more frequent interactions, information exchange, communication, and organizational cooperation. Van de Ven (1976) proposed that the greater the frequency of interorganizational communication, the greater the consensus among parties and the greater the situational awareness. Thus, organizations working under conditions of high proximity would be expected to more accurately diagnose environmental conditions, and communicate (and recognize the need to communicate further and/or cooperate) with others to gain clear understanding of the situational challenges they face. Thus, the degree of propinquity should magnify the effects of swift trust on intentions to communicate and cooperate/collaborate between organizations.

5.4.c (2) Temporal versus Persistent Nature of Swift Trust. Swift trust literature to date provides conflicting results on whether swift trust is fragile and diminishes or whether it is persistent (Coppola et al., 2004; Harrison et al., 1997; Jarvenpaa & Leidner, 1999). Additional research is needed to provide resolution in this debate. An answer to this question requires measurement of swift trust over multiple points in time – particularly at the beginning and end of temporary organizational relationships. The 'shape' of swift trust may assume at least three different forms. One, swift trust may diminish over time due, perhaps, to changes in contextual conditions or the recognition that other involved parties are not trustworthy. Two, swift trust may persist as long as the contextual conditions that demand temporary collaborative effort remain. Three, it seems possible that swift trust might even increase further (i.e., strengthen) beyond initial levels (as conventional organizational trust typically does) due to the passage of time and

the chance for further interaction. Conclusions regarding the temporal shape of swift trust require further analysis.

5.5 Conclusions

The goal of the present study was to enhance our understanding of swift trust in temporary, collaborative efforts between organizations. This research successfully demonstrated the distinctiveness of swift trust, displayed the relationship of swift trust to behavioral intentions to communicate and collaborate, and identified factors that strengthen these relationships. These findings enhance the study of trust between organizations, in general, and offer new insight into the working relationships between organizations involved in temporary, unplanned collaborative efforts. In doing so, this research offers many exciting new paths for future research opportunities.

Practical applications from this study also provide meaningful contributions to our knowledge of how to effectively manage strategic alliances. This is important because of the increasing use of strategic alliances within rapidly changing competitive environments. The growth in the use of interorganizational collaborations to achieve competitive advantages will likely persist. Few organizations possess all necessary resources, or resources possessing ample capabilities, to compete alone successfully. As a result, organizations will continue to turn to other organizations for resource access in an effort to improve their competitive position. The ability to collaborate successfully may represent an important capability in terms of organizational survival. Swift trust provides one path by which organizations may realize performance benefits without the previously required passage of time and repeated interaction with others, or the implementation of risk-reduction contracts and control mechanisms. Interorganizational relationships based on swift trust may be extremely important given the

increasingly dynamic, often hypercompetitive, conditions within today's competitive environment. Fluid and frequently changing networks of organizational alliances may soon be commonplace.

Ultimately, findings from the present study provided one possible explanation for the effective, collaborative efforts surrounding the Columbia Space Shuttle disaster. Although interviewee responses detailed the presence of some form of immediate trust between participating organizations, the respondents were unable to articulate exactly what factors prompted the trust formation or what contributed to the combined efforts' success. Clearly, the disaster was distinguished by a high degree of organizational resource interdependence, was a complex response never previously encountered, and included the social risk of failing to meet nationally determined objectives. As such, it conformed to the requisite conditions proposed by Meyerson and colleagues (1996). Therefore, swift trust may provide the answer. Recognition of this possibility stimulates interest in improved understanding of the concept and its role in temporary interorganizational activity.

APPENDIX A

Some Antecedents of Organizational Trust as Summarized in Prior Literature

Past interactions	Receptivity	Trustworthy intentions
Availability	Ability	Credibility
Competence	Intention to produce	Ownership of feelings
Consistency	Experimentation w/new behavior	Group norms
Discreetness	Dependence on trustee	Altruism
Fairness	Previous outcomes	Expertness
Integrity	Reliability	Personal attraction
Loyalty	Reputation	Shared values
Openness	Autonomy/feedback	Motivation to lie
Promise fulfillment	Motives	Benevolence
Honesty	Caring	Moral integrity
Goodwill	Groups goals	Dynamism

(Mayer et al., 1995)

APPENDIX B
Scenario Used in Swift Trust Scale Development

Disaster City, USA is a largely agricultural community covering an area of about 1.5 square miles with a population of approximately 950 people. The city has a volunteer fire department of 60 members and a police force of 5 full time and 2 reserve officers. The city also has two ambulances. All of the emergency responders have basic training and experience in wildland firefighting and some structural firefighting. Most of the city contains 1 and 2-story wood frame dwellings with a mix of small commercial structures. The downtown area of the city covers about 7 square blocks and contains several 1 – 3-story reinforced concrete structures including a school, theater, large agricultural supply, and City Hall.

At approximately 0930 today a large explosion occurred at Disaster City. Several emergency services were dispatched to the scene and are currently dealing with a large number of injured civilians. The exact cause of the explosion is not known at this time. The scene involves several damaged structures and a large area of collapse, which requires the expertise of a FEMA Urban Search and Rescue team search and rescue effort. The local incident commander has noted that within the operational area is a damaged partially collapsed building known to contain toxic agricultural chemicals. The commander has stated he will be asking the FEMA team to address any possibility of the spread of toxic contamination from the building because it is near areas where live trapped victims are being relocated. In addition, the explosion caused a derailment of a train traveling on the rail line that runs near downtown. The train included 25 railcars, 10 of which were carrying chlorine gas. Local fire/police/EMS personnel are working at many sites and have successfully removed several live victims and fatalities.

Your organization (i.e., the company for which you now work) has been called to respond to this emergency disaster. You and other co-workers have been dispatched to respond to the incident.

APPENDIX C
Sorting Instructions for Doctoral Students

STEP 1: Read the following two definitions.

1. Organizational Trust (i.e., Conventional Trust)

Defined – "an individual's belief or a common belief among a group of individuals that another individual or group:

(a) makes good-faith efforts to **behave in accordance with** any **commitments** both explicit or implicit,

(b) is **honest** in whatever **negotiations** preceded such commitments, and/or

(c) **does not take excessive advantage** of another even when the opportunity is available."

Cummings, L.L., & Bromiley, P. (1996). The Organizational Trust Inventory (OTI). In Kramer, R.M., & Tyler, T.R. (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 302-330). Thousand Oaks, CA: Sage.

2. Swift Trust

Defined – a form of trust that unfolds in temporary systems. Temporary systems are "sets of diversely skilled people working together on a complex task over a limited period of time."

Swift trust represents a unique form of collective perception and relating that is capable of managing issues of:

(d) **vulnerability** (i.e., resulting from - interdependence with others, lack of role clarity, possible harm from another to goods/things we value, or likely future interactions)

(e) **uncertainty** (i.e., an estimation of how the other party will act before one can know for sure or the uncertainty inherent in the context in which action is taking place), and/or

(f) **risk** (i.e., exposing oneself to a situation where the possible damage may be greater than the advantage sought).

Developed from Meyerson, D., Weick, K.E., Kramer, R.M. (1996). Swift trust and temporary groups. In Kramer, R.M., & Tyler, T.R. (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 166-195). Thousand Oaks, CA: Sage.

STEP 2: Please sort the attached survey questions (59 in total) into the construct you believe is most representative of the item. Please sort into exactly one category: Swift Trust or Conventional Trust.

Please find the survey items in the attached Excel spreadsheet. **Some items are reverse-scored.**

If you believe item #1 is representative of the definition of "Swift Trust", please place an "X" under "Swift Trust". If you believe item #1 is representative of the definition of "Organizational Trust", please place an "X" under "Organizational Trust".

In addition, please feel free to provide comments on any items you feel are confusing, ambiguous, inappropriate, etc. Space is available for your comments.

APPENDIX D
Combined (and randomized) Scale of Swift Trust

1. We must work with other organizations to accomplish our objectives in a timely manner.
2. We feel that the other organizations try to get out of their commitments.
3. We can monitor whether other organizations are doing their job.
4. We will not be asked to work on future similar activities if we fail on this task.
5. We feel that the other organizations take advantage of people who are vulnerable.
6. We think that the other organizations do not mislead us.
7. We know with certainty the outcome of this activity.
8. We are eager to work on this activity.
9. We can take as long as we need to get this job done.
10. We think that the other organizations take advantage of our problems.
11. We know the deadline for completion of this activity.
12. We think all organizations will share in the success of this coordinated activity.
13. We feel that the other organizations try to get the upper hand.
14. We are reluctant to take action at the outset of the task.
15. We must check to see that other organizations are doing their job.
16. We feel that the other organizations negotiate with us honestly.
17. We can eliminate all conditions that might challenge our organization.
18. We will participate only if our involvement is beneficial to us.
19. We think the people in the other organizations tell the truth in negotiations.
20. We choose to participate in this activity even though the other organizations may perform poorly.
21. We know our reputation could be damaged by a poor outcome on this activity.
22. We are unsure of the roles to be performed by other organizations.
23. We can determine whether we will work with these other organizations in the future.
24. We believe that each organization possesses the skills necessary to perform their role.
25. We can monitor whether working conditions change over the course of this activity.
26. We can observe the skills/abilities of the other organizations.
27. We must proceed on this task despite the chance for damage to our reputation.
28. We understand that the consequences are severe if all organizations do not work well together.
29. We can measure whether or not the activity is ahead of, on, or behind schedule.
30. We understand that time is of the essence regarding completion of this activity.
31. We understand that the consequences of not meeting our objectives are severe.
32. We know how long each step in the process takes to complete.
33. We can determine early on whether or not the overall activity will be successful.
34. We believe all organizations will share in the failure of this coordinated activity.
35. We recognize the importance of this activity for the livelihood of our organization.
36. We expect the working conditions to change over the course of this activity.
37. In our opinion, the other organizations involved are reliable.
38. We choose to become involved even if the consequences are negative.
39. We can eliminate surprises in relation to this activity.
40. We think that the people in the other organizations succeed by stepping on other people.
41. We recognize that success depends on effective coordination among all organizations.
42. We are likely to work with these other organizations again in the future.
43. We are confident that the other organizations will perform their assigned tasks.
44. We realize this activity requires the coordination of multiple organizations.

APPENDIX D (*continued*)
Combined (and randomized) Scale of Swift Trust

45. We can determine early on whether or not the other organizations will perform their assigned roles.
46. We feel that the other organizations negotiate joint expectations fairly.
47. We understand what skills/abilities all organizations bring to the table.
48. We expect the other organizations to do their assigned job.
49. We could easily find other organizations to work with on this task.
50. We think that the other organizations meet their negotiated obligations to us.
51. We know that immediate action is needed for the success of the activity.
52. We can determine whether our involvement will be beneficial to us.
53. We believe our involvement is beneficial to this operation.
54. We feel that the other organizations will keep their word.
55. We expect the organizations chosen to participate will change over the course of this activity.
56. We need to know the likely outcome of this activity before we become involved.
57. We must rely on other organizations to achieve our objectives.
58. We know clearly the roles needed to accomplish this task.
59. We must participate in this activity despite the chance of a poor outcome.

APPENDIX E
Scenario and Survey used to Validate Swift Trust Measure

STEP 1: Read the following case scenario.

Disaster City, USA is a largely agricultural community covering an area of about 2.5 square miles with a population of approximately 2,500 people. The city has a volunteer fire department of 60 members and a police force of 8 full time and 2 reserve officers. The city also has two ambulances. All of the emergency responders have basic training and experience in wildland firefighting and some structural firefighting. Most of the city contains 1 and 2-story wood frame dwellings with a mix of small commercial structures. The downtown area of the city covers about 7 square blocks and contains several 1 – 3-story reinforced concrete structures including a school, theater, large agricultural supply, and City Hall.

At approximately 0930 today a large explosion occurred at Disaster City. Several federal, state, and local emergency service providers were dispatched to the scene and are currently dealing with a large number of injured civilians. The exact cause of the explosion is not known at this time. The scene involves several damaged structures and a large area of collapse, which requires the expertise of a FEMA Urban Search and Rescue team. The local incident commander has noted that a damaged, partially collapsed building known to contain toxic agricultural chemicals is located within the operational area. The commander has stated he will be asking for support to address any possibility of the spread of toxic contamination from the building because it is near areas where live, trapped victims are being relocated. In addition, the explosion caused a derailment of a train traveling on the rail line that runs near downtown. The train included 25 railcars, 1 of which was carrying chlorine. First responders are working at many sites and have successfully removed several live victims and fatalities.

Your organization (i.e. the company/agency for which you now work) has been called to respond to this emergency disaster. You and other co-workers have been dispatched to respond to the incident.

-- OVER --

APPENDIX E (*continued)*

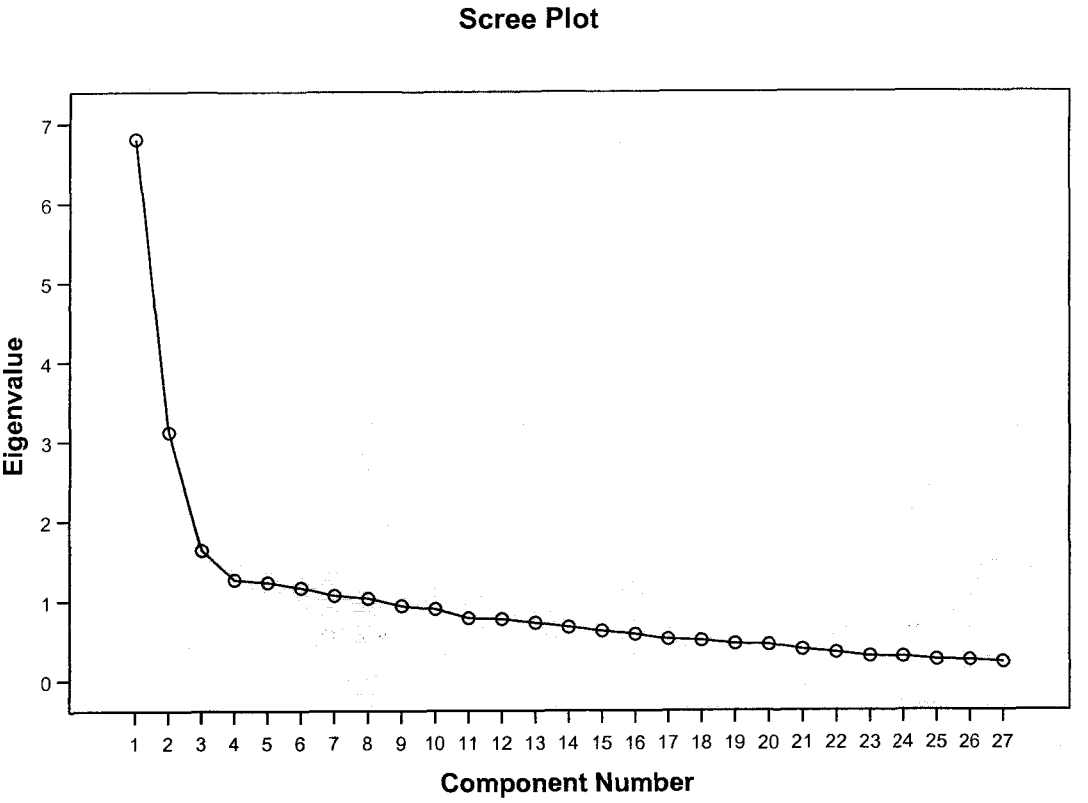
Scenario and Survey used to Validate Swift Trust Measure

STEP 2: Please answer the following questions on behalf of the organization/agency for which you work.

The purpose of this survey is to explore how organizations work together in temporary situations. Please circle the number to the right of each statement that most closely describes the opinion of ***your organization*** *towards the* ***other organizations with which you would expect to work****. Answer each item according to the extent you agree or disagree with the statement. If you neither agree nor disagree with a statement please circle "4" as a neutral rating. There is no right or wrong answer.*
Your answers are confidential. Thank you for participating.

	Strongly Disagree			Neutral			Strongly Agree
	1	2	3	4	5	6	7
We must work with other organizations to accomplish our objectives in a timely manner.	1	2	3	4	5	6	7
We feel that the other organizations try to get out of their commitments.	1	2	3	4	5	6	7
We feel that the other organizations take advantage of people who are vulnerable.	1	2	3	4	5	6	7
We think that the other organizations do not mislead us.	1	2	3	4	5	6	7
We know with certainty the outcome of this activity.	1	2	3	4	5	6	7
We think that the other organizations take advantage of our problems.	1	2	3	4	5	6	7
We know the deadline for completion of this activity.	1	2	3	4	5	6	7
We feel that the other organizations try to get the upper hand.	1	2	3	4	5	6	7
We feel that the other organizations negotiate with us honestly.	1	2	3	4	5	6	7
We think the people in the other organizations tell the truth in negotiations.	1	2	3	4	5	6	7
We know our reputation could be damaged by a poor outcome on this activity.	1	2	3	4	5	6	7
We are unsure of the roles to be performed by other organizations.	1	2	3	4	5	6	7
We can observe the skills/abilities of the other organizations.	1	2	3	4	5	6	7
We understand that the consequences are severe if all organizations do not work well together.	1	2	3	4	5	6	7
We understand that time is of the essence regarding completion of this activity.	1	2	3	4	5	6	7
We understand that the consequences of not meeting our objectives are severe.	1	2	3	4	5	6	7
We know how long each step in the process takes to complete.	1	2	3	4	5	6	7
We recognize the importance of this activity for the livelihood of our organization.	1	2	3	4	5	6	7
We expect the working conditions to change over the course of this activity.	1	2	3	4	5	6	7
In our opinion, the other organizations involved are reliable.	1	2	3	4	5	6	7
We think that the people in the other organizations succeed by stepping on other people.	1	2	3	4	5	6	7
We recognize that success depends on effective coordination among all organizations.	1	2	3	4	5	6	7
We realize this activity requires the coordination of multiple organizations.	1	2	3	4	5	6	7
We feel that the other organizations negotiate joint expectations fairly.	1	2	3	4	5	6	7
We think that the other organizations meet their negotiated obligations to us.	1	2	3	4	5	6	7
We know that immediate action is needed for the success of this activity.	1	2	3	4	5	6	7
We feel that the other organizations will keep their word.	1	2	3	4	5	6	7
We must rely on other organizations to achieve the objectives.	1	2	3	4	5	6	7
We know clearly the roles needed to accomplish this task.	1	2	3	4	5	6	7
We must participate in this activity despite the chance of a poor outcome.	1	2	3	4	5	6	7

APPENDIX F-1
Screeplot from Factor Analysis of OTI and Swift Trust Items Combined

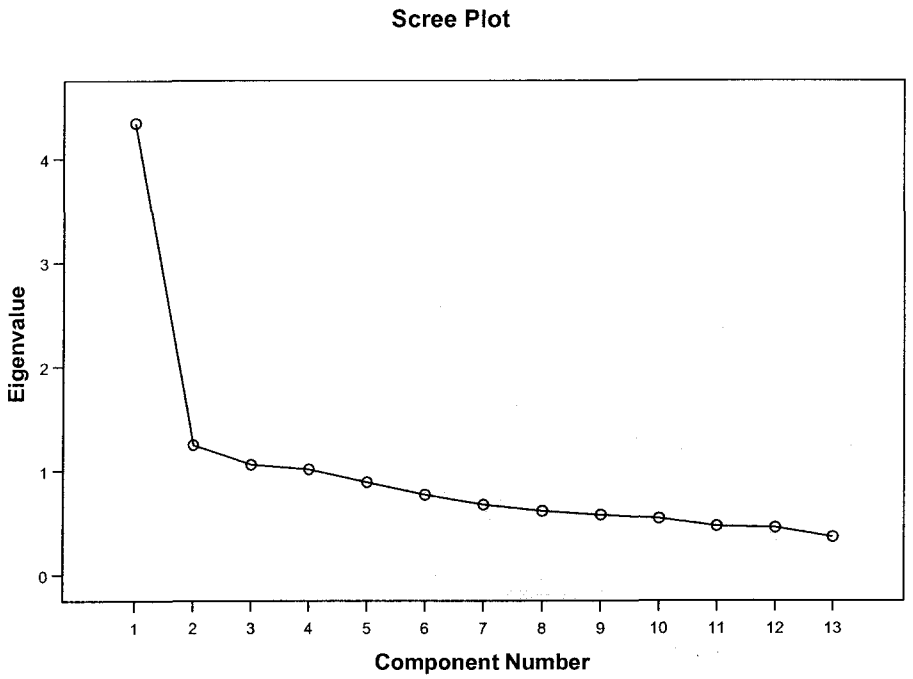


APPENDIX F-2
Factor Analysis – OTI and Swift Trust Items Combined
Unrotated Loadings

	Component							
Items	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
OTI # 11	.729							
OTI # 12	.719							
OTI # 10	.663							
OTI # 5	.595	-.463						
OTI # 7	.585							
OTI # 6	.581							
ST # 13	.571							
OTI # 8	.536							
ST # 14	.529							
OTI # 4	.522	-.449						
ST # 11	.515	.402						
ST # 15	.515	.439						
OTI # 1	.505	-.428	.402					
OTI # 9	.496							
ST # 7	.471	.456						
ST # 17	.470							
ST # 18	.427							
ST # 16	.426							
OTI # 2	.514	-.528						
ST # 8		.511						
ST # 9	.435	.495						
ST # 6					.634			
ST # 4						.473		
ST # 1						.425		
OTI # 3							.542	
ST # 12	.412						-.497	
ST # 5					.423			.638
Eigenvalue (unrotated)	6.801	3.108	1.626	1.257	1.224	1.155	1.060	1.021
% of Variance	25.19	11.51	6.02	4.65	4.53	4.28	3.92	3.78

Extraction Method: Principal Components Analysis
8 components extracted
Only loadings > | .40 | shown for ease of interpretation (Finkelstein, 1992).

APPENDIX G-1
Screeplot from Factor Analysis of Swift Trust Items



APPENDIX G-2
Factor Analysis – 13 Swift Trust Items
Unrotated Loadings

	Component			
Swift Trust Items	**1**	**2**	**3**	**4**
# 15	.663			
# 7	.656			
# 9	.650			
# 11	.643			
# 14	.629			
# 13	.604			-.470
# 8	.561	.422	-.458	
# 17	.560			
# 18	.547	-.499		
# 12	.529			
# 1	.503			
# 4	.422	.488	.520	
# 16	.487			.555
Eigenvalue (unrotated)	4.342	1.246	1.057	1.013
% of Variance	33.40	9.58	8.13	7.79

Extraction Method: Principal Components Analysis
4 components extracted
Only loadings > | .40 | shown for ease of interpretation (Finkelstein, 1992).

APPENDIX G-3
Exploratory Factor-Analytic Results
Swift Trust Items Only

	Two-Factor Results				Three-Factor Results					
	Varimax Loadings		Oblimin Loadings		Varimax Loadings			Oblimin Loadings		
Swift Trust Item	1	2	1	2	1	2	3	1	2	3
# 18	.740		.801		.739			.786		
# 14	.668		.673		.637			.628		
# 17	.631		.648		.635			.654		
# 13	.625		.625		.628			.633		
# 15	.596		.564		.510	.575		.444	.532	
# 16	.506		.506		.491			.487		
# 8		.692		.722		.822			.882	
# 4		.645		.708			.824			.854
# 7		.609		.578			.582			.521
# 12		.601		.612		.405	.460			.406
# 9		.599		.567		.693			.691	
# 11		.529		.475		.605			.581	
# 1		.438		.405			.575			.552
Eigenvalue	2.873	2.715	4.342	1.246	2.589	2.264	1.792	4.342	1.246	1.057
% of Variance	22.10	20.90			19.91	17.42	13.78			

Note: The factor eigenvalues shown are subsequent to rotation for Varimax rotation. The factor eigenvalues shown are prior to rotation for Direct Oblimin rotation; when components are correlated the sums of squared loadings cannot be added to obtain a total variance.

APPENDIX G-3 (*continued*)
Exploratory Factor-Analytic Results
Swift Trust Items Only

	Four-Factor Results							
	Varimax Loadings				Oblimin Loadings			
Swift Trust Item	1	2	3	4	1	2	3	4
# 18		.556	.494			-.554		.417
# 14		.622				-.593		
# 17			.551					.492
# 13		.804				-.798		
# 15	.527		.470		.520			
# 16			.752					.752
# 8	.824				.864			
# 4				.829			.856	
# 7		.483		.536			.507	
# 12				.476			.426	
# 9	.707				.718			
# 11	.559		.443		.539			
# 1				.554			.556	
Eigenvalue	2.113	2.080	1.787	1.678	4.342	1.246	1.057	1.013
% of Variance	16.26	16.00	13.74	12.91				

Note: The factor eigenvalues shown are subsequent to rotation for Varimax rotation. The factor eigenvalues shown are prior to rotation for Direct Oblimin rotation; when components are correlated the sums of squared loadings cannot be added to obtain a total variance.

APPENDIX H
Survey Used in Cyber-Terrorism Training Exercises

SURVEY #1

Current Employer: (Circle one)

Government Law Enforcement Fire Department Utilities Military Other

How long with this employer: _____

Circle one of the following that best describes your relative position within your organization:

1 = upper management
2 = middle management
3 = lower-level management
4 = staff
5 = technical
6 = 1st responder
7 = Incident response
8 = Other (detail) _____

*For each of the following organizations, please circle the level of your organization's **prior interaction** with the other organization.*

	No Interaction			**Occasional Interaction**			**Frequent Interaction**
	1	**2**	**3**	**4**	**5**	**6**	**7**
City Government	1	2	3	4	5	6	7
Law Enforcement	1	2	3	4	5	6	7
Fire Department	1	2	3	4	5	6	7
Area Utilities (ex: power, water, etc.)	1	2	3	4	5	6	7
Military Installations	1	2	3	4	5	6	7

*For each of the following organizations, please check (√) the **typical interaction method(s)** used during prior interactions.*

	email	telephone	cell phone	satellite phone	radio	face-to-face	Other (list)
City Government							
Law Enforcement							
Fire Department							
Area Utilities (ex: power, water, etc.)							
Military Installations							

APPENDIX H (*continued*)

SURVEY #1 (continued)

To what degree does each item below describe the organization for which you work? Provide your opinion based on your organization.

	Not at All			**Neutral**			**A great Deal**
	1	**2**	**3**	**4**	**5**	**6**	**7**
People are committed to doing their job well.	1	2	3	4	5	6	7
People respect the nature of one another's job activities.	1	2	3	4	5	6	7
If something out of the ordinary happens, people know who has the expertise to respond.	1	2	3	4	5	6	7
People in my organization value expertise and experience over hierarchical rank.	1	2	3	4	5	6	7
In my organization, the people most qualified to make decisions make them.	1	2	3	4	5	6	7
If something unexpected occurs, the most highly qualified people, regardless of rank, make the decisions.	1	2	3	4	5	6	7
People typically "own" a problem until it is resolved.	1	2	3	4	5	6	7
It is generally easy for us to obtain expert assistance when something comes up that we don't know how to handle.	1	2	3	4	5	6	7

APPENDIX H (*continued*)

SURVEY #2

NOTE: Use of the terms – 'activity, objectives, tasks, issues, process, roles, events' – refer to the fictitious happenings within the Cyber Terrorism exercise. Please answer all remaining questions as if the fictitious events are actually occurring.

Please circle the number to the right of each statement that most closely describes the opinion of ***your organization*** *towards the* ***other organizations with which you would expect to work*** *in order to address the series of events within the exercise. Answer each item according to the extent you agree or disagree with the statement.*

	Strongly Disagree			**Neutral**			**Strongly Agree**
	1	**2**	**3**	**4**	**5**	**6**	**7**
We must work with other organizations to accomplish our objectives in a timely manner.	1	2	3	4	5	6	7
We know with certainty the outcome of this activity.	1	2	3	4	5	6	7
We know the deadline for completion of this activity.	1	2	3	4	5	6	7
We know our reputation could be damaged by a poor outcome on this activity.	1	2	3	4	5	6	7
We are unsure of the roles to be performed by other organizations.	1	2	3	4	5	6	7
We can observe the skills/abilities of the other organizations.	1	2	3	4	5	6	7
We understand that the consequences are severe if all organizations do not work well together.	1	2	3	4	5	6	7
We understand that time is of the essence regarding completion of this activity.	1	2	3	4	5	6	7
We understand that the consequences of not meeting our objectives are severe.	1	2	3	4	5	6	7
We know how long each step in the process takes to complete.	1	2	3	4	5	6	7
We recognize the importance of this activity for the livelihood of our organization.	1	2	3	4	5	6	7
We expect the working conditions to change over the course of this activity.	1	2	3	4	5	6	7
We recognize that success depends on effective coordination among all organizations.	1	2	3	4	5	6	7
We realize this activity requires the coordination of multiple organizations.	1	2	3	4	5	6	7
We know that immediate action is needed for the success of this activity.	1	2	3	4	5	6	7
We must rely on other organizations to achieve the objectives.	1	2	3	4	5	6	7
We know clearly the roles needed to accomplish this task.	1	2	3	4	5	6	7
We must participate in this activity despite the chance of a poor outcome.	1	2	3	4	5	6	7

REFERENCES

Aldrich, H., & Whetten, D. A. (1981). Organization-sets, action-sets, and networks: Making the most of simplicity. In P. C. Nystrom & W. H. Starbuck (Eds.), *Handbook of organizational design* (Vol. 1, pp. 385-408). New York: Oxford University Press.

Allen, T. J. (1977). *Managing the flow of technology: Technology transfer and the dissemination of technological information within the research and development organization*. Cambridge, MA: MIT Press.

Alter, C. (1990). An explanatory study of conflict and coordination in interorganizational service delivery systems. *Academy of Management Journal, 33*(3), 478-502.

Axelrod, R. M. (1984). *The evolution of cooperation*. New York: BasicBooks.

Bachmann, R. (2001). Trust, power and control in trans-organizational relations. *Organization Studies, 22*(2), 337-365.

Baker, L., & Plowman, D. A. (2004). Mindfulness and organizational performance: An examination of how colleges of business manage the unexpected, *Academy of Management Annual Meeting*. New Orleans, LA.

Barney, J. B., & Hansen, M. H. (1994). Trustworthiness as a source of competitive advantage. *Strategic Management Journal, 15*(Winter), 175-190.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Bartlett, M. S. (1954). A note on the multiplying factors for various chi square approximations. *Journal of the Royal Statistical Society, 16 (Series B)*, 296-298.

Becerra, M., & Gupta, A. K. (2003). Perceived trustworthiness within the organization: The moderating impact of communication frequency on trustor and trustee effects. *Organization Science, 14*(1), 32-44.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238-246.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588-606.

Bettencourt, B. A., & Dorr, N. (1998). Cooperative interaction and intergroup bias: Effects of numerical representation and cross-cutting role assignment. *Personality and Social Psychology Bulletin, 24*, 1276-1293.

Boisot, M. (1995). *Information space: A framework for learning in organizations, institutions, and culture*. London: Routledge.

Boss, R. W. (1978). Trust and managerial problem solving revisited. *Group Organization Studies, 3*, 331-342.

Bouchard, T. J., Jr. (1976). Field research methods: Interviewing, questionnaires, participant observation, systematic observation, unobtrusive measures. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 363-413). Chicago: Rand McNally.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validity by the multitrait-multimethod matrix. *Psychological Bulletin, 56*, 81-105.

Carson, S. J., Madhok, A., Varman, R., & John, G. (2003). Information processing moderators of the effectiveness of trust-based governance in interfirm r&d collaboration. *Organization Science, 14*(1), 45-56.

Catell, R. B. (1966). The scree test for number of factors. *Multivariate Behavioral Research, 1*, 245-276.

Chen, C. C., Chen, X. P., & Meindl, J. R. (1998). How can cooperation be fostered? The cultural effects of individualism-collectivism. *Academy of Management Review, 23*(2), 285-304.

Chen, M. J., Smith, K. G., & Grimm, C. M. (1992). Action characteristics as predictors of competitive responses. *Management Science, 38*, 439-455.

Child, J., & Mollering, G. (2003). Contextual confidence and active trust development in the chinese business environment. *Organization Science, 14*(1), 69-80.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20*(1), 37-46.

Cohen, S. G., Ledford, G. E., & Spreitzer, G. M. (1996). A predictive model of self-managing work team effectiveness. *Human Relations, 49*, 643-676.

Cohen, W. M., & Levinthal, D. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35*(1), 128-152.

Collins, E. G. C. (1983). Managers and lovers. *Harvard Business Review, 61*(5), 142-153.

Contractor, F. J., & Lorange, P. (1988). *Cooperative strategies in international business*. Lexington, MA: Heath.

Coppola, N. W., Hiltz, S. R., & Rotter, N. G. (2004). Building trust in virtual teams. *IEEE Transactions on Professional Communication, 47*(2), 95-104.

Costa, A. C. (2003). Understanding the nature and the antecedents of trust within work teams. In B. Nooteboom & F. Six (Eds.), *The trust process in organizations*. Cheltenham, UK: Edward Elgar.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297-334.

Cummings, L. L., & Bromiley, P. (1996). The organizational trust inventory (oti): Development and validation. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in organizations. Frontiers of theory and research*. Thousand Oaks, CA: Sage.

D'Aveni, R. (1994). *Hypercompetition*. New York: Free Press.

D'Aveni, R. (1995). Coping with hypercompetition: Utilizing the new 7s's framework. *Academy of Management Executive, 9*(3), 45-60.

Das, T. K., & Teng, B. S. (1998). Between trust and control: Developing confidence in partner cooperation in alliances. *Academy of Management Review, 23*(3), 491-512.

Deschamps, J. C., & Brown, R. J. (1983). Superordinate goals and intergroup conflict. *British Journal of Social Psychology, 22*, 189-195.

DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed. Vol. 26). Thousand Oaks, CA: Sage Publications.

Dirks, K. T., & Ferrin, D. L. (2001). The role of trust in organizational settings. *Organization Science, 12*(4), 450-467.

Dixit, N. (1985). The effect of verbal contact and spatial positioning on job satisfaction, job performance, and interpersonal attraction: An experimental investigation: State University of New York at Albany.

Doney, P. M., & Cannon, J. P. (1997). An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing, 61*(2), 35-51.

Drnevich, P., Mehta, S., Chaturvedi, A., & Ramanujam, R. (2004). Affiliation or situation? Preferences in collaborative interorganizational response to bio-terrorism, *Academy of Management*. New Orleans, LA.

Dunphy, D., & Bryant, B. (1996). Teams: Panaceas or prescriptions for improved performance. *Human Relations, 49*, 677-699.

Dyer, J. H. (1996). Specialized supplier networks as a source of competitive advantage: Evidence from the auto industry. *Strategic Management Journal, 17*, 271-292.

Dyer, J. H., & Nobeoka, K. (2000). Creating and managing a high-performance knowledge-sharing network: The toyota case. *Strategic Management Journal, 21*, 345-367.

Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review, 23*(4), 660-679.

Eisenhardt, K. M. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management Journal, 32*(3), 543-576.

Eisenhardt, K. M. (1993). High reliability organizations meet high velocity environments: Common dilemmas in nuclear power plants. In K. H. Roberts (Ed.), *New challenges to understanding organizations* (pp. 117-136). New York: Macmillan.

Evan, W. M. (1966). The organization-set: Toward a theory of interorganizational relations. In J. D. Thompson (Ed.), *Organizational design and research: Approaches to organizational design* (pp. 434). Pittsburgh, Pennsylvania: University of Pittsburgh Press.

Feldman, M. S., & March, J. G. (1981). Information in organizations as signal and symbol. *Administrative Science Quarterly, 26*(2), 171-186.

Ferrier, W. J. (2001). Navigating the competitive landscape: The drivers and consequences of competitive aggressiveness. *Academy of Management Journal, 44*(4), 858-877.

Ferrier, W. J., Smith, K. G., & Grimm, C. M. (1999). The role of competitive action in market share erosion and industry dethronement: A study of industry leaders and challengers. *Academy of Management Journal, 42*(4), 372-388.

Finkelstein, S. (1992). Power in top management teams: Dimensions, measurement, and validation. *Academy of Management Journal, 35*(3), 505-538.

Gambetta, D. (1988). Can we trust trust? In D. Gambetta (Ed.), *Trust: Making and breaking cooperative relations*. Oxford, UK: Basil Blackwell.

Geisler, E. (1995). Industry-university technology cooperation: A theory of inter-organizational relationships. *Technology Analysis & Strategic Management, 7*(2), 217-229.

Giffin, K. (1967). The contribution of studies of source credibility to a theory of interpersonal trust in the communication department. *Psychological Bulletin, 68*, 104-120.

Goes, J. B., & Park, S. H. (1997). Interorganizational links and innovation: The case of hospital services. *Academy of Management Journal, 40*(3), 673-696.

Goodman, L. P., & Goodman, R. A. (1972). Theater as a temporary system. *California Management Review, 15*(2), 103-108.

Goodman, R. A., & Goodman, L. P. (1976). Some management issues in temporary systems: A study of professional development and manpower - the theater case. *Administrative Science Quarterly, 21*, 494-501.

Grandori, A., & Soda, G. (1995). Interfirm networks - antecedents, mechanisms and forms. *Organization Studies, 16*(2), 183-214.

Granovetter, M. (2005). The impact of social structure on economic outcomes. *Journal of Economic Perspectives, 19*(1), 33-50.

Gulati, R. (1995a). Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal, 38*, 85-112.

Gulati, R., Nohria, N., & Zaheer, A. (2000). Strategic networks. *Strategic Management Journal, 21*, 203-215.

Hall, R. H., Clark, J. P., Giordano, P. C., Johnson, P. V., & Van Roekel, M. (1977). Patterns of interorganizational relationships. *Administrative Science Quarterly, 22*, 457-474.

Hambrick, D. (1981). Environment, strategy, and power within top management teams. *Administrative Science Quarterly, 26*, 253-275.

Hansen, M. H. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly, 44*, 82-111.

Hardy, C., Phillips, N., & Lawrence, T. (1998). Distinguishing trust and power in interorganizational relations: Forms and facades of trust. In C. Lane & R. Bachmann (Eds.), *Trust within and between organizations: Conceptual issues and empirical applications*. New York: Oxford University Press.

Harrison, R. T., Dibben, M. R., & Mason, C. M. (1997). The role of trust in the informal investor's investment decision: An exploratory analysis. *Entrepreneurship Theory and Practice*, 63-81.

Hatch, M. J. (1997). *Organization theory: Modern symbolic and postmodern perspectives*. New York: Oxford University Press.

Hoffman, J. J., Cullen, J. B., Carter, N. M., & Hofacker, C. F. (1992). Alternative methods for measuring organization fit: Technology, structure, and performance. *Journal of Management, 18*(1), 45-57.

Hornsey, M. J., & Hogg, M. A. (2000). Assimilation and diversity: An integrative model of subgroup relations. *Personality and Social Psychology Review, 4*(2), 143-156.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion*. New Haven, CT: Yale University Press.

Hunger, J. D., & Wheelen, T. L. (2001). *Essentials of strategic management* (2nd ed.). Upper Saddle River, New Jersey: Prentice-Hall, Inc.

Isabella, L. A. (1990). Evolving interpretations as a change unfolds: How managers construe key organizational events. *Academy of Management Journal, 33*(1), 7-41.

Jacobs, D. (1974). Dependency and vulnerability: An exchange approach to the control of organizations. *Administrative Science Quarterly*, 45-59.

Jarvenpaa, S. L., Knoll, K., & Leidner, D. E. (1998). Is anybody out there? Antecedents of trust in global virtual teams. *Journal of Management Information Systems, 14*(4), 29-64.

Jarvenpaa, S. L., & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organization Science, 10*(6), 791-815.

Jones, G. R., & George, J. M. (1998). The experience and evolution of trust: Implications for cooperation and teamwork. *Academy of Management Review, 23*(3), 531-546.

Kaiser, H. (1970). A second generation little jiffy. *Psychometrika, 35*, 401-415.

Kaiser, H. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31-36.

Kanter, R. M. (1994). Collaborative advantage: The art of alliances. *Harvard Business Review*(July-August), 96-108.

Kelloway, E. K. (1998). *Using lisrel for structural equation modeling: A researcher's guide.* Thousand Oaks, CA: Sage Publications.

Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of behavioral research* (4th ed.). Stamford, CT: Thomson Learning, Inc.

Klein, K. J., & Kozlowski, S. W. J. (2000). *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions.* San Francisco: Jossey-Bass.

Kline, R. B. (1998). *Principles and practice of structural equation modeling.* New York: The Guilford Press.

Kostova, T., & Roth, K. (2002). Adoption of an organizational practice by subsidiaries of multinational corporations: Institutional and relational effects. *Academy of Management Journal, 45*(1), 215-233.

Kuhlmann, T. M., & Schumann, O. (2002). *Trust in german-mexican business relationships.* Paper presented at the European Academy of Management, Milan, Italy.

Kumar, N., Stern, L. W., & Anderson, J. C. (1993). Conducting interorganizational research using key informants. *Academy of Management Journal, 36*(6), 1633-1651.

Lawrence, T. B., Hardy, C., & Phillips, N. (2002). Institutional effects of interorganizational collaboration: The emergence of proto-institutions. *Academy of Management Journal, 45*(1), 281-290.

Lengnick-Hall, C. A., & Beck, T. E. (2005). Adaptive fit versus robust transformation: How organizations respond to environmental change. *Journal of Management, 31*(5), 738-757.

Locke, E. A., Latham, G. P., & Erez, M. (1988). The determinants of goal commitment. *Academy of Management Review, 13*(1), 23-39.

Luhmann, N. (1979). *Trust and power*. Chichester, England: Wiley.

MacCallum, R. C. (1986). Specification searches in covariance structure modeling. *Psychological Bulletin, 100*, 107-120.

Marcus-Newhall, A., Miller, N., Holtz, R., & Brewer, M. B. (1993). Cross-cutting category membership with role assignment: A means of reducing intergroup bias. *British Journal of Social Psychology, 32*, 125-146.

Martins, L. L., Gilson, L. L., & Maynard, M. T. (2004). Virtual teams: What do we know and where do we go from here? *Journal of Management, 30*(6), 805-835.

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review, 20*(3), 709-734.

McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal, 38*(1), 24-59.

McGrath, J. E. (1964). Toward a "theory of method" for research on organizations. In W. W. Cooper, H. L. Leavitt & M. W. Shelly (Eds.), *New perspectives in organizational research* (pp. 533-547). Somerset, New Jersey: Wiley.

McKnight, D. H., Cummings, L. L., & Chervany, N. L. (1998). Initial trust formation in new organizational relationship. *Academy of Management Review, 23*(3), 473-490.

Meyerson, D., Weick, K. E., & Kramer, R. M. (1996). Swift trust and temporary groups. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 166-195). Thousand Oaks, CA: Sage.

Milliken, F. J. (1987). Three types of perceived uncertainty about the environment: State, effect, and response uncertainty. *Academy of Management Review, 12*(1), 133-143.

Mohr, J., & Spekman, R. (1994). Characteristics of partnership success: Partnership attributes, communication behavior, and conflict resolution techniques. *Strategic Management Journal, 15*, 135-152.

Molm, L. D., Takahashi, N., & Peterson, G. (2000). Risk and trust in social exchange: An experimental test of a classical proposition. *The American Journal of Sociology, 105*(5), 1396-1427.

Morgan, G. (1997). *Images of organization* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review, 23*(2), 242-266.

Nelson, R. E. (1989). The strength of strong ties: Social networks and intergroup conflict in organizations. *Academy of Management Journal, 32*(2), 377-401.

Nooteboom, B., Berger, H., & Noorderhaven, N. G. (1997). Effects of trust and governance on relational risk. *Academy of Management Journal, 40*(2), 308-338.

Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.

O'Reilly III, C. (1978). The intentional distortion of information in organizational communication: A laboratory and field investigation. *Human Relations, 31*, 173-193.

Oliver, C. (1990). Determinants of interorganizational relationships: Integration and future directions. *Academy of Management Review, 15*(2), 241-265.

Phillips, A. (1960). A theory of interfirm organization. *Quarterly Journal of Economics, 74*, 602-613.

Pierce, C. A., Byrne, D., & Aguinis, H. (1996). Attraction in organizations: A model of workplace romance. *Journal of Organizational Behavior, 17*(1), 5-32.

Porter, T., & Lilly, B. (1996). The effects of conflict, trust, and task commitment on project team performance. *International Journal of Conflict Management, 7*, 361-376.

Pruitt, D. G. (1981). *Negotiation behavior*. New York: Academic Press.

Ring, P. S., & Van de Ven, A. H. (1992). Structuring cooperative relationships between organizations. *Strategic Management Journal, 13*, 483-498.

Ring, P. S., & Van de Ven, A. H. (1994). Developmental processes of cooperative interorganizational relationships. *Academy of Management Review, 19*(1), 90-118.

Robins, L. E. (2004). *The effects of selected interventions on trust in temporary groups during after action reviews.* Unpublished Dissertation, Walden University.

Rosen, B., & Jerdee, T. H. (1977). Influence of subordinate characteristics on trust and use of participative decision strategies in a management simulation. *Journal of Applied Psychology, 62*, 628-631.

Rosenthal, R., & Rosnow, R. L. (1991). *Essentials of behavioral research: Methods and data analysis* (2nd ed.). New York: McGraw-Hill.

Rummel, R. J. (1970). *Applied factor analysis*. Evanston, IL: Northwestern University Press.

Schwab, D. P. (1980). Construct validity in organizational behavior. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 2, pp. 3-43). Greenwich, CT: JAI Press.

Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., & Sherif, C. W. (1961). *The robbers cave experiment: Intergroup conflict and cooperation*. Middletown, Connecticut: Wesleyan University Press.

Smith, K. G., Carroll, S. J., & Ashford, S. J. (1995). Intra- and interorganizational cooperation: Toward a research agenda. *Academy of Management Journal, 38*(1), 7-23.

Smith, K. G., Locke, E. A., & Barry, D. (1990). Goal setting, planning, and organizational performance: An experimental simulation. *Organizational Behavior and Human Decision Processes, 46*(1), 118-134.

Sobrero, M., & Roberts, E. B. (2001). The trade-off between efficiency and learning in interorganizational relationships for product development. *Management Science, 47*(4), 493-511.

Spector, P. E. (2006). Method variance in organizational research: Truth or urban legend? *Organizational Research Methods, 9*(2), 221-233.

Stern, R. N. (1979). The development of an interorganizational control network: The case of intercollegiate athletics. *Administrative Science Quarterly, 24*, 242-266.

Stone-Romero, E. F., & Rosopa, P. J. (2004). Inference problems with hierarchical multiple regression-based tests of mediating effects. *Personnel and Human Resources Management, 23*, 249-290.

Successful shuttle recovery required massive coop effort. (2003, 10/30/03). Retrieved 11/6/03, 2003, from http://www.epa.gov/region6/6xa/emergency_successful.htm

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York: HarperCollins.

Thomas, J. B., & McDaniel, R. R., Jr. (1990). Interpreting strategic issues: Effects of strategy and the information-processing structure of top management teams. *Academy of Management Journal, 33*, 286-306.

Thomas, L. G. I. (1996). The two faces of competition: Dynamic resourcefulness and hypercompetitive shift. *Organization Science, 7*(3), 221-242.

Thompson, L. L. (2003). *Making the team: A guide for managers* (2nd ed.): Prentice Hall.

Thurstone, L. L. (1947). *Multiple factor analysis*. Chicago: University of Chicago Press.

Tyler, T. R., & Kramer, R. M. (1996). Whither trust? In R. M. Kramer & T. R. Tyler (Eds.), *Trust in organizations. Frontiers of theory and research*. Thousand Oaks, CA: Sage.

Van de Ven, A. H. (1976). On the nature, formation, and maintenance of relations among organizations. *Academy of Management Review*, 24-36.

Van de Ven, A. H., & Walker, G. (1984). The dynamics of interorganizational coordination. *Administrative Science Quarterly, 29*, 598-621.

Warren, R. (1967). The interorganizational field as a focus for investigation. *Administrative Science Quarterly*, 398-419.

Weick, K. E., & Roberts, K. H. (1993). Collective mind in organizations: Heedful interrelating on flight decks. *Administrative Science Quarterly, 38*, 357-381.

Weick, K. E., & Sutcliffe, K. M. (2001). *Managing the unexpected: Assuring high performance in an age of complexity*. San Francisco: Jossey-Bass.

White, G. B. (2005). *Introduction and history: A cyber terrorist exercise.*Unpublished manuscript, San Antonio.

Whitney, J. O. (1994). *The trust factor: Liberating profits and restoring corporate vitality*. New York: McGraw-Hill, Inc.

Williamson, O. (1985). *The economic institutions of capitalism*. New York: The Free Press.

Yin, R. K. (2003). *Case study research* (3rd ed.). Thousand Oaks, CA: Sage.

Zajac, E. J., & Shortell, S. M. (1989). Changing generic strategies: Likelihood, direction, and performance implications. *Strategic Management Journal, 10*, 413-430.

Zand, D. (1972). Trust and managerial problem solving. *Administrative Science Quarterly, 17*, 229-239.

VITA

Tammy Elizabeth Beck was born in Texas on August 2, 1963, to Timothy Arthur and Mary Ellen Duyka. She grew up in Wharton, Texas along with her sisters Terry and Trudy. After receiving the distinction of valedictorian from Wharton High School, Wharton, Texas, in 1981, she attended Wharton County Junior College over the next year. She entered the University of Texas at Austin, Texas in 1982 where she later received the degree of Bachelor of Business Administration with a major in accounting in December 1984. In 1985, she married Robert Benjamin Beck, also of Wharton, Texas. She became a certified public accountant in the State of Texas in 1986, and practiced accounting over the next sixteen years within public accounting firms and various industrial organizations. In 1995, she received the degree of Master of Business Administration from the University of Houston. In August 2002, she entered the Graduate School of the University of Texas at San Antonio in pursuit of a Doctor of Philosophy in Business Administration with a concentration in organization and management studies. She is the proud mother of two children; Daniel Timothy Beck born in 1990, and Hannah Elizabeth Beck born in 1995.