UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

COMMUNICATING FOR RESILIENCE: A LONGITUDINAL STUDY OF PROCESSES AND PRINCIPLES FOR MANAGING ORGANIZATIONAL DISRUPTION

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

Degree of

DOCTOR OF PHILOSOPHY

By

ARDEN CLARE ROEDER
Norman, Oklahoma
2021

Downloaded from SHAREOK. Persistent Handle URL: https://hdl.handle.net/11244/332956

COMMUNICATING FOR RESILIENCE: A LONGITUDINAL STUDY OF PROCESSES AND PRINCIPLES FOR MANAGING ORGANIZATIONAL DISRUPTION

A DISSERTATION APPROVED FOR THE

DEPARTMENT OF COMMUNICATION

BY THE COMMITTEE CONSISTING OF

Dr. Ryan S. Bisel, Chair

Dr. Michael W. Kramer

Dr. Ioana A. Cionea

Dr. Glenn J. Hansen

Dr. Shane Connelly

© Copyright by ARDEN CLARE ROEDER 2021
All Rights Reserved.

Acknowledgements

This dissertation represents the culmination of my formal education journey. I am fortunate that the conclusion of this project will enable me to embark upon a career of continuing to read, to learn, to study, to question, and to seek answers to additional interesting queries.

I would like to begin by thanking my advisor, Dr. Ryan Bisel, for being a truly outstanding mentor, guide, motivator, and source of encouragement over the past four years. Your special combination of setting the bar extraordinarily high, and then gently guiding the way upwards, helped me get to this point. I am exceedingly grateful. To my committee members, Drs. Michael Kramer, Ioana Cionea, Glenn Hansen, and Shane Connelly: This dissertation is a direct result of insights gained from your suggestions and knowledge gleaned in your classrooms. Thank you for your expertise and wisdom. I would be remiss if I did not also acknowledge those who first spurred me toward graduate and doctoral education: Dr. Lacy McNamee and Dr. Johny Garner. You both noticed and encouraged an ability in me before I saw it myself. I cannot thank you enough for being the first to believe in me and set me upon this journey.

I would next like to thank my parents, Sandy and Gretchen McCormack, for your unending support and for always spurring me on toward the next deadline, the next milestone, and the next celebration. I appreciate you both always demonstrating the importance of family first, and for establishing the home base we all hold so dear. To my siblings, in-laws, cousins, grandparents, aunts, and uncles near and far, thank you all for cheering me on along the way.

There are a couple groups of exceptionally special women who deserve my gratitude as well. To my gals: Madeline, Emily, Amanda, Claire, Katy, Haley, Abi, and Allison. You all are my best and brightest sounding boards, my inspirations, and my ultimate support system. I am immeasurably thankful to go through this life with each and every one of you. To my academic

ladies: Jessica, Katherine Ann, Morgan, Britney, and Mizuki. I thank each of you for modeling the exceptional habit of right-sizing our work, and for intentionally checking on how the "other" parts of life are going. My work is better because of you.

Finally, to my husband, Travis. I am unspeakably blessed to spend my days with you. The years marking this doctoral degree brought so many changes: engagement, being newlyweds, a second pup, three states, four houses, and most recently, the birth of our daughter. I have loved every stage more than the last, and that is all due to your steadfastness by my side. Your excellent cooking, terrible jokes, and dedication to your own graduate work have been my daily driving force. I love you and I love our life together. I can't wait for what's next.

Funding was provided by the University of Oklahoma Department of Communication's dissertation scholarship fund and research awards from the Graduate Student Senate.

Table of Contents

Acknowledgements iv

List of Tables viii

List of Figures ix

Abstract x

Chapter 1: Introduction 1

Chapter 2: Literature Review 4

Stress 4

Efficacy 8

Performance 10

Communicative Resilience in Organizations and the Communicative Theory of Resilience 13

Resilience in Organizational Reliability and High-Reliability Organization Theory 16

Assessment of Resilience in Organizations 20

Chapter 3: Method 30

Power Analysis 32

Procedures and Design 34

Measures 36

Data Preparation 41

Chapter 4: Results 44

Chapter 5: Discussion 52

Developing and Sustaining Resilience in Organizations Across Time 52

Communicative Theory of Resilience 55

High-Reliability Organizing 58

Relative Influences of Communicative Resilience and Reliability Organizing 61

Practical Implications..... 65

Limitations 66

Conclusion 67

References..... 68

Appendix A: Communication Resilience Processes Scale 85

Appendix B: Safety Organizing Scale 88

Appendix C: Assessment of Disruptiveness 89

Appendix D: Individual Perceived Stress Scale..... 90

Appendix E: Team Perceived Stress Scale 91

Appendix F: Personal Efficacy Beliefs Scale 92

Appendix G: Collective Efficacy Beliefs Scale..... 93

Appendix H: Individual Success-Failure Scale 94

Appendix I: Team Success-Failure Scale 95

Appendix J: Demographic Questions 96

Appendix K: Final LISREL Syntax for CRPS CFA 97

List of Tables

Table 1: Hypotheses 25

Table 2: Descriptive and Demographic Statistics for Time 1 and Time 2 Participants 33

Table 3: Results of One-sample t-tests Assessing Degree of Disruptiveness 35

Table 4: Initial, Intermediate, and Final Goodness-of-Fit Indices for CRPS CFA 44

Table 5: Means, Standard Deviations, Reliabilities, and Correlations for Study Variables 49

Table 6: Regression Analyses for Time 2 Predictions 50

Table 7: Multiple Linear Regression Analyses for Time 2 Predictions 51

List of Figures

Figure 1: Survey Flow (Time 1) 82

Figure 2: Survey Flow (Time 2) 83

Figure 3: Confirmatory Factor Analysis for CRPS (Unstandardized Solution) 84

Abstract

This project explored how individuals and teams employ specific communication processes and principles to cultivate, sustain, and strengthen resilience after organizational disruption. A longitudinal study of working adults revealed high-reliability team organizing, as well as communicative resilience, significantly predicted resilience, as measured by disruption management outcomes. This study used two theoretical perspectives of resilience in organizational communication—the communicative theory of resilience (CTR) and high-reliability organizing theory (HRO)—as frameworks to investigate how the presence and enactment of resilience processes influence three disruption management outcomes at both the individual and team levels: stress, efficacy, and performance. Perceptions of individual and team stress, efficacy, and performance were examined at two times in a field survey with hundreds of working adults from various organizations across the United States. Results indicated (a) highly-reliable organizing was significantly related to improved levels of most disruption management outcomes at both data collection points, and for both individuals and teams, and (b) communicative resilience was significantly related to more positive levels of all disruption management outcomes at Time 1 for individuals and teams. Furthermore, comparative analyses revealed that (c) high-reliability organizing practices were generally more predictive of positive disruption management outcomes than communicative resilience, however, the two forms of resilience are likely compatible and complementary. Implications for resilience theorizing in organizational communication research conclude the dissertation.

Keywords: resilience; organizational disruption; stress; efficacy; performance

Chapter 1: Introduction

Disruptions to routines can be highly unsettling and frustrating to those who experience them, particularly when prolonged or extreme consequences occur because of disruptive events. When drastic organizational changes or unforeseen events arise, developing new work strategies, communication plans, and routines for organizational members and teams presents unique challenges (Lewis, 1999). Furthermore, research related to organizational change and disruptions is an area to which organizational communication scholars have much to contribute (Weber et al., 2015). A communication approach to the study of resilience (Buzzanell, 2010, 2018b) suggests resilience can be developed over time by engaging in resilient discourse, as well as called upon when disruptive events arise (Wieland, 2020). Elsewhere, scholars have long noted the resilience of high-reliability organizations, which create cultures of safety—cultures that serve as contexts that anticipate disruptions and plan for ways to contain them (Weick & Sutcliffe, 2001).

The appraisal of disruption by individual organizational members and teams occurs within pre-established organizational contexts of stronger or weaker resilience. Those pre-established contexts are both individual and systemic. Therefore, it seems likely communicative resilience and high-reliability organizational cultures influence appraisals of and experiences with workplace disruption. A communication perspective of resilience directs scholarly attention to the ways a particular disruptive event gets appraised through interpretive processes which, in turn, influence perceptions of stress, efficacy, and performance. In other words, it seems likely upstream communicative resilience influences downstream appraisals of and experiences with workplace disruption.

Resilience is “the process of reintegrating from disruptions in life” (Richardson, 2002, p. 309). Interest in resilience is growing in communication scholarship; this project sought to uncover how communication processes and principles between individuals and teams in organizations bolster or stifle the development and enactment of resilience processes after organizational disruption. A communication approach to the study of resilience (Buzzanell, 2010, 2018b) suggests resilience can be developed over time through engaging in resilient discourse, as well as called upon when disruptive events arise, through the use of particular communication strategies and processes (Wieland, 2020). Moreover, organizational scholarship has investigated how reliability organizing principles can promote cultures of safety and resilience by establishing communication patterns focused on anticipation and containment of potential errors and disruptions.

This project explored how communication in teams and organizations bolsters or stifles resilience during disruption. The presence or absence of communicative resilience in individuals and teams likely influences their respective ability to keep action moving amidst uncertainty; such effects may be evident in specific organizational constructs, such as stress, efficacy, and performance. These three constructs are labeled here “disruption management outcomes,” because they signal whether and how organizational members and teams enact resilience during disruptions. This project analyzed how communicative resilience and reliability organizing are related to these three key disruption management outcomes: stress, efficacy, and performance at both the individual and team levels of analysis.

Key Contributions

Two dominant theoretical approaches were used to study resilience in group and organizational contexts from a communication perspective. First, the communicative theory of

resilience (CTR), as proposed by Buzzanell (2010, 2018b), is a foundation for studying *resilience in organizations* following specific disruptive events. Second, high-reliability organizing (HRO; Weick & Sutcliffe, 2001, 2015) theory takes a systemic approach to the concept of resilience and is appropriate for examining *organizational resilience* toward general disruptions. In organizational communication literature, studies of *resilience in organizations* use CTR to explore how interpersonal and group communication can cultivate resilience to "bounce back" and craft "new normalcies" (Buzzanell, 2010, p. 9), whereas HRO theory presents *organizational resilience* as a team or system's capacity to absorb the strains of disruptions by embedding redundancy, slack, and margin into the organization (Weick & Sutcliffe, 2001, 2015). These two conceptualizations of resilience in organizational settings can be used in tandem to gain a fuller understanding of the nature of resilience in organizations (Roeder, Bisel, & Morrissey, 2021).

The present study contributes to organizational and group communication literature in three ways. First, this study compared the relative influence of communicative resilience (Buzzanell, 2010, 2018) with the cultural influence of reliability organizing on disruption management outcomes (Weick & Sutcliffe, 2001, 2015). The study's design included both CTR and HRO frameworks and allowed for enhanced understanding of how both forms of resilience complement one another. Second, this study is the first of its kind to explore both forms of resilience processes and principles at the individual and team levels simultaneously and across time. This design provided an empirical assessment of the relative influence of resilience processes at different levels and across time, revealing intriguing findings regarding meaning making oriented toward a particular disruptive event as compared to disruptions more broadly. Finally, the study is among the first of its kind to test CTR quantitatively—an opportunity only

recently made possible by the development and validation of a CTR measurement (Wilson et al., 2021). The following sections first present literature focused on stress, efficacy, and performance. Each is introduced broadly, before summarizing pertinent findings at both the individual and team levels. These sections offer detailed connections for how each variable relates to communication and resilience research. Then, the theoretical foundations and related findings from CTR and HRO theories are reviewed prior to presenting hypotheses, methods, results, and discussion.

Chapter 2: Literature Review

Stress

Stress is a widely studied concept across organizational science domains, including psychology, management, and communication, in addition to academic fields, such as biology and medicine. Stress is a negative emotional response to the perception of being unable to meet relevant environmental demands (Boren, 2014; Cohen et al., 1983). Furthermore, when developing a global measure of stress, Cohen et al. (1983) emphasized that individuals need only to *perceive* the element as a threat for it to be stress-inducing, regardless of whether the threat is genuinely impeding their goals. Organizational scholarship demonstrated stress is linked to organizational outcomes, such as burnout, turnover, and performance, among others (Boren, 2014; Miller et al., 1990; Sullivan & Bhagat, 1992). Conceptualizations of stress in organizational communication literature also consider the ever-changing relationship between an individual and their complex and dynamic environment—a relationship that can induce stress, rather than as an individual stimulus or a response to a stimulus (Fonner & Fetherston, 2017).

Organizational contexts, such as job expectations, supervisor and peer relationship quality, situational demands, and available coping resources are examples of environmental

considerations that influence stress (Fonner & Fetherston, 2017; Schuler, 1982). Important for the current study was a careful consideration of the role of communication in shaping the workplace environment, and, therefore, each individual member's appraisal of potential stressors. Moreover, Miller et al. (1990) stated that "attitudes and perceptions of the workplace are largely a function of communication behavior" (p. 306) as individuals and teams engage in communication prior to and throughout a disruption in order to attribute meaning to it. As such, preceding interactions and expectations in the workplace environment shape members' assessments of perceived threats, and, therefore, their appraisals of being able or unable to manage that stress adequately. Thus, communication and stress are linked.

The depiction of environmental appraisals being rooted in communication aligns with a social constructionist perspective, which posits that, "taken-for-granted realities are produced from interactions between and among social agents" (Fairhurst & Grant, 2010, p. 174). Social constructionism is also evident in how CTR and HRO theories are used to explain resilience as they place communication processes at the center of their explanatory mechanisms, which is further discussed in subsequent sections. An element which is not yet well-described in CTR and HRO literature domains is the influence of communication in the ultimate appraisal of and experience with disruptions. Appraisals are likely to affect disruption management outcomes, such as stress, efficacy, and performance.

Scholarship about stress in organizations is a rich literature as there are numerous theoretical contributions that link stress to the prevalence and outcomes of stress in the workplace (for a review, see Fonner & Fetherston, 2017). The following sections offer further information on stress at the individual and team levels, particularly with respect to how stress

might be linked to the enactment of communicative resilience in organizations following significant disruption.

Individual Stress

Stress, and associated emotions, such as burnout and anxiety, are commonplace in modern organizations. A common source of work stress is role conflict or role ambiguity, often due to uncertainty related to the environment or expectations (Miller et al., 1990; Rings et al., 1979). Certainly, workload and working conditions can produce stress in organizational members as well (Miller et al., 1990; Ray & Miller, 1991). The experience of stress in the workplace may lead to adverse effects on related constructs of interest in organizational sciences, such as job satisfaction, organizational commitment, and performance (Miller et al., 1990). Furthermore, the enactment of specific coping strategies in organizations, such as social support from peers or supervisors, participation in wellness programs, and rumination, to name a few, may serve to ameliorate or prolong the perceived stress of the individual if selected strategies are not sufficiently effective in activating coping (Ashford, 1988; Boren, 2014; Haggard et al., 2011; Harrison & Stephens, 2019; Roeder et al., 2020).

Moments of organizational change or disruption can also induce increased levels of stress among organizational members. For example, consider a recent workplace disruption experienced by individuals and teams across the world: the unforeseen and sudden shift to distributed work due to concerns of the COVID-19 pandemic (Stephens et al., 2020). During the spring of 2020 when organizations required members to shift their in-person routines rapidly to some form of work-from-home, telework, or remote work, this disruption created stress at the individual level for a variety of reasons. For many, their work routines became blended with non-work routines, or perhaps their remote location did not support their work in terms of

technology, access, and equipment. The rapid, unforeseen shift to telework is but one example of how organizational disruption can be related to individual stress. Though the experiences of workplace disruptions considered in this study are certainly not limited to those related to the COVID-19 pandemic, this unprecedented global event is acknowledged here as it has shaped recent organizing and working routines around the world.

Coping resources are linked to the degree to which stress is felt and prolonged during and following disruptive events; furthermore, many coping resources and strategies are communicative in nature, such as feedback- and information-seeking, reframing the disruption, and avoidance behaviors (Ashford, 1988). The enactment of communicative resilience following organizational disruption, and the resultant effects on perceived stress at the individual and team levels deserve more attention in group and organizational communication scholarship, as the predilection or inability to enact communicative resilience following an organizational disruption is likely related to individual perceived stress in the wake of disruption.

Team Stress

In addition to individual members, organizational teams in organizations can also experience *collective* stress (Weaver et al., 2001). Similar to the individual level, where stress is an individual's perception that an element of the environment might interfere with a personal goal, team stress is a processual construct relative to the *shared* environment of its members as an evaluation of whether the team is "taxing or exceeding their resources and/or endangering their well-being" (Weaver et al., 2001, p. 86). Moreover, Bartel and Saavedra (2000) theorized that work groups achieve coordinated action through optimizing their "thoughts, feelings, and behaviors" (p. 198) as they work toward a shared goal. Similarly, Bartel and Saavedra suggested that collective work "moods" can also be achieved or prolonged as members align their goals,

expectations, and efforts in "well-coordinated patterns of behavior" (p. 199). As such, collective stress among team members is a likely outcome of a shared disruption, to the degree to which resources, stressors, and communication surrounding the disruption are shared as well.

Returning to the disruption example of shifting to distributed work or telework, such an experience would disrupt the shared environment, access to shared resources, and ability to engage in process routines of an organizational team. Therefore, a disruption to a shared environment that influences the degree to which members are "taxing or exceeding their resources" (Weaver et al., 2001, p. 86) would affect team stress. Furthermore, collective stress is also linked to collective coping strategies among work teams (Länsisalmi et al., 2000), but the role of communication, and specifically the inclusion of communicative resilience and reliability organizing, warrants further attention.

Efficacy

Individual and collective efficacy in organizational settings are important constructs for inclusion in studies of resilience because efficacy is an "individual's perceived expectancy of obtaining valued outcomes through personal effort" (Fuller et al., 1982, p. 7) and is, therefore, indicative of a member's perception or belief in his or her own task and relational skills in the workplace. Insofar as efficacy is related to studies of organizational disruption, it stands to reason that, if an individual or team is sufficiently disrupted in terms of their access to interpersonal, relational, or functional resources, their perceived efficacy might suffer in turn.

Individual Efficacy

Research on efficacy in organizational sciences has revealed strong links to additional foundational constructs, such as performance, organizational commitment, turnover, and citizenship behaviors (Fuller et al., 1982; Jones, 1986; Yang et al., 2016). Fuller et al. (1982)

suggested individual efficacy might be sustained or even enhanced during an organizational change or disruption, therefore influencing the effect of such a disruption on both short- and longer-term organizational outcomes. Individual efficacy is related to resilience insofar as both constructs hold important implications for how individuals react to and cope with disruption (Schwarzer & Warner, 2013).

Research has shown strong ties between efficacy and resilience, particularly in relation to additional positive organizational constructs, such as goal-attainment and workplace satisfaction. Grant (2014) demonstrated that participation in an executive coaching program throughout an organizational change served to bolster both individual efficacy and resilience for participants. The coaching program emphasized reflexive mindfulness about leadership style and purposeful communication practices, reinforcing the role of workplace communication practices in the development and maintenance of both efficacy and resilience during disruption. Advancing the provided example of how a remote work transition would disrupt work routines, individual efficacy is related to disruption insofar as elements of the disruption itself may, in fact, impede or hinder the relationship between effort and results. In such a case, where expected access to interpersonal or functional resources is disrupted, individual efficacy would be influenced as well. As such, further examination of individual efficacy in relation to communicative resilience is warranted, particularly in the wake of organizational disruption.

Team Efficacy

In addition to one's own perceived efficacy in the workplace, perceptions of their team's efficacy are important to understanding communicative resilience during disruptions as well. Collective efficacy is an increasingly studied topic in organizational science as researchers consider the role of the team in investigating individual effectiveness, performance, and

satisfaction. Collective efficacy is "perceptions of task-specific team capability" (Gully et al., 2002, p. 819), and can be assessed at the individual or team perception level of analysis.

Furthermore, Watson et al. (2001) posited that researching and understanding collective efficacy as a shared belief is paramount to gaining a nuanced understanding of teams in organizations because efficacy "beliefs are shared…each member's interpretations…are, in part, based on how others perceive and interpret them" (pp. 1057-1058), particularly when aspects of organizational life are routinely discussed between team members (Weick, 1995). Therefore, if a team experiences a shared disruption, such as transitioning to remote work, perceptions of a team's capability to continue to accomplish work tasks during developing and adapting to new work routines might be altered as well. Finally, as organizations increasingly rely on team- and group-based structures, understanding individuals' perceptions of their team's efficacy likely has important implications for garnering greater understanding of their own efficacy and performance during disruption as well (Baker, 2001).

Performance

Performance, a widely studied topic of great concern to organizational leaders and researchers alike, refers to "outcomes achieved and accomplishments made at work" (Anitha, 2014, p. 309). Leaders and decision-makers in organizations return regularly to performance outcomes to guide decisions regarding compensation, promotion, retention, and termination (Van Scotter, 2000). Albeit perhaps less cited within organizational research than stress and efficacy, performance is relevant in the context of this project as a disruption management outcome because it offers insight into how well individuals or teams might be coping with the disruption, as well as the degree to which they may be capable of enacting resilience. Individual or team resilience during disruption may involve continuing or adapting work routines to be more

suitable for their current environment or developing alternative ways of organizing to maintain or perhaps improve performance.

Organizational communication scholars have a long history of espousing the importance of avoiding managerialism (i.e., research in service of for-profit or greed-based goals) in their scholarship (Conrad, 2011). Inclusion of performance as an outcome variable does not amount to managerialism because the focus on performance here is not in service of profit maximization; performance is, instead, included as an outcome of resilience and adaptability during disruption—humanistic outcomes of interest that are increasingly relevant in light of the COVID-19 global pandemic. Importantly, while performance may not be a widespread topic of interest in organizational *communication* research, performance as a disruption management outcome in this study offers insight into how communication resilience processes and reliability organizing principles allow individuals and groups to continue to pursue desired goals and outcomes during disruption.

Individual Performance

Assessments of performance are largely concerned with task completion and quality in accordance with leadership and managerial expectations related to "achieving agreed business outputs" (Rosete & Ciarrochi, 2005, p. 391). Individual performance is linked to a variety of similar constructs, such as organizational culture, workplace incentives, leadership effectiveness, and organizational commitment (Brown et al., 2011; Condly et al., 2008; Garnett et al., 2008; Rosete & Ciarrochi, 2005). Individual performance, as one's ability to achieve goals at work, may also be impeded or interrupted during a work disruption, such as unexpected remote work. Individual performance is an important construct to consider in relation to resilience in that the adaptation and continuation of routines in the face of disruption, or perhaps the inability to do so,

is an indication of the degree to which an individual can practice resilience within their organizational setting, thus enabling continued performance in their role.

Team Performance

Similarly, team performance and the subsequent evaluation of how well a team can continue to perform as a work unit during disruption ought to be considered a crucial outcome of resilience as well. More specifically, team communication which adheres to resilient organizing principles might reveal specific structures and strategies effective for keeping action moving forward. As an organization or group seeks to absorb strains resulting from a disruptive event, such organizing principles are paramount to success (Weick & Sutcliffe, 2001, 2015). Facets of team communication are already linked as contributory elements to team performance, such as organizational trust between team members, relationship quality between members, leadership strategy, and training effectiveness (Brown et al., 2015; Dionne et al., 2004; Myers & Sadaghiani, 2010; Salas et al., 2008). If any of these team communication markers or similar team performance indicators were to suffer because of a shared disruption among team members, it stands to reason that team performance will be altered in kind.

For example, a team making sudden adjustments to routines to accommodate remote work requirements would likely experience a change in communication quality between members; perhaps leaders' ability to delegate responsibilities and guide members toward effectively sharing tasks would be hampered or diminished. As such, an investigation into how resilient organizing principles embedded within team communication, such as those offered by Baker et al. (2006), will contribute to greater understanding of how team communication during disruptions is important for performance.

Exploring the Communication-Resilience Link in Organizations

The preceding description of disruption management outcomes (i.e., stress, efficacy, and performance) raises the question, "What communication processes could reduce stress and bolster efficacy and performance for individuals and teams, despite an organizational disruption?" The following sections answer this question by exploring two key concepts of studying resilience in communication: communicative resilience processes and reliability organizing principles, which serve as independent variables for this study.

Communicative Resilience in Organizations and the Communicative Theory of Resilience

The communicative theory of resilience (CTR; Buzzanell, 2010) posits resilience as the ability to "bounce back or reintegrate after difficult life experiences" (p. 1). Furthermore, resilience is a dynamic process which unfolds over time, triggered by a disruptive event or series of events. Prior to CTR, Richardson (2002) posited resiliency theory, wherein an internal drive or force motivates humans to persist through difficulty, and that the experience of stressful or disruptive events can create enhanced resilient qualities in individuals. Buzzanell's (2010) depiction of resilience as a communicative process stands in contrast to previously held definitions, which classified resilience as a trait or individual personality characteristic that can be possessed in varying quantities. Rather, CTR suggests disruptions spark sensemaking, an inherently communicative process, through which individuals begin (or fail to begin) the adaptive-transformative process of "bouncing back" or "bouncing forward" (Buzzanell, 2010, 2018a).

Importantly, a close examination of the basic tenets of CTR reveals that certain forms of meaning making tend to spark greater resilience. To be clear, CTR does not suggest all communication processes are conducive to invoking resilience; in fact, according to the theory, some communication patterns stifle or halt the development of communicative resilience.

Furthermore, adopting a communication perspective of resilience acknowledges that the process is ongoing, being created and sustained through individual turns of talk in human interaction (Buzzanell, 2018a). More specifically, in organizational and group contexts, resilience processes may be induced when "individuals and organizations reintegrate and foster productive change during and after…obstacles" (Buzzanell, 2018b, p. 14). According to CTR, the development and enactment of resilience is supported in communication, through which individuals, groups, families, and perhaps entire organizations and communities foster resilience through five subprocesses: (a) crafting normalcy, (b) affirming identity anchors, (c) maintaining and using communication networks, (d) constructing alternative logics, and (e) foregrounding productive action while backgrounding negative feelings (Buzzanell, 2010, 2018a).

First, *crafting normalcy* as a resilience process takes shape through the language, storytelling, and communication interactions between individuals which actively construct and reframe the aftermath of a triggering event as a new normal way of being. CTR suggests resilience is then "activated" through this process as a "new normal" (Buzzanell, 2018b, p. 15) and is communicatively constituted through interactions. Secondly, *identity anchors* as a "relatively enduring cluster of identity discourses" (Buzzanell, 2010, p. 4) are affirmed and reaffirmed through communication, specifically in contrast to uncertain and unstable identities related to the disruptive event. For example, one might choose to focus on and affirm familial and community identity anchors during moments of job loss or uncertainty. Third, and especially salient in studies of workplace disruptions, resilience can be cultivated through the active *maintenance of communication networks* and how workplace connections and interactions are both used and maintained as a means of constituting resilience (Wieland, 2020). The fourth subprocess of communicative resilience involves the *development of alternative logics*—

meaning the cultivation of alternative ways of organizing and restructuring, which is accomplished through communication with others (Buzzanell, 2010). In the midst of a workplace disruption, using communication processes to construct and adapt organizing principles to fit new normalcies and new routines also sparks resilience. Finally, resilience can be constructed by purposefully using communication to both *acknowledge negative feelings while prioritizing the continuation of action* and progress in the face of disruptive events.

CTR was originally proposed by an organizational communication scholar, Dr. Patrice Buzzanell; yet, its applications thus far are primarily found in interpersonal communication research, including individual, dyadic, and family communication scholarship (Afifi, 2018; Carr & Koenig Kellas, 2018; Dorrance Hall, 2018; Lucas & Buzzanell, 2012; Venetis et al., 2020). A lack of application of CTR to organizational and group settings is surprising. Moreover, the few and recent applications of CTR to organizational contexts have tended to focus on broad, macro communication patterns, such as those that can be seen in whole communities (Barbour et al., 2020; Rice & Jahn, 2020), and not necessarily in workplaces. Additional scholarship applying the tenets of CTR to organizational contexts is warranted. More specifically, research related to how individuals, groups, and teams cope with a disruption to work routines, and the influence of such experiences on organizational disruption management outcomes, would add value and understanding to organizational communication research.

As a theoretical foundation for communication scholars, CTR generated a great deal of research for individuals, partners, families, groups, and communities alike (e.g., Barbour et al., 2020; Carr & Koenig Kellas, 2018; Ford & Ivancic, 2020; Ishak & Williams, 2018; Lucas & Buzzanell, 2012; Okamoto, 2020; Rice & Jahn, 2020; Roeder, Bisel, & Morrissey, 2021). The five subprocesses of CTR are of great theoretical interest and have proven to be a useful

framework from which to classify and more deeply understand the vital role of communication in fostering resilience in these various contexts. Specifically, for organizational and group communication researchers, viewing organizational disruptions from the lens of CTR presents an opportunity to gain a more nuanced understanding of how communication between individuals, teams, volunteers, supervisor-subordinate relationships, and leaders do, in fact, influence those individuals' ability to respond to a disruption in a resilient manner.

Applying CTR to organizational contexts is an important research pursuit given previous applications of the theory. To date, research integrating CTR as a theoretical framework in organizational communication is largely reliant upon *qualitative* data, in terms of observations and retrospective in-depth interviews. Moreover, studies are predominantly focused on *individual* organizational members' resilient experiences (Agarwal & Buzzanell, 2015; J. S. Ford, 2018; Okamoto, 2020; Wieland, 2020) and the effects of workplace disruption on non-work domains, such as how a workplace disruption can spillover into the family context (e.g., a layoff or unexpected pay stoppage; Lucas & Buzzanell, 2002; Roeder, Bisel, & Morrissey, 2021). CTR has yet to be extensively applied and tested quantitatively and in organizational contexts; additionally, existing research is limited in investigations of whether and how organizational teams use communication to foster resilience during disruption and to bounce forward with enhanced resilience.

Resilience in Organizational Reliability and High-Reliability Organization Theory

In addition to CTR, high-reliability organizing (HRO) theory offers another theoretical perspective for understanding how individuals and teams enact resilience during disruption. High-reliability organizations (HROs) are a specific classification of organizations wherein life-and-death situations are involved in the work of the organization (Weick & Sutcliffe, 2001,

2015). Thus, the organizing principles underlying how HROs function are different from non-HROs. Previous research related to high-risk organizations did not focus as intently on the organizing principles of HROs as more recent applications of the theory. Weick et al.'s (2005) work on sensemaking and collective mindfulness in high-reliability contexts shifted the focus of HRO theory toward the unique organizing commitments of HROs, which allowed them to maintain reliability during high-stress and high-stakes environments.

Moreover, because the stakes in HROs involve threat to human life, these organizations must maintain resilience in their performance without the benefit of low-stakes trial-and-error feedback. Common examples of HROs are firefighting crews (Jahn, 2016; Jahn & Black, 2017; Minei & Bisel, 2013), healthcare and hospital organizations (Baker et al., 2006; Carroll & Rudolph, 2006), military operations (Roberts et al., 1994), and nuclear power plants (Barbour & Gill, 2017; Bierly & Spender, 1995; Bierly et al., 2008). Rather than focusing on lean efficiency and productivity, HROs are primarily concerned with reliable performance in the face of grave consequences for unreliability.

Researchers proposed HROs tend to exhibit five reliability organizing principles, which account for their reliability and error-suppression: (a) preoccupation with failure, (b) reluctance to simplify, (c) sensitivity to operations, (d) commitment to resilience, and (e) deference to expertise (Weick & Sutcliffe, 2001, 2015). *Preoccupation with failure* is established through regular communication between team members, which acknowledges where errors might arise and explicitly states mistakes that should not be made. *Reluctance to simplify* is an essential element of mindfulness among team members accomplished through embracing the inherent nuances within organizations, rather than embracing simplified categories and labels often seen in non-HROs. Maintaining a *sensitivity to operations* requires HROs to monitor trouble while it

is small and resolvable, rather than developing solutions once issues have escalated. Sensitivity to operations is accomplished by using communication to develop trusting and honest relationships throughout the organizational structure so that pertinent information can flow efficiently. *Commitment to resilience*, as a reliability principle, is focused on a team or organization's ability to absorb strains arising from unexpected circumstances and is accomplished through strategies, such as developing contingency plans and creating slack and margin within organizing. Lastly, *deference to expertise* allows for decision making power in organizations to be deferred to members based on relevant knowledge of the situation at hand, rather than based on power and hierarchical structures.

Communication scholars have contributed to HRO research by demonstrating the essential role of communication in creating and sustaining the five cultural principles (Allen et al., 2010; Barbour & Gill, 2017; J. L. Ford, 2018; Ishak & Williams, 2017; Jahn, 2016; Jahn & Black, 2017; Minei & Bisel, 2013; Myers & McPhee, 2006; Roeder, Bisel, & Howe, 2021). Barbour and Gill (2017) studied the powerful influence of how questions were asked and answered within a nuclear power plant, revealing the essential role of effective questioning in an HRO with respect to safety and error prevention. Jahn and Black (2017) studied the communication methods firefighters used to navigate elements of power and hierarchy within their teams, given that HRO principles in their original depictions from Weick and Sutcliffe (2001, 2015) call for rather flat hierarchical structures in organizing.

Additionally, the five organizing principles of HRO theory were reanalyzed by J. L. Ford (2018) considering how the principles might present obstacles to reliability and safety organizing within HROs if mindfulness in communication is absent; Ford subsequently offered specific

communication-based recommendations for how the organizing principles might be more effectively integrated into HROs through purposeful communication strategies.

Resilience as a theoretical construct in HRO literature differs from how resilience is defined in CTR. Enacting a *commitment to resilience* as an organizing principle of high-reliability teams (HRTs) and organizations alike requires a purposeful, ongoing commitment to implementing redundancies and contingency planning in an effort to avoid and minimize potential future errors and failures. Maintaining a commitment to resilience requires a team to be highly familiar with each other's particular, specialized skills, to be able to create new alternatives to work activities if disruptions arise, and to dedicate energy to forecasting, and, therefore, planning to avoid potential trouble spots that might disrupt regular functioning (Baker et al., 2006; Eisenberg et al., 2005; Vogus & Sutcliffe, 2007). As such, theorizing about resilience in organizations from an HRO perspective, though certainly sharing aspects with CTR, tends to shift the focus from individual members' turns of talk and tends to focus more on the group or system's capacity to "absorb strain" (Weick, 2015).

For the purposes of the current study, HRO theory is a beneficial theoretical lens to study responses to workplace disruptions, even among teams not within a high-reliability work setting, because the underlying principles of HRO theory can be used to capture the degree to which a team is able to organize and perform reliably in uncertain conditions. Moreover, the capacity for a team to organize reliably and to subsequently maintain reliability during a disruption is indicative of the team's capacity to commit to resilient organizing practices. Including HRO as a theoretical perspective in conjunction with CTR creates an opportunity to evaluate the relative explanatory power of each theory, and even to explore whether the combination of both theoretical perspectives is a useful design in studies of resilience in organizational contexts.

Assessment of Resilience in Organizations

The communicative theory of resilience suggests resilience is a function of a *member's* ability to bounce back from a significant disruption; meanwhile, high-reliability organizing theory views resilience as a *systemic* capacity to absorb strain from disruptions and keep action moving forward. Therefore, both theoretical perspectives were employed in this study with the promise of reaching a more holistic understanding of how individuals and teams alike communicate in the wake of disruption. This project used longitudinal data collection to further enhance understanding of the interconnected nature of the potential relationships between communicative resilience processes and high-reliability organizing principles and their respective influence on stress, efficacy, and performance of individuals *and* teams in organizations across time. Communicative resilience processes and reliability organizing principles are akin to disruption management *strategies* individuals and teams can deploy to more effectively manage disruptive *outcomes* of stress, efficacy, and performance. Specifically, this project investigated how communicative resilience aids in meaning making toward a specific disruption, in conjunction with how reliability organizing allows for meaning making oriented toward disruptions more broadly. The following sections offer more detailed information about the nature of the relationships between these constructs, as well as how measurement across time is a fitting design for such an investigation.

Communicative Resilience Processes

Stress. Insofar as an individual or team enacts communication behaviors aligned with CTR during a disruption, such resilience process behaviors are disruption management strategies, which might serve to reduce their perceived stress both related to the disruption itself as well as in additional facets of personal and professional life (i.e., H1a and H1b; see Table 1).

Communication shapes one's perceptions of their environment and appraisal of potential workplace stressors and can also build resilience in response to a disruption; therefore, engaging in the mindful communication practices found in CTR should influence the negative appraisal of stressors. For example, affirming stable facets of identity, maintaining communication networks, and the ability to acknowledge stress while focusing on productive action should each increase resilience while reducing stress.

These resilience processes may be accomplished by focusing on non-disrupted aspects of identity, such as those within family and community settings, or maintaining encouraging and productive communication routines with coworkers during a disruption, contributing both to network maintenance as well as foregrounding productivity. Conversely, lower communicative resilience, perhaps in frequency or quality, is hypothesized as being associated with an increased amount of perceived stress for individuals and teams because their appraisal of stressors might be more salient than their capacity for resilience in reflections on disruptive work experiences.

Moreover, communicative resilience at one point in time (i.e., Time 1) should serve as a negative predictor of perceived stress at a second point in time several weeks later (i.e., T2) for individuals and teams as well (i.e., H1c and H1d) because enactment of resilience and appraisal of stressors are likely related to one another across time. Prior research has demonstrated convergent validity and an inverse association between stress and resilience, albeit with an assessment of trait-based resilience, rather than communicative resilience (Connor & Davidson, 2003; Smith et al., 2008). Therefore, the following hypothesis is proposed:

> H1: Communicative resilience is negatively associated with participants' perceived stress at T1 at the (a) individual and (b) team levels and is a negative predictor of participants' perceived stress at T2 at the (c) individual and (d) team levels.

Efficacy. Next, communicative resilience should be positively associated with individual and team efficacy at one point in time (i.e., T1) as resilience and efficacy share similar assessments of one's abilities related to task and relational skills (i.e., H2a and H2b). Both resilience and efficacy are linked to belief in one's abilities to accomplish tasks in the current environment. If resilience during disruption is high, perceptions of individual and team efficacy will also be high, perhaps through strategies, such as relying on others in one's network or developing alternative ways of organizing during disruption to accomplish tasks. If individuals can use communication to reframe and restructure their appraisal of a work disruption toward alternative methods of organizing or the development of new routines, their efficacy to continue accomplishing work tasks will likely benefit in kind. Though previous research has demonstrated a positive association between resilience and efficacy, these constructs have not yet been associated with a specific focus on communicative resilience processes (Carr & Koenig Kellas, 2018). Additionally, communicative resilience should serve as a positive predictor of individual and team efficacy several weeks later (i.e., T2) as greater communicative resilience contributes to a heightened sense of efficacy across time (i.e., H2c and H2d). Taken together, the relationships between communicative resilience and efficacy are hypothesized to be:

> H2: Communicative resilience is positively associated with participants' perceived efficacy at T1 at the (a) individual and (b) team levels and is a positive predictor of participants' perceived efficacy at T2 at the (c) individual and (d) team levels.

Performance. Similar to H2, resilience and performance should be positively associated with one another. As individuals engage in more communicative resilience practices, perhaps through reaffirming stable work identities or promoting productive action during disruption, their performance in achieving work outcomes should also be higher, as well as their perception of

team performance as well (i.e., H3a and H3b). Continued or improved performance during disruption is indicative of the individual's or team's ability to cope with disruption, perhaps through the use of humor about the situation or an increased willingness to ask for help during disruption, both of which are manifestations of high levels of communicative resilience. Communicative resilience should also serve as a positive predictor of participants' perceptions of individual and team performance at a second point in time (i.e., T2) because if the communicative resilience processes are used strategically, performance will remain high across time (i.e., H3c and H3d). As such, the following hypothesis is proposed:

> H3: Communicative resilience is positively associated with participants' performance at T1 at the (a) individual and (b) team levels and is a positive predictor of participants' performance at T2 at the (c) individual and (d) team levels.

High-Reliability Organizing Commitments

Hypotheses 4-6 mirror hypotheses 1-3 insofar as the proposed relationships between the independent and dependent variables are aligned. However, this set of hypotheses now focuses on the role of reliability organizing principles as the independent variable rather than communicative resilience processes. High-reliability organizing principles are more concerned with systemic, and therefore team-level, capacity for resilience rather than individual members' communication practices (Weick & Sutcliffe, 2001, 2015). A reliably-organized team or organization maintains a communicatively-constructed cultural mindset, which allows these teams and organizations to continually anticipate and contain disruptions. Their communication practices routinely orient members toward planning for and minimizing future inevitable disruptions. This mindset is different from, yet seemingly complementary to, processes of communicative resilience which help individuals and teams in meaning making about a single

disruption. As such, hypotheses 4-6 investigate the nature of team communication as enacted through daily messages supporting reliability and safety culturing between team members. The nature and direction of the predicted relationships for hypotheses 4-6 are consistent with hypotheses 1-3.

Stress. The enactment and implementation of reliability organizing principles through communication demonstrates a commitment to resilience and a team's capacity for absorbing strain. As such, an inverse relationship between individuals' perceptions of their team's adherence to reliability organizing and individual and team stress at one point in time (i.e., Time 1) seems likely. Insofar as a team reinforces reliability organizing values in their communication, such as open discussion of mistakes, creating methods for future error prevention, and actively pooling collective expertise, teams and individuals should be less inclined to assign negative appraisals to potential stressors in their work environment (Vogus & Sutcliffe, 2007; i.e., H4a and H4b). For example, a team comprised of members particularly in touch with one another's strengths, and that regularly discusses alternative options for organizing their work routines, should be better prepared to respond resiliently to disruptions, thus reducing the likelihood for negative appraisals leading to stress (Ishak & Williams, 2018; Roeder, Bisel, & Morrissey, 2021). According to HRO theory, the hypothesized inverse relationship should be consistent across time (i.e., Time 2) if reliability organizing principles are embedded in the team's communication patterns (i.e., H4c and H4d). The relationships between reliability organizing and stress are hypothesized as:

> H4: Reliability organizing is negatively associated with participants' perceived stress at T1 at the (a) individual and (b) team levels and is a negative predictor of participants' perceived stress at T2 at the (c) individual and (d) team levels.

Table 1

Hypotheses

Hypothesis	IV(s)	DV(s)	Analyses	Statistic(s)
H1: Communicative resilience is negatively associated with participants' perceived stress at T1 at the (a) individual and (b) team levels and is a negative predictor of participants' perceived stress at T2 at the (c) individual and (d) team levels.	CTR	T1 individual stress; T1 team stress; T2 individual stress; T2 team stress	Correlation; Regression	*r;* *R*
H2: Communicative resilience is positively associated with participants' perceived efficacy at T1 at the (a) individual and (b) team levels and is a positive predictor of participants' perceived efficacy at T2 at the (c) individual and (d) team levels.	CTR	T1 individual efficacy; T1 team efficacy; T2 individual efficacy; T2 team efficacy	Correlation; Regression	*r;* *R*
H3: Communicative resilience is positively associated with participants' performance at T1 at the (a) individual and (b) team levels and is a positive predictor of participants' performance at T2 at the (c) individual and (d) team levels.	CTR	T1 individual performance; T1 team performance; T2 individual performance; T2 team performance	Correlation; Regression	*r;* *R*
H4: Reliability organizing is negatively associated with participants' perceived stress at T1 at the (a) individual and (b) team levels and is a negative predictor of participants' perceived stress at T2 at the (c) individual and (d) team levels.	HRO	T1 individual stress; T1 team stress; T2 individual stress; T2 team stress	Correlation; Regression	*r;* *R*
H5: Reliability organizing is positively associated with participants' perceived efficacy at T1 at the (a) individual and (b) team levels and is a positive predictor of participants' perceived efficacy at T2 at the (c) individual and (d) team levels.	HRO	T1 individual efficacy; T1 team efficacy; T2 individual efficacy; T2 team efficacy	Correlation; Regression	*r;* *R*
H6: Reliability organizing is positively associated with participants' performance at T1 at the (a) individual and (b) team levels and is a positive predictor of participants' performance at T2 at the (c) individual and (d) team levels.	HRO	T1 individual performance; T1 team performance; T2 individual performance; T2 team performance	Correlation; Regression	*r;* *R*

Hypothesis	IV(s)	DV(s)	Analyses	Statistic(s)
H7: Communicative resilience is a stronger (a) negative predictor of T2 perceived individual stress, (b) positive predictor of T2 individual efficacy, and (c) positive predictor of T2 individual performance than reliability organizing.	CTR; HRO	T2 individual stress; T2 individual efficacy; T2 individual performance	Multiple regression	*R*
H8: Reliability organizing is a stronger (a) negative predictor of T2 perceived team stress, (b) positive predictor of T2 team efficacy, and (c) positive predictor of T2 team performance than communicative resilience.	HRO; CTR	T2 team stress; T2 team efficacy; T2 team performance	Multiple regression	*R*

Efficacy. A positive association between reliability organizing and individual and team efficacy also seems likely. Creating and maintaining reliable organizing through communication should contribute to an enhanced commitment to resilience among the team, allowing for greater capacity to absorb strain and therefore continued efficacy to accomplish tasks (i.e., H5a and H5b). Additionally, reliability organizing involves cultivating a sensitivity to operations, where trouble is monitored while it is small and resolvable, as well as a willingness to defer to situated expertise during disruptions (Bisel & Adame, 2019; Jahn & Black; 2017; Weick & Sutcliffe, 2015). Both reliability commitments can be accomplished through mindful team communication strategies, such as identifying where errors cannot happen and which activities the team cannot afford to do poorly (Vogus & Sutcliffe, 2007). Implementing such communication expectations would relate to greater individual and team perceptions of task capability in efficacy initially (i.e.,T1) and across time (i.e., T2; H5c and H5d) because the team would be more apt to absorb strain and keep action moving. Thus, the following hypothesis proposed:

> H5: Reliability organizing is positively associated with participants' perceived efficacy at T1 at the (a) individual and (b) team levels and is a positive predictor of participants' perceived efficacy at T2 at the (c) individual and (d) team levels.

Performance. Like efficacy, positive associations should exist between reliability organizing and perceptions of individual and team performance at one point in time (i.e.,T1). If a team demonstrates firm commitments to reliable organizing principles through its communication patterns, perceptions of performance as how well individuals and teams can continue to work despite disruption will likely be bolstered in kind. Teams demonstrating adherence to reliability organizing are preoccupied with failure in such a way that the team is often highly prepared for unknown situations (Jahn & Black, 2017). Resilience and team

performance could be linked via communication strategies, such as naming and actively planning for potential future errors as well as discussing potential future issues to be aware of in their work, often accomplished through practices such as after-action reviews (Allen et al., 2010). If such communication is routinized, the team creates opportunities for sustained individual and team performance when unexpected disruptions inevitably arise (Vogus & Sutcliffe, 2007; i.e., H6a and H6b). Such strategies would hold across time (i.e., T2) if the team continues to use reliability organizing principles in their regular work routines (i.e., H6c and H6d). Taken together, the hypothesis testing reliability organizing and performance is as follows:

> H6: Reliability organizing is positively associated with participants' performance at T1 at the (a) individual and (b) team levels and is a positive predictor of participants' performance at T2 at the (c) individual and (d) team levels.

Comparing Communicative Resilience and Reliability Organizing

Finally, hypotheses 7 and 8 investigate these relationships when considering communicative resilience processes and reliable organizing principles in tandem with one another, specifically evaluating which construct is more influential on disruption management outcomes at Time 2. The following sections offer brief predictions about how communicative resilience and reliability organizing work with one another with respect to the disruption management outcomes across time intervals. Recall the comparative observation that CTR is primarily concerned with how communication produces resilience in organization's *members*, while HRO theory is primarily concerned with how communication produces the resilience of (reliable) organizational *systems* (Roeder, Bisel, & Morrissey, 2021).

The following hypotheses forward a test of that literary observation. The general pattern of this set of hypotheses (H7-H8) is that communicative resilience (measured using the CRPS)

should be a stronger predictor of *individual* level disruption management outcomes of a particular disruption at the at the second collection point (i.e., T2), while reliability organizing commitments (measured using the SOS) will be a stronger predictor of *team* level disruption management outcomes about disruptions more broadly at the second collection point (i.e., T2). As this study is the first of its kind to evaluate the relative influence of communicative resilience and reliability organizing on resilience in organizational contexts quantitatively, hypotheses 7 and 8 are important for accomplishing this goal.

Stress. First, communicative resilience should be a stronger predictor of *individual stress* at the second interval of time (i.e., T2) than reliability organizing (i.e., H7a), and reliability organizing should be a stronger predictor of *team stress* than communicative resilience (i.e., H8a). This prediction is based upon the nature of the theoretical and methodological bases of these two measures (see Appendix A and Appendix B). The Communication Resilience Processes Scale is more suitable for assessing individual-level perceptions, while the Safety Organizing Scale can capture perceptions of team-level dynamics. Additionally, resilience should hold a negative association with stress for both hypotheses according to the theoretical bases of both measures.

Efficacy. In considering communicative resilience and reliability organizing in relation to efficacy, communicative resilience at the first point in time (i.e., T1) should be a positive predictor for individual efficacy several weeks later (i.e., T2; H7b); reliability organizing at the first point (i.e., T1) should positively predict team efficacy at the second (i.e., T2; H8b). Similar to H7a and H8a, communicative resilience at the initial point of collection (i.e., T1) should be a stronger predictor of individual efficacy than reliability organizing (i.e., H7b), and reliability

organizing should be a stronger predictor of team efficacy than communicative resilience (i.e., H8b).

Performance. The final consideration is communicative resilience and reliability organizing in relation to performance; these hypotheses mirror the pattern established in H7b and H8b. Communicative resilience should be a positive predictor for individual performance (i.e., H7c) and reliability organizing should positively predict team performance (i.e., H8c). Further, communicative resilience ought to be a stronger predictor of performance at the individual level when compared to reliability organizing (i.e., H7c), whereas reliability organizing should be a stronger predictor of team performance than communicative resilience (i.e., H8c). Based on these considerations, H7 and H8 propose:

> H7: Communicative resilience is a stronger (a) negative predictor of T2 perceived individual stress, (b) positive predictor of T2 perceived individual efficacy, and (c) positive predictor of T2 individual performance than reliability organizing.
>
> H8: Reliability organizing is a stronger (a) negative predictor of T2 perceived team stress, (b) positive predictor of T2 perceived team efficacy, and (c) positive predictor of T2 team performance than communicative resilience.

Chapter 3: Method

Participants and Inclusion Criteria

Participants (N = 192 T1; N = 151 T2; see Table 2) were recruited through the author's personal and professional networks as well as via Prolific crowdsourcing research services. To qualify, participants were required to meet the following criteria: (a) be 18 or older, (b) work at least 35 hours per week, (c) work with a team of at least three individuals, and (d) have experienced a disruption to their work routines within the past three months. As the study was

concerned with disruption management outcomes at individual and team levels, the requirements for participants to work within a team and to have experienced a work disruption were important for this study. By meeting these qualifications, participants were able to provide their perception of team-level variables, in addition to providing their assessment of these variables with respect to a recent disruption to their work routines.

Recruitment and Incentives

The full participant set for Time 1 included 172 individuals recruited from Prolific and 20 from personal networking. 151 participants completed the Time 2 survey, of which 133 were from Prolific and 18 were from personal networking. Prolific participants were paid based on average time spent completing the survey. Time 1 Prolific participants were paid an average of $3.20 for their time, corresponding to an average wage of $11.61 per hour. Time 2 Prolific participants were paid an average of $1.89 for their time completing the second survey, corresponding to an average wage of $18.36 per hour.

Prolific participants who met the qualifications listed previously were eligible to participate. The Prolific system allows for researchers to create filters on who is eligible to participate in a given study. For this project, the filters aligned with the criteria listed previously: all Prolific users are 18 or older, and the researcher added additional filters of (a) full-time employment status, and (b) working in a group of at least two additional individuals. These filters yielded a pool of 7,565 matching participants who had been active within the past 90 days. When the study was published within Prolific, those eligible participants received a notification in their user profile describing the study. Opportunities to participate were limited due to financial constraints of using the Prolific service; participation slots were awarded on a first-come, first-serve basis for Prolific users who elected to participate.

Personal networking participants were recruited via social media and word of mouth. They were incentivized to participate by being entered to win a $50 gift card to one of five retailers of their choice (Amazon, Target, Wal-Mart, Starbucks, or Home Depot) after completing both surveys. Two of the 18 Time 2 personal network participants were randomly selected to receive gift cards after survey collection ended.

Power Analysis

A priori power analysis using G*Power software (Erdfelder et al., 1996) was used to determine an appropriate sample size for this study. To account for potential variations in effect sizes, three power analyses for multiple linear regression using an alpha level of .05 and a power level of .80 were conducted. Cohen (1992) suggested that effect sizes ranging from .10 to .25 are acceptable in social scientific research for small to medium effects. Therefore, power analyses used effect sizes of .10, .15, and .25 to determine a desired range for the number of participants in the study, given this study's design with two independent variables.

The power calculation with an effect size of .10 suggested a sample size of 100 participants, 68 participants for an effect size of .15, and 42 participants for an effect size of .25. Furthermore, the longitudinal design of this study was also taken into consideration when conducting the power analysis as the estimated goals for sample size ought to be increased to account for participant attrition between the first and second iteration of data collection. The goal sample size was 150 participants for initial collection and at least 100 final participants at the end of the second collection. The study exceeded these goals with 192 participants at Time 1 and 151 at Time 2. The high retention rate within this project was likely due to Prolific participants receiving money per participation window, the appeal of the gift card drawing for personal contacts who completed both surveys, and repeated survey reminders sent to both groups.

Table 2

Descriptive and Demographic Statistics for Time 1 and Time 2 Participants

	Time 1					Time 2				
	N	Min	Max	*M*	*SD*	*N*	Min	Max	*M*	*SD*
Age	192	20	60	34.16	8.59	151	20	60	34.70	8.95
Tenure (in years)										
Paid work experience	192	0.83	41.58	13.44	8.49	151	1.00	41.58	13.94	8.74
Supervisory experience	192	0.00	31.50	4.18	5.19	151	0.00	31.50	4.42	5.47
In current organization	192	0.00	30.67	5.92	5.62	151	0.00	30.67	6.07	5.94
With current team	192	0.08	22.50	3.31	3.16	151	0.08	22.50	3.42	3.42
Gender										
Male	103					83				
Female	88					68				
Non-binary	1					0				
Ethnicity										
American Indian or Alaskan Native	1					1				
Asian	27					23				
Black or African American	13					9				
Native Hawaiian or Pacific Islander	0					0				
White	129					102				
Hispanic or Latino	12					8				
Combination of above ethnicities	9					7				
Prefer not to answer	1					1				

Procedures and Design

Both CTR and HRO are processual in nature; thus, an adequate test of these theories should investigate changes over time. This study employed a longitudinal design as a strategy to test relationships between variables. Longitudinal designs offer an advantage in quantitative research because collecting participant data across time creates an opportunity to examine how disruption management outcomes may change across time, as well as the ability to assess potential causal relationships between variables across collection points. Specifically, this study measured the same individuals over time, thus fitting within the "panel design" described by Segrin (2017). After obtaining university IRB approval for this study, participants completed two surveys through Qualtrics, separated by four to six weeks (see Figures 1 and 2).

After providing consent, participants described an event or series of events that disrupted their work routines within the last three months and indicated the month and year the event(s) began. Participants then completed six items assessing the disruptiveness of the event on a scale ranging from 0-100 (0 = *not at all*, 100 = *completely*). Items were borrowed from recent CTR scholarship (Wilson et al., 2021; see Appendix C). Indeed, of the 192 participants, none indicated that the chosen event was not disruptive at all, meaning no zero scores were observed in the dataset. The researcher selected two of the six items most apt to assess overall disruptiveness of participants' chosen experiences, "How disruptive was the event to your work routines?" and "To what extent did the disruptive event impact your work life?". Analyses revealed these items' averages for chosen disruptive events were significantly higher than a moderately disruptive event, as seen when compared to the scale's midpoint of 50 (see Table 3). Therefore, on average, participants selected events which were significantly disruptive to their work experiences, thus necessitating resilience.

Additionally, participants were asked to describe the disruptive experience in an open-ended dialogue box, then indicated the timing of the event to confirm the necessity for resilience and to assess the effects of the disruption on stress, efficacy, and performance. Due to the study's design, with resilience as a key construct of interest, the disruptive workplace event described by each participant was used as a marker of selection and for corroborating whether participants qualified for inclusion in the study. Participants who did not describe a disruptive workplace event, or who indicated their chosen event was more than three months prior, were removed from the dataset. Some of the most common issues described by participants were technological dysfunction or resource unavailability, interpersonal conflicts with coworkers or leaders, unexpected personnel change such as new team members or a change in management, and distractions to work routines caused by personal life responsibilities.

Next, participants indicated the degree to which their work routines relied upon teammates and teamwork, completed communicative resilience and high-reliability organizing assessments, followed by measures of stress, efficacy, and performance at individual and team levels (see Figure 1). Each measure is described in the following sections. The study also included three attention verification questions interspersed throughout the measures. An example of one such item was, "This is an attention verification question. Please select 'Agree'".

Table 3

Results of One-sample t-tests Assessing Degree of Disruptiveness

Item	*M*	*SD*	*t*	*df*	*p*
Event's disruptiveness to work routines	78.94	20.56	19.48	191	< .001
Disruptive event's impact on work life	75.32	22.50	15.60	191	< .001

Measures

Resilience

Communicative Resilience. Resilience is described in the communication literature as a process that "unfolds in response to a single or series of disruptive events…and is created through interaction" (Wilson et al., 2021, pp. 478-479). As such, measuring *resilience in organizations* as a communicative process necessitates a focus on the communication practices and behaviors that individuals enact in the wake of a disruption. In this study, resilience in organizations was measured using the Communication Resilience Processes Scale (CRPS; Wilson et al.). Specifically, the CRPS reflects the five core processes of communicative resilience as first proposed by Buzzanell (2010): (a) crafting normalcy, (b) affirming identity anchors, (c) maintaining and using communication networks, (d) constructing alternative logics, and (e) foregrounding productive action while backgrounding negative feelings. The CRPS includes 32 items and was used to capture the degree to which each participant engaged in communicative resilience practices during a disruption to their work routines (see Appendix A). Items were measured on a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*) capturing the degree to which each statement reflected how the participant communicated about and responded to the disruption. High scores on the CRPS indicate the participant engaged in the communicative behavior described, hence greater resilience as proposed by the tenets of CTR.

Sample items for each of the five resilience processes include: "I made an effort to keep up with my daily routines" and "I started to do new things that over time became ordinary" (crafting normalcy); "I focused on my most important roles during this time" (affirming identity anchors); "I turned to other people in my network for what I needed" and "I reconnected with others during this difficult time" (maintaining and using communication networks); "I tried to

see the difficult situation in a new light" and "I tried to find humor in the situation even though it was difficult to do so" (constructing alternative logics); and "I chose to focus on action that would help me move forward even though it was difficult" (foregrounding productive action while backgrounding negative feelings).

As the CRPS is a newly developed scale, its reliability and validity assessments were taken from the authors' original work proposing the new measure. Wilson et al.'s (2021) work revealed acceptable reliability for each of the proposed subfactors of the scale ($\alpha > .80$). Subsequent analyses confirmed the existence of the five-factor structure proposed by the five communicative subprocesses, further supporting their claim that the 32 items do not load onto one single factor. Rather, a confirmatory factor analysis demonstrated the five-factor structure and that, when taken together, the five subprocesses loaded sufficiently onto "resilience" as a second-order latent factor. Wilson et al. also demonstrated support for the validity of the CRPS in their findings. The CRPS displayed convergent validity with coping strategies and predictive validity with respect to post-traumatic growth and improved mental health following a disruptive event.

Reliability Organizing. Vogus and Sutcliffe's (2007) nine-item safety organizing scale (SOS) assessed adherence to high-reliability organizing commitments and, therefore, *organizational resilience*. The original items in this measure reflect the nature of reliability organizing amongst a team of nurses; therefore, the items were slightly adapted to reflect a general work team (see Appendix B). Items were assessed on a 7-point Likert scale (1 = *not at all,* 7 = *to a very great extent*) and included statements such as, "We spend time identifying activities we do not want to go wrong," "When errors happen, we discuss how we could have prevented them," and "When giving report to a teammate, we usually discuss what to look out

for next." A benefit of the design of the SOS is that the items are inherently focused on communication practices among team members, rather than strictly containing behavioral items. The SOS is a unidimensional measure; moreover, construct validity for the SOS is bolstered because the scale was developed by Sutcliffe, one of the original HRO theorists (Weick & Sutcliffe, 2001). Cronbach's alpha for the SOS in its initial development was .88; the scale also demonstrated convergent, discriminant, and criterion validity (Vogus & Sutcliffe, 2007). Thus, reliability organizing as an indication of adherence to HRO values, such as commitment to resilience, was measured using the SOS.

Perceived Stress

Perceived stress, both at the individual and team levels, was assessed using the Global Measure of Perceived Stress Scale (PSS), a widely used and highly effective assessment of perceived stress (Cohen et al., 1983). The original assessment contained 14 items; more recent iterations use a 10-item design, with four of the statements using reverse-coded wording (see Appendix D). The scale also contains a time constraint for each individual item, asking participants to consider how often they have felt or thought a certain way in the past month. The PSS uses a 5-point Likert type measure (1 = *never,* 5 = *very often*). Items include "In the last month, how often have you felt that you were unable to control the important things in your life?" and "In the last month, how often have you found that you could not cope with all the things that you had to do?" An example of a reverse-coded statement is, "In the last month, how often have you felt that you were on top of things?". In three initial studies of the PSS, Cronbach's alpha ranged from .84 to .86 (Cohen et al., 1983). Additional research has demonstrated adequate reliability for the scale, ranging from .70 to .87 (Robins et al., 2001; Schweiger & DeNisi, 1991).

The PSS has been adapted and used in many research contexts. For the purposes of this project, items were adapted to assess individual perceptions of team stress in addition to individual stress. Importantly, the directions specified that the participant was to consider his or her own *perception* of their work team's thoughts and feelings in the one-month timeframe (see Appendix E). This design is a purposeful attempt to produce theoretical alignment with the individual and collective efficacy beliefs scales, which are discussed in the following section, as well as to achieve consistency as responses are only being gathered from individuals, rather than an aggregation of perceptions from multiple team members. Adaptations of the sample items from the individual level were as follows: "In the last month, how often has your team felt that it was unable to control important things," "In the last month, how often has your team found that it could not cope with all the things that its members had to do," and "In the last month, how often has your team felt that it was on top of things?"

Efficacy Beliefs

Perceived efficacy beliefs at both the individual and team levels of analysis were captured using assessments from Riggs and Knight's (1994) work regarding individual and collective efficacy and resultant relationships to performance. As previously mentioned, the design of these two measures is aptly matched for this project because they are constructed to capture an individual's perception of both their own individual efficacy as well as beliefs about their work team's efficacy. The individual efficacy beliefs scale includes 10 statements on a 6-point Likert scale (1 = *strongly disagree,* 6 = *strongly agree*), such as "I have confidence in my ability to do my job" and "I am very proud of my job skills and abilities." Six of the items are reverse-coded and include statements, such as "I doubt my ability to do my job" and "I feel

threatened when others watch me work" (see Appendix F). Riggs and Knight reported acceptable reliability of .80 for the personal efficacy beliefs scale.

The collective efficacy beliefs scale contains seven items and is rated on the same 6-point scale (1 = *strongly disagree,* 6 = *strongly agree*). Five of the seven items are reverse coded, such as "This team is poor compared to other teams doing similar work" and "This team is not very effective" as compared to "The members of this team have excellent job skills" (see Appendix G). The only adaptation from the original design of the collective efficacy beliefs scale was an edit changing "department" to "team" to create consistency throughout the assessment. The collective efficacy beliefs scale also held acceptable reliability in previous studies at an alpha level of .84.

Performance

Individual and group performance were also assessed using a scale from Riggs and Knight (1994). Their success-failure scale presented an optimal assessment for this project as it captures individual perceptions at multiple levels. Riggs and Knight stated the measure was apt at capturing "group members' perceptions of the demonstrated ability of the group and its members to perform" (p. 756). The measure contains nine items rated on a 6-point Likert scale (1 = *strongly disagree,* 6 = *strongly agree*). An additional aspect of this measure which makes it an appropriate fit for this project is its focus on the *recent* performance of the participant and their team. Given the longitudinal design of this study, this is a small, yet meaningful, component of capturing performance perceptions from respondents at both iterations of their participation. Performance is assessed through items such as, "I have recently benefited because my work performance was good" and "My recent work deserves an A+" whereas reverse-coded items contain statements, such as, "I have recently had some costly failures at work" and "The

organization has recently suffered because of mistakes I made" (see Appendix H). Items were adapted to capture recent team performance as well by adjusting the scope of each item to reflect team performance rather than individual performance. "This team has recently benefited because its performance was good" and "The recent work of this team deserves an A+" are examples of the adapted items used to capture group performance (see Appendix I).

Demographic Items and Follow-Up Design

Finally, participants responded to demographic questions and items that captured their experience with paid work, supervisory experience, tenure in their current organization, and tenure with their current work team (see Appendix J). A final element in the first iteration of participation collected contact information for completing the Time 2 survey from personal network participants. Prolific research participants were contacted based on their unique Prolific identification code. Participation in the second survey took take place four to six weeks following initial survey completion. Only the dependent variables were measured in the second survey, thus time to complete the study at Time 2 was significantly shorter, reducing potential attrition rates (see Figure 2). Personal network participants who completed both surveys and passed all attention verification checks were entered into a drawing for one of two gift cards worth $50 in value each; winners had an opportunity to select from one of five retailers of their choice (Amazon, Target, Wal-Mart, Starbucks, or Home Depot).

Data Preparation

Prior to beginning any statistical analyses after data collection was finished, the data were inspected, cleaned, and prepared for analyses. The initial sample consisted of 230 collected surveys. First, 14 incomplete responses were removed from analyses. The researcher specified incomplete status as any response where the participant exited the survey prior to completion.

Next, the dataset was checked for duplicate submissions from identical Prolific user codes. One individual completed two submissions; both were removed. In reviewing the three attention verification questions, five responses were removed for failing one or more attention verification checks. One response was removed because the participant indicated they did not regularly work within a team setting. Next, each submission was reviewed to determine whether the participant followed the stated guidelines of describing a disruptive event to their work routines within the past three months. In total, 16 responses were removed from the dataset either for failure to describe a disruptive event or selecting an event that occurred more than three months prior. The final Time 1 sample yielded 192 participants.

The data were then imported into IBM's SPSS v. 26 for further preparation and analyses. First, listwise missing value analysis in SPSS was conducted to detect whether any items presented issues with systematically missing data. Though the researcher had already removed incomplete responses, there were rare instances where a participant did not answer single items within a particular scale. One participant did not provide responses to the team stress scale at Time 2. According to Little's MCAR test, there was no pattern of systematically missing data as the test indicated data were missing completely at random, χ^2 (182) = 175.55, p = .621. This process was followed by item recoding for reverse-coded items (see Appendices). Items were recoded into new variables. After recoding the researcher used the expectation-maximization (EM) function in SPSS to impute new values based on a missing value analysis, then saved a new data file with these imputed scores.

The third phase of data preparation focused on conducting a confirmatory factor analysis (CFA) on the CRPS using LISREL 10.3.1 (Jöreskog & Sörbom, 2020). The CFA in this study was based on Model A proposed by Wilson et al. (2021). Model fit was assessed based on

suggested fit indices of RMSEA $\leq$ 0.06 (Hu & Bentler, 1999), CFI $\geq$ 0.90 (Bentler, 1990), and SRMR $\leq$ 0.08 (Hu & Bentler, 1999). The model did not meet acceptable standards based on initial fit assessments (see Table 4). After evaluating initial fit indices for the CRPS, the researcher undertook the following sequential steps to improve fit: first, standardized path coefficients of each item were reviewed to assess weak or problematic items according to Brown (2015). Items with a standardized path coefficient less than .50 were noted first. Then suggested error covariances between items were evaluated based on their potential to improve model fit and theoretical justification.

One item was removed from the model based on a poor standardized path coefficient of .47: "I turned to family and close friends for support" (see Appendix A). Though Wilson et al.'s (2021) model included all 32 statements, the item's weak loading in this project may be explained by the discrepancy between the aims of the two studies. More specifically, Wilson et al.'s design allowed participants to select and describe any disruptive event of their choosing, whereas this project required participants to consider and describe a *workplace* disruption. Therefore, participants may not have felt that family and close friends were a constructive outlet of support for a workplace disruption, in contrast to a general life disruption.

The researcher then reviewed model fit indices again and re-examined individual item standardized path coefficients. The indices had improved with the removal of the item discussed above; no additional items were removed due to poor standardized path coefficients (see Table 4). The next step to improve model fit indices was an evaluation of suggested error covariances between items based on theoretical justification of how each item relates to a communicative resilience process. The researcher iteratively added five suggested error covariances between pairs of individual items and one error covariance between a pair of factors (see Appendix K).

Each error covariance allowed was between items from the same subscale, where the wording of the items was quite similar to one another. The error covariance added between the Humor and Reframing factors was justified as these are the two subfactors proposed by Wilson et al. (2021) which make up the "constructing alternative logics" factor of CTR (see Appendix A). Because these two factors are two elements describing the same communicative resilience process, this added error covariance allowance is theoretically sound within the tenets of CTR.

Following the removal of the aforementioned item and allowance of these error covariances, the model fit indices were acceptable. Upon further review, none of the remaining suggested error covariances were theoretically sound. Thus, the researcher concluded modifications at this juncture with the final fit indices displayed in Table 4, wherein acceptable model fit was achieved based on previously stated standards (see Figure 3).

Table 4

Initial, Intermediate, and Final Goodness-of-Fit Indices for CRPS CFA

Iteration	χ^2	*df*	RMSEA	CFI	SRMR
Initial	871.10	457	0.07	0.89	0.09
Intermediate (after dropped item)	802.84	427	0.07	0.90	0.08
Final (after adding error covariances)	685.93	421	0.06	0.93	0.07

Chapter 4: Results

The following sections review the eight major hypotheses of this project and the accompanying analyses and results for each. Additional implications for each hypothesis and its findings are presented in the Discussion.

H1 proposed communicative resilience would be negatively associated with Time 1 perceived stress at the individual (H1a) and team (H1b) levels and would be a negative predictor

of Time 2 perceived stress at the individual (H1c) and team (H1d) levels. Correlation analyses showed full support for H1a and H1b, indicating an inverse association existed between communicative resilience and perceived stress at Time 1 (see Table 5). Linear regression analyses revealed non-significant results for H1c and H1d (see Table 6). Thus, communicative resilience had a significant inverse association with both individual and team stress at Time 1 but was not an effective predictor of individual or team stress at Time 2.

H2 proposed communicative resilience would be positively associated with Time 1 perceived efficacy at the individual (H2a) and team (H2b) levels and would be a negative predictor of Time 2 perceived efficacy at the individual (H2c) and team (H2d) levels. Correlation analyses showed full support for H2a and H2b (see Table 5). Linear regression analyses revealed non-significant results for H2c but significant results for H2d (see Table 6). Therefore, communicative resilience was positively associated with Time 1 perceived individual and team efficacy and was a positive predictor of perceived team efficacy at Time 2. However, communicative resilience was not a significant predictor of Time 2 perceived individual efficacy.

H3 proposed communicative resilience would be positively associated with Time 1 performance at the individual (H3a) and team (H3b) levels and would be a negative predictor of Time 2 performance at the individual (H3c) and team (H3d) levels. Correlation analyses showed full support for H3a and H3b (see Table 5). Linear regression analyses revealed significant results for H3c and H3d (see Table 6). As such, H3 was fully supported. Communicative resilience was positively associated with Time 1 individual and team performance and was also a significant, positive predictor of individual and team performance at Time 2.

H4 proposed reliability organizing would be negatively associated with Time 1 perceived stress at the individual (H4a) and team (H4b) levels and would be a negative predictor of Time 2

perceived stress at the individual (H4c) and team (H4d) levels. Correlation analyses showed full support for H4a and H4b, indicating an inverse association existed between reliability organizing and perceived stress at Time 1 (see Table 5). Linear regression analyses revealed significant results for H4c and non-significant results for H4d (see Table 6). Thus, reliability organizing had a significant inverse association with both perceived individual and team stress at Time 1 and was a significant predictor of Time 2 perceived stress at the individual level, but not at the team level.

H5 proposed reliability organizing would be positively associated with Time 1 perceived efficacy at the individual (H5a) and team (H5b) levels and would be a negative predictor of Time 2 perceived efficacy at the individual (H5c) and team (H5d) levels. Correlation analyses showed full support for H5a and H5b (see Table 5). Linear regression analyses revealed significant results for H5c and H5d (see Table 6). Therefore, H5 was fully supported. Reliability organizing was positively associated with Time 1 perceived individual and team efficacy and was also a positive predictor of perceived individual and team efficacy at Time 2.

H6 proposed reliability organizing would be positively associated with Time 1 performance at the individual (H6a) and team (H6b) levels and would be a negative predictor of Time 2 performance at the individual (H6c) and team (H6d) levels. Correlation analyses showed full support for H6a and H6b (see Table 5). Linear regression analyses revealed significant results for H6c and H6d (see Table 6). Thus, H6 was also fully supported. Reliability organizing was positively associated with Time 1 perceived individual and team efficacy and was also a positive predictor of perceived individual and team efficacy at Time 2.

H7 and H8 examined the relative strength of communicative resilience and reliability organizing as predictors of each set of disruption management outcomes at Time 2. The goal of

these hypotheses was to better understand how each independent variable performed at their respective theoretical levels when time was taken into consideration. More specifically, H7 proposed that communicative resilience would be a stronger predictor of the individual level disruption management outcomes at Time 2, while H8 proposed that reliability organizing would be a stronger predictor of the team level disruption management outcomes at Time 2. The researcher used multiple linear regression to evaluate the relative strengths of the standardized beta weights on each of the six disruption management outcomes.

H7 proposed communicative resilience would be a stronger negative predictor of Time 2 perceived individual stress (H7a) and a stronger positive predictor of Time 2 perceived individual efficacy (H7b) and Time 2 individual performance (H7c) as compared to reliability organizing. Multiple linear regression revealed non-significant results for Time 2 perceived individual stress (H7a). Thus, neither communicative resilience nor reliability organizing was a significant predictor of Time 2 individual stress (see Table 7). H7b and H7c both revealed similar surprising results: With respect to both Time 2 perceived individual efficacy (H7b) and Time 2 individual performance (H7c), reliability organizing was a significant positive predictor, but communicative resilience was not (see Table 7). Therefore, H7 was partially supported as reliability organizing was a significant predictor of perceived individual efficacy and individual performance at Time 2, while communicative resilience was not a significant predictor of any disruption management outcomes at Time 2 when examined in conjunction with reliability organizing.

H8 proposed reliability organizing would be a stronger negative predictor of Time 2 perceived team stress (H8a) and a stronger positive predictor of Time 2 perceived team efficacy (H8b) and Time 2 team performance compared to communicative resilience. Again, using

multiple linear regression, the results were similar to those of H7. Neither variable was a significant predictor of Time 2 perceived team stress (H8a). However, reliability organizing again proved to be a significant predictor of both Time 2 perceived team efficacy (H8b) and Time 2 team performance (H8c), while communicative resilience was not a significant predictor of either (see Table 7). Therefore, H8 was also partially supported. To summarize the results of H7 and H8, reliability organizing was a stronger predictor of Time 2 perceived efficacy and Time 2 performance, *both* at the individual and team levels of analysis, while communicative resilience was not a significant predictor of any Time 2 disruption management outcomes at either level. Furthermore, neither variable proved to be a significant predictor of Time 2 perceived stress at either level of analysis.

Taken together, these patterns of results suggest that communicative resilience's influence on disruption management outcomes tends to be more apparent the closer it is to a disruption event, while reliability organizing tends to exert its influence on disruption management outcomes more evenly across time. In this way, both communicative resilience and reliability organizing are complementary in their influence on disruption management. Implications for these results are further explored in the Discussion.

Table 5

Means, Standard Deviations, Reliabilities, and Correlations for Study Variables

	M	*SD*	α	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Comm. Resil.[1]	4.41	0.69	.93	–												
2. Reliability Org.[2]	5.20	1.09	.93	.58***	–											
3. T1 Ind. Stress[3]	2.66	0.76	.90	-.26***	-.25***	–										
4. T1 Ind. Eff.	4.58	0.88	.88	.30***	.32***	-.54***	–									
5. T1 Ind. Perf.	4.72	0.72	.80	.39***	.38***	-.56***	.65***	–								
6. T1 Team Stress	2.50	0.67	.85	-.19**	-.16*	.63***	-.35***	-.37***	–							
7. T1 Team Eff.	4.80	0.98	.89	.27***	.41***	-.37***	.47***	.51***	-.43***	–						
8. T1 Team Perf.	4.88	0.74	.85	.37***	.40***	-.47***	.57***	.69***	-.49***	.79***	–					
9. T2 Ind. Stress	2.52	0.72	.90	-.13	-.17*	.66***	-.40***	-.37***	.52***	-.31***	-.33***	–				
10. T2 Ind. Eff.	4.55	0.89	.91	.16	.26**	-.47***	.72***	.53***	-.38***	.36***	.39***	-.59***	–			
11. T2 Ind. Perf.	4.77	0.74	.85	.26**	.34***	-.44***	.54***	.66***	-.37***	.42***	.48***	-.57***	.73***	–		
12. T2 Team Stress	2.47	0.68	.87	-.11	-.15	-.41***	-.25**	-.29***	.60***	-.38***	-.33***	.65***	-.45***	-.45***	–	
13. T2 Team Eff.	4.73	0.99	.91	.32***	.41***	-.30***	-.35***	.46***	-.38***	.70***	.63***	-.39***	.44***	.57***	-.55***	–
14. T2 Team Perf.	4.74	0.78	.87	.25**	.31***	-.36***	.41***	.58***	-.44***	.55***	.60***	-.48***	.58***	.75***	-.58***	.78***

Note. * = $p < .05$; ** = $p < .01$; *** = $p < .001$

[1] Communicative resilience, as measured by the CRPS
[2] Reliability organizing, as measured by the SOS
[3] Variables 3-14 were assessed using each participants' perceptions of each dependent variable at both the individual and team levels at Time 1 and Time 2

Table 6

Regression Analyses for Time 2 Predictions

Time 2 Variable	H	B	SE B	95% CI for B		β	*t*	*F*	*df*	*p*	R^2
				LL	UL						
Communicative Resilience[1]											
Stress											
Individual	H1c	-0.15	0.09	-0.32	0.03	-.13	-1.66	2.74	149	.100	.02
Team	H1d	-0.11	0.08	-0.28	0.06	-.11	-1.33	1.76	148	.187	.01
Efficacy											
Individual	H2c	0.21	0.11	0.00	0.43	.16	1.95	3.81	149	.053	.03
Team	H2d	0.48	0.12	0.24	0.71	.32	4.06	16.48	149	<.001	.10
Performance											
Individual	H3c	0.29	0.09	0.12	0.47	.26	3.33	11.09	149	.001	.07
Team	H3d	0.29	0.09	0.11	0.48	.25	3.11	9.68	149	.002	.06
Reliability Organizing[2]											
Stress											
Individual	H4c	-0.11	0.05	-0.22	-0.01	-.17	-2.10	4.75	149	.037	.03
Team	H4d	-0.09	0.05	-0.19	0.01	-.15	-1.85	3.61	148	.066	.02
Efficacy											
Individual	H5c	0.21	0.06	0.09	0.34	.26	3.32	11.48	149	.001	.07
Team	H5d	0.37	0.07	0.24	0.50	.41	5.51	29.19	149	<.001	.17
Performance											
Individual	H6c	0.23	0.05	0.12	0.33	.34	4.42	19.62	149	<.001	.12
Team	H6d	0.22	0.06	0.11	0.33	.31	4.02	15.60	149	<.001	.10

[1] Communicative resilience, as measured by the CRPS
[2] Reliability organizing, as measured by the SOS

Table 7

Multiple Linear Regression Analyses for Time 2 Predictions

Time 2 Variable	H	Predictor	B	SE B	95% CI for B		β	*t*	*p*	Model Summary			
					LL	UL				*F*	*df*	R^2	*p*
Individual													
Stress	H7a	Comm. Res.[1]	-0.06	0.11	-0.28	0.16	-.05	-0.54	.590	2.34	148	.03	.099
		Rel. Org.[2]	-0.09	0.07	-0.22	0.04	-.14	-1.39	.167				
Efficacy	H7b	Comm. Res.	0.01	0.13	-0.25	0.27	.01	0.08	.936	5.47	148	.07	.005
		Rel. Org.	0.21	0.08	0.05	0.36	.26	2.64	.009				
Performance	H7c	Comm. Res.	0.11	0.11	-0.10	0.32	.10	1.04	.301	10.29	148	.12	<.001
		Rel. Org.	0.19	0.06	0.06	0.31	.28	2.98	.003				
Team													
Stress	H8a	Comm. Res.	-0.03	0.10	-0.24	0.17	-.03	-0.32	.748	1.76	147	.02	.177
		Rel. Org.	-0.08	0.06	-0.20	0.04	-.13	-1.32	.189				
Efficacy	H8b	Comm. Res.	0.17	0.14	-0.10	0.45	.12	1.25	.213	16.02	148	.18	<.001
		Rel. Org.	0.31	0.08	0.15	0.47	.35	3.76	<.001				
Performance	H8c	Comm. Res.	0.12	0.11	-0.11	0.34	.10	1.03	.307	8.60	148	.10	<.001
		Rel. Org.	0.18	0.07	0.05	0.31	.26	2.67	.008				

[1] Communicative resilience, as measured by the CRPS
[2] Reliability organizing, as measured by the SOS

Chapter 5: Discussion

The purpose of this study was to assess the relative roles of communicative resilience and reliability organizing on individual and team level self-perceived stress, efficacy, and performance in organizational settings across time. More specifically, the study had two objectives: first, to explore how communicative resilience and reliability organizing related to disruption management outcomes for individuals and teams in organizations in the wake of a disruptive workplace event. Second, the study sought to investigate the role played by communication in the development and maintenance of resilience across time for individuals and teams in organizational contexts. Thus, this project contributes important longitudinal analyses revealing the role of communication in appraisals of disruption and understanding of longer-term resilience in organizations, as well as an in-depth investigation of how individual and team level stress, efficacy, and performance are influenced by disruptive experiences. This study's contributions to group and organizational communication, communicative resilience, and high-reliability organizing literature domains are detailed in the following paragraphs.

Developing and Sustaining Resilience in Organizations Across Time

The longitudinal design of this study offers new and exciting knowledge to organizational and resilience communication literature domains. The longitudinal collection effort for this study is of particular importance to the resilience literature. Scholars interested in resilience ought to consider how communication patterns known to establish resilience can be integrated into the appraisals and meaning making processes of individuals and teams such that the capacity to bounce back and absorb strains becomes second nature. In this way, resilience would be established and routinized such that it can be called upon as a readily available resource when the next unforeseen disruption occurs. As such, discovering the role of communication in building

sustained resilience is paramount. Indeed, Wilson et al. (2021) included a specific call for longitudinal studies testing and validating the CRPS stating that, "longitudinal studies…are needed to address issues of causality" and to "explore what disruptive events people are experiencing, what resilience processes they enact, and their well-being over time" (p. 30). This project answers that call and contributes new knowledge regarding causality and the development and sustainability of resilience across time.

By way of summary, analyses revealed the influence of communicative resilience tended to be associated with Time 1 results, while reliability organizing was significantly associated with stress, efficacy, and performance at both Time 1 and Time 2. Though communicative resilience was significantly associated with each of the Time 1 outcomes at both the individual and team levels, it significantly predicted only three of the six disruption management outcomes at Time 2: team efficacy, individual performance, and team performance. Meanwhile, communicative resilience was neither a significant predictor of stress (individual, team-level), nor individual efficacy at Time 2. By comparison, reliability organizing was significantly associated with each outcome at Time 1 *and* was a significant predictor of each outcome at Time 2, except for team stress. Moreover, for the three Time 2 outcomes that were significantly predicted by both communicative resilience and reliability organizing (team efficacy, individual performance, and team performance), reliability organizing was a stronger predictor and explained more variance for each outcome than communicative resilience.

The question is these patterns of results reveal about resilience in organizations. In comparing the results of communicative resilience and reliability organizing at Time 1 and Time 2, several insights become apparent. First, communicative resilience is useful for understanding the state of individuals' and teams' capacity for resilience *close to* a disruptive event. Notice,

instructions for the CRPS asked participants to consider and reflect upon their experiences of *a particular event*, thus appraising that event's disruptiveness to work routines (see Appendix A). Results here affirm that communicative resilience is a process of meaning making oriented toward a specific disruption. As such, communicative resilience and the CRPS are important considerations for scholarship investigating how the communication practices of individuals and teams within the appraisal of a unique disruptive event will help cultivate or perhaps hinder resilience in meaning making. Communicative resilience is a necessary framework for understanding members' well-being and tough mindset when reacting to a workplace disruption.

Similarly, reliability organizing was also significantly inversely associated with stress and positively associated with efficacy and performance at the individual and team levels at Time 1. However, reliability organizing is indicative of ongoing, reliable culturing practices, reinforced in communication patterns. If individuals and teams within organizations adhere to HRO principles, resilience will be more readily available and in greater stores due to the existing social context in which its members operate. The organizing principles underlying such work contexts will inherently and continually emphasize readiness for handling disruptions, often with explicit expectations for planning ahead for disruptive punctuations to ordinary work. More specifically, communication patterns between individuals and team members, which more closely reflect highly-reliable organizing principles, will reinforce a mindset and culture of resilience through ongoing experiences and reinforced communication expectations. Therefore, if communicative resilience is meaning making oriented toward a disruption, reliability organizing is meaning making oriented toward *disruptions*.

Results reinforce the complementarity of *both* communicative resilience processes and reliability organizing principles, particularly when considering the two time longitudinal data

collection. Though both variables were associated with each disruption management outcome at Time 1, reliability organizing outperformed communicative resilience at Time 2 in terms of capacity for predicting how well disruptions were managed by team members. More specifically, reliability organizing was a significant predictor of each Time 2 outcome except for team stress, whereas communicative resilience was a significant predictor of only three outcomes. Moreover, a close examination of the three outcomes significantly predicted by both communicative resilience and reliability organizing (individual performance, team efficacy, and team performance), reliability organizing was a *stronger* predictor of all three.

These results further support the claim that individuals and teams functioning within a *highly-reliable culture* are more capable of withstanding unforeseen disruptions long-term as compared to those adhering to communicative resilience patterns. Again, certainly, communicative resilience processes are of paramount importance for aiding organizational members in adaptive sensemaking close to a particular disruptive event; however, considering the social contexts surrounding these individuals and teams is equally vital to understanding how established communication patterns equip individuals and teams for resilience both close to the event and beyond, near and far. In sum, results suggest that communicative resilience processes aid in meaning making oriented toward *a* disruption; reliability organizing principles shape meaning making oriented toward *disruptions*. In this way, these processes and principles represent complementary modes of understanding and practicing organizational resilience.

Communicative Theory of Resilience

Additionally, this project contributes a group communication application of the communicative theory of resilience (Buzzanell, 2010, 2018a). To date, scholars have used CTR to explore communicative processes of resilience in many contexts, including, but not limited to,

family and marital communication (Beck, 2016; Carr & Koenig Kellas, 2018; Dorrance Hall, 2018; Lucas & Buzzanell, 2012), risk communication (Barbour et al., 2020), community resilience (Rice & Jahn, 2020; Scharp et al., 2020), and organizational contexts (Agarwal & Buzzanell, 2015; Ishak & Williams, 2018; Okamoto, 2020; Roeder, Bisel, & Morrissey, 2021). Similarly, to date, scholarship on communicative resilience has tended to be qualitative in nature (Roeder, Bisel, & Morrissey, 2021). Indeed, Wilson et al. (2021) stated that "no quantitative measure [had] been developed to assess CTR processes…across a wide range of disruptive events" prior to the development of the Communicative Resilience Processes Scale.

Published qualitative projects have contributed to scholars' knowledge base of communicative resilience, but resilience scholarship is strengthened by theory-testing and deductive reasoning, as can be accomplished via quantitative investigations. The present study used quantitative data collection and analysis strategies. Therefore, it bolsters the validity of the communicative resilience theory and further extends its use into group and organizational communication literature related to resilience. However, future research should continue to explore projects with quantitative methods using the CRPS (Wilson et al., 2021), thus continuing to advance application and understanding of how resilience is enacted, cultivated, and sustained in individuals and groups alike.

The present study of CTR in team contexts revealed that communicative resilience is notably influential for team members' perceptions of stress, efficacy, and performance in the aftermath of a disruption; however, those influences seem to fade within a relatively short timeframe—at least 4-6 weeks. That pattern suggests resilient communication is helpful for bouncing back from a disruptive event quickly and effectively and reinforces the notion that communicative resilience is effective for meaning making about a specific disruptive event.

Furthermore, results suggest that individuals and teams within organizations who can successfully draw upon their communication networks, use communication to construct new normalcies following the event, and anchor themselves within stable identities are likely to develop greater stores of resilience to draw upon during the next disruption. Therefore, this study is a contribution of CTR scholarship to both group and organizational literatures. More specifically, this project is one of few studies using CTR to explain the consequences of individual and team communication behaviors for resilience in organizational settings (Malvani Redden et al., 2019; Roeder, Bisel, & Morrissey, 2021).

Furthermore, this study represents an early assessment of the psychometric reliability of CTR—an opportunity only recently made possible by the development and validation of the Communicative Resilience Processes Scale (Wilson et al., 2021). Confirmatory factor analyses conducted for this project aligned well with the model presented by Wilson and colleagues. In doing so, these analyses support the reliability of the scale and demonstrate is transferability to specific communication contexts, such as organizational settings. Also, in the present study, the CRPS demonstrated expected convergent validity with the Safety Organizing Scale. Conversely, the CRPS demonstrated an expected inverse relationship with the Perceived Stress Scale. As such, this study provides empirical support for the validity of the CRPS and should encourage further scholarship employing the communicative resilience construct and measure.

Analyses revealed that communicative resilience was significantly associated with each disruption management outcome at both the individual and team levels at Time 1 (H1a-b, H2a-b, H3a-b). This finding has two key implications for communication research. First, it confirms the CRPS explains how resilience is created through communication both for individuals and teams alike, particularly with respect to appraisals of a specific disruption. Second, the significant

associations between communicative resilience and each of the disruption management outcomes at Time 1 highlight the necessity for additional research into individual and team level organizational constructs of interest. Managers and practitioners are often concerned with aspects of organizational life that serve to reduce stress and bolster efficacy and performance. This paper underscores the need for future research related to resilience and additional organizational factors to expand and deepen current understanding of how communication processes facilitate meaning making in appraisals oriented toward a disruption, in order to create resilience in short-term responses to disruptive workplace events. Therefore, the project also serves as a model of how CTR is a useful and informative lens for explaining how communication can develop resilience at the team level, and thus ought to encourage group and organizational communication scholars alike to continue to locate relevant contexts in which to apply CTR as a theoretical framework.

High-Reliability Organizing

This project contributes to and extends high-reliability organizing theory in existing organizational communication scholarship. HRO is a popular theory in organizational communication (Barbour & Gill, 2017; J. L. Ford, 2018; Jahn & Black, 2017; Minei & Bisel, 2013; Roeder, Bisel, & Howe, 2021); yet, the theory has largely been underused as a theoretical framework in studies related to resilience (for a notable exception, see Roeder, Bisel, & Morrissey, 2021). This pattern is somewhat surprising, given that HRO was closely linked to matters of resilience from its inception. For example, Weick and Sutcliffe (2001, 2015) theorized groups and systems can maintain high reliability through implementing and adhering to five key principles, one of which is a *commitment to resilience*. A commitment to resilience entails pursuing and maintaining communication patterns that facilitate specialized organizing, aimed toward creating redundant systems, often through material and procedural contingency plans.

As such, using HRO as a theoretical framework in resilience scholarship is essential for discovering the ways in which team communication patterns might facilitate or enhance resilient practices during and following disruptive events. Results presented here indicate that reliability organizing principles support resilience for both individual team members and whole teams close to disruptions and beyond. This empirical observation is consistent with HRO theorizing, which states that high reliability is a culturally constructed context of teams and organizations and not a one-time event (Weick & Sutcliffe, 2015). In other words, reliability organizing is ongoing by nature and serves as a contextual backdrop against which disruptions are appraised and experienced. Existing scholarship has repeatedly documented the essential role played by communication in establishing and maintaining reliable organizing practices. For example, purposeful questioning (Barbour & Gill, 2017), participatory decision making (Jahn & Black, 2017), and informal team communication norms (Roeder, Bisel, & Howe, 2021) have each been documented as communication patterns that support the rise of reliable organizing practices. However, further research investigating how communication facilitates the maintenance of HRO principles alongside resilience is warranted.

Moreover, similar to communicative resilience, analyses showed full support for the relationship between reliability organizing and each disruption management outcome at Time 1 (H4a-b, H5a-b, H6a-b). Support for these hypotheses offers additional evidence that incorporating HRO principles into routinized communication practices will better equip individuals and teams for effective meaning making about disruptions more broadly. Indeed, reliability organizing explained more variance of all three team level outcomes at Time 2 than communicative resilience (Table 6). These results suggest that insofar as organizational members and teams can routinize reliability principles into everyday communication patterns with one

another, the more likely it will be that these members will have heightened capacity and quality of resilience when disruptive events arise. Beyond establishing resilience within individual members, crafting organizational communication expectations that mimic those proposed in HRO theory will serve to create more resilient, more durable individuals and teams, capable of appraising and responding to disruptions in reliable ways both in the immediate aftermath and across time. Thus, ample opportunities exist for communication scholars to continue to investigate the nature of resilience using HRO theory, particularly for teams and groups facing unforeseen obstacles, planned change processes, or perhaps repetitive disruptive events.

Moreover, this dissertation offers evidence that the safety organizing scale (SOS; Vogus & Sutcliffe, 2007) offers rich insight into communication processes within work teams. However, the scale has not been widely applied in quantitative organizational communication scholarship. The excellent performance of the SOS in predicting disruption management outcomes in this project speaks to its relevance and applicability for this type of research. Therefore, assessment of reliability organizing, by way of the SOS, should be a mainstay in quantitative organizational communication research related to resilience and reliability. Further, the items in the scale are strongly rooted in communication behaviors; each statement has a simple, concrete purpose, and the scale performed very well in terms of reliability and validity. Additionally, the active nature of the wording of the items in the scale is paramount to determining how teams regularly behave and communicate. Future scholarship ought to continue to explore additional factors that might provide further insight into how individuals and teams respond to disruptive workplace events over time. Stress, efficacy, and performance are important markers for this research domain and for organizational practitioners, but certainly many avenues for exploration still exist, such as the influence of resilience processes on

workplace relationships and leader-member dynamics (Ford & Ivancic, 2020; Okamoto, 2020; Wieland, 2020).

To date, HRO scholarship in organizational communication has been predominantly qualitative (Barbour & Gill, 2017; Minei & Bisel, 2013; Roeder, Bisel, & Howe, 2021). The SOS presents an opportunity for scholars to deductively test and assess the main implications of HRO theory to further understand the role of reliability organizing within teams and organizations alike. The following sections offer additional details on how communicative resilience and reliability organizing are complementary components of understanding how individuals and teams can establish and maintain resilience in their appraisals of specific disruptions, or disruptive events more broadly.

Relative Influences of Communicative Resilience and Reliability Organizing

Finally, this study offers a nuanced understanding of how communicative resilience compared to reliability organizing in terms of how each variable was associated with stress, efficacy, and performance at Time 1 and predictive of each outcome at Time 2. To accomplish this goal, analyses explored the relative influence of communicative resilience and reliability organizing on disruption management outcomes to explore the possibility that communicative resilience contributes more to individual level resilience while reliability organizing is better fit to explain team resilience (Buzzanell, 2010; Weick & Sutcliffe, 2001). In general, communicative resilience was significantly associated with more individual level outcomes, while reliability organizing was significantly associated with more team level outcomes, though not precisely in accordance with hypothesized patterns. Specific findings related to the relative influence between communicative resilience processes and reliability organizing principles are discussed in the following paragraphs.

First, in comparing the associations between communicative resilience and disruption management outcomes at Time 1, recall that significant associations emerged for each outcome at both the individual and team levels. Close examination of these results revealed that communicative resilience was more strongly correlated with each individual level outcome than its team level counterpart at Time 1. However, in evaluating Time 2 outcomes, communicative resilience was only significantly associated with individual *and* team levels for performance, but not with stress or efficacy. The hypothesized prediction that communicative resilience would hold a stronger association with individual performance than with team performance was true for this pairing as well, albeit a rather small difference.

In general, the reliability organizing variable performed well overall at both levels of analysis; yet, results are complex. Interestingly, reliability organizing held a stronger association with Time 1 individual stress as compared to team stress, and communicative resilience was more strongly associated with Time 1 stress at both levels as compared to reliability organizing. In examining how reliability organizing was associated with efficacy and performance at Time 1, analyses revealed stronger associations with team efficacy and team performance as compared to individual efficacy and individual performance. Therefore, for both efficacy and performance, reliability organizing was stronger at the team level than at the individual, and it was a stronger predictor at both levels for each outcome at Time 1.

The relationships between reliability organizing and Time 2 outcomes also revealed intriguing results. First, reliability organizing was significantly predictive of Time 2 individual stress, but not team stress. More research is needed to further understand how team stress across time is related to resilience behaviors, as neither communicative resilience nor reliability organizing was a significant predictor of Time 2 team stress. In fact, Time 2 team stress is the

single variable not significantly associated with reliability organizing, which raises the possibility that perhaps the study did not have enough power to assess team stress across time, or that participants' perceptions of team stress are difficult to capture (Miller et al., 1990). In examining Time 2 efficacy and performance, reliability organizing was a stronger significant predictor of team efficacy as compared to individual efficacy, but a weaker predictor of team performance as compared to individual performance. Importantly, reliability organizing held a significant association or served as a significant predictor of each of the disruption management outcomes at both Time 1 and Time 2, with the aforementioned exception of Time 2 team stress.

Reliability organizing predicted disruption management outcomes at Time 1 and Time 2 and did so at both the perceived individual and perceived team levels. Taken together, these results indicate that, while communicative resilience is an appropriate measure to assess individual and team outcomes at Time 1 by revealing the nature of meaning making in the aftermath of a particular disruption, reliability organizing proved to be more influential overall at both levels of analysis for both Time 1 and Time 2 (Vogus & Sutcliffe, 2007; Wilson et al., 2021). This finding reinforces how meaning making strategies toward disruptions more broadly are a useful organizing principle for both individuals and teams. These findings suggest that, in organizations where safety culturing and high-reliability principles are normalized through communication, individuals and teams are better prepared and equipped to manage disruption (Baker et al., 2006; Roeder, Bisel, & Morrissey, 2021). Thus, a strong case exists for continued and expanded investigation into how reliability organizing principles are related to and encouraging of resilience in organizational settings. Moreover, these results suggest that building and sustaining resilience for individuals and teams in organizations can be accomplished by incorporating and reinforcing high-reliability organization strategies into routinized

communication behaviors among team members (J. L. Ford, 2018). Implications and suggestions for such practices are offered in the following sections.

Finally, Hypothesis 7 predicted that communicative resilience would be a stronger predictor of Time 2 disruption management outcomes at the individual level as compared to reliability organizing, whereas Hypothesis 8 predicted reliability organizing would be a stronger predictor of Time 2 disruption management outcomes as the team level as compared to reliability organizing. Interestingly, analyses proved that, in fact, reliability organizing was more predictive of Time 2 outcomes at *both* the individual and team levels. Though this finding does not hold for individual or team stress at Time 2 (H7a; H8a), multiple linear regression analyses revealed significant findings for efficacy and performance at both levels. In each instance, reliability organizing was a stronger predictor of the disruption management outcome at Time 2 than communicative resilience.

This intriguing finding holds important implications for the future of resilience research in communication because it further bolsters the case for continuing to integrate HRO theorizing into resilience research, particularly in investigations regarding resilience across time. Specifically, these results highlight the need for additional longitudinal research to gain further understanding into precisely how resilience is cultivated and established through communication and organizing principles, such as those found within high-reliability organizing. It may be the case that similar organizing strategies and the communication patterns therein might also contribute to building and sustaining resilience among individuals and teams as well.

Importantly, the results of this study further reinforce the compatibility of CTR and HRO as complementary theoretical frameworks in group and organizational communication research. Though it may appear as if these two literature domains conceptualize resilience in ways too

distinct to compare, this project complements existing qualitative research (Barbour & Gill, 2017; Ishak & Williams, 2017) by providing an example of how resilience research can be bolstered and enhanced by incorporating and integrating both literature domains (Roeder, Bisel, & Morrissey, 2021). Moreover, the project presents quantitative, longitudinal evidence that supports the idea resilience research can be strengthened by synthesizing and utilizing both theoretical domains in future studies. Therefore, this dissertation and the results herein ought to encourage scholars to continue to consider how synthesizing and drawing upon both CTR and HRO literatures and conceptual frameworks offers an enhanced, nuanced understanding of the role of communication in building lasting resilience in organizational settings.

Practical Implications

The results of this study offer relevant and practical implications for organizational practitioners and team members. First, the study underscores the importance of developing communication behaviors aligned with the five processes of communicative resilience outlined in CTR (Buzzanell, 2010), particularly for individuals to be able to activate resilience immediately following disruptive events. Leaders are encouraged to promote communicative resilience practices into routinized norms for individuals and teams in their organizations. This practice would certainly serve to strengthen efficacy and performance during and after disruptive events, while reducing stress for individuals and teams in the immediate aftermath.

Second, the results strongly support incorporating reliable organizing principles into regular team communication patterns and behaviors (Baker et al., 2006; Jahn, 2016; Roeder, Bisel, & Howe, 2021). Though participants in this study were not screened or selected for membership in high-reliability organizations, results demonstrated that individuals in teams where such communication practices were routinized were more resilient in the wake of

disruption. These practices include behaviors, such as openly discussing mistakes and how to learn from them, discussing alternate work practices to routinized processes, knowing and utilizing unique skill sets of each team member, and developing collective expertise to face and quickly resolve crises when they emerge (Ishak & Williams, 2018). Establishing communication patterns within work teams, which are known to enhance the reliability of organizing, is important for developing and establishing resilience in both the short and long term, reducing stress, and enhancing efficacy and performance. Therefore, organizational practitioners ought to be encouraged to incorporate similar patterns into their work teams so that individual members and entire teams will be capable of resilient responses to future disruptions, thus continuing to bolster and strengthen capacity for resilience across time.

Limitations

A primary limitation of this study is the attrition of participants between collection intervals, which is common in longitudinal research. Ideally, each participant would have participated at both collection points, thus bolstering the reliability and validity of Time 2 findings. Financial strain created by needing to incentivize participants twice meant that fewer participant responses could be collected, and statistical power was, therefore, constrained. However, the benefits of longitudinal data offered by the study design and the results herein remain a significant contribution beyond these limiting factors. Furthermore, the study is limited in its access to team-level aggregation data. The team level variables are reliant upon each participant's perception of their own work team. Future research could build on the findings in this project by studying specific teams within organizations and aggregating impressions of team communication and disruption management outcomes from multiple team members. Finally, because the study recruited from a diverse participant pool, and each individual selected and

described his or her own disruptive event, degree of disruptiveness to work routines varied across the sample. Similarly, future researchers might consider exploring resilience within work groups that experienced a shared disruptive event, then comparing how each individual and the team as a whole unit embodied and enacted resilience (or failed to do so) in their communication.

Conclusion

This project sought to investigate the role of communication in developing and sustaining resilience in response to workplace disruption. By examining the influence of communicative resilience and reliability organizing on stress, efficacy, and performance for individuals and teams, this study uncovered new knowledge about the essential role of communication for establishing both short- and longer-term resilience processes in organizations. The study offers relevant and timely results to communicative resilience and reliability organizing literature domains. High-quality quantitative research is needed in both these research areas; thus, the longitudinal results of this paper created new knowledge about how resilience is developed across time through communication practices between individuals in organizations and amongst team members, answering a call from Wilson et al. (2021) for such projects.

Specifically, results of this paper underscore the vital role communication plays in developing resilience for individuals and teams. Resilience is often incorrectly assumed to be a trait held by certain individuals and lacking in others; in contrast, this study contributes evidence that suggests specific interpersonal and team communication practices bolster the capacity to respond resiliently to an unforeseen disruptive workplace event. Resilience is a dynamic and expanding topic of interest within organizational communication research, and this project offers an additional avenue of understanding to how resilience is crafted through communication.

References

Afifi, T. D. (2018). Individual/relational resilience. *Journal of Applied Communication Research*, *46*(1), 5-9. https://doi.org/10.1080/00909882.2018.1426707

Agarwal, V., & Buzzanell, P. M. (2015). Communicative reconstruction of resilience labor: Identity/identification in disaster-relief workers. *Journal of Applied Communication Research*, *43*(4), 408-428. https://doi.org/10.1080/00909882.2015.1083602

Allen, J. A., Baran, B. E., & Scott, C. W. (2010). After-action reviews: A venue for the promotion of safety climate. *Accident Analysis and Prevention*, *42*(2), 750-757. https://doi.org/10.1016/j.aap.2009.11.004

Anitha, J. (2014). Determinants of employee engagement and their impact on employee performance. *International Journal of Productivity and Performance Management, 63*(3), 308-323. https://doi.org/10.1108/IJPPM-01-2013-0008

Ashford, S. J. (1988). Individual strategies for coping with stress during organizational transitions. *The Journal of Applied Behavioral Science, 24*(1), 19-36. https://doi.org/10.1177/0021886388241005

Baker, D. F. (2001). The development of collective efficacy in small task groups. *Small Group Research*, *32*(4), 451-474. https://doi.org/10.1177/104649640103200404

Baker, D. P., Day, R., & Salas, E. (2006). Teamwork as an essential component of high-reliability organizations. *Health Services Research, 41*(4p2), 1576-1598. https://doi.org/10.1111/j.1475-6773.2006.00566.x

Barbour, J. B., Bierling, D. H., Sommer, P. A., & Trefz, B. A. (2020). Risk communication infrastructure and community resilience: Does involvement in planning build cross-sector planning and response networks? *Journal of Applied Communication Research, 48*(1), 91-113. https://doi.org/10.1080/00909882.2019.1704828

Barbour, J. B. & Gill, R. (2017). Questioning as regulatory work practice: The communicative accomplishment of reliability and safety in the oversight of nuclear power plants. *Communication Monographs, 84*(4), 466-487. https://doi.org/10.1080/03637751.2017.1322212

Beck, G. A. (2016). Surviving involuntary unemployment together: The role of resilience-promoting communication in familial and committed relationships. *Journal of Family Communication, 16*(4), 369-385. https://doi.org/10.1080/15267431.2016.1215315

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Quantitative Methods in Psychology, 107*(2), 238-246. https://doi.org/10.1037/0033-2909.107.2.238

Bierly, P. E., Gallagher, S. & Spender, J. C. (2008). Innovation and learning in high-reliability organizations: A case study of United States and Russian nuclear attack submarines, 1970–2000. *IEEE Transactions on Engineering Management, 55*(3), 393-408. https://doi.org/10.1109/TEM.2008.922643

Bierly, P. E., & Spender, J. C. (1995). Culture and high reliability organizations: The case of the nuclear submarine. *Journal of Management, 21*(4), 639-656. https://doi.org/10.1016/0149-2063(95)90003-9

Bisel, R. S., & Adame, E. A. (2019). Encouraging upward ethical dissent in organizations: The role of deference to embodied expertise. *Management Communication Quarterly, 33*(2), 139-159. https://doi.org/10.1177/0893318918811949

Boren, J. P. (2014). The relationships between co-rumination, social support, stress, and burnout among working adults. *Management Communication Quarterly*, *28*(1), 3-25. https://doi.org/10.1177/0893318913509283

Brown, S., Gray, D., McHardy, J., & Taylor, K. (2015). Employee trust and workplace performance. *Journal of Economic Behavior & Organization, 116*(xx), 361-378. https://doi.org/10.1016/j.jebo.2015.05.001

Brown, S., McHardy, J., McNabb, R., & Taylor, K. (2011). Workplace performance, worker commitment, and loyalty. *Journal of Economics & Management Strategy, 20*(3), 925-955. https://doi.org/10.1111/j.1530-9134.2011.00306.x

Buzzanell, P. M. (2010). Resilience: Talking, resisting, and imagining new normalcies into being. *Journal of Communication, 60*(1), 1-14. https://doi.org/10.1111/j.1460-2466.2010.01469.x

Buzzanell, P. M. (2018a). Communication theory of resilience: Enacting adaptive-transformative processes while families experience loss and disruption. In D. O. Braithwaite, E. A. Suter, & K. Floyd (Eds.), *Engaging theories in family communication: Multiple perspectives* (2nd ed., pp. 98-109). Routledge.

Buzzanell, P. M. (2018b). Organizing resilience as adaptive-transformational tensions. *Journal of Applied Communication Research, 46*(1), 14-18. https://doi.org/10.1080/00909882.2018.1426711

Carr, K., & Koenig Kellas, J. (2018). The role of family and marital communication in developing resilience to family-of-origin adversity. *Journal of Family Communication, 18*(1), 68-84. https://doi.org/10.1080/15267431.2017.1369415

Carroll, J. S., & Rudolph, J. W. (2006). Design of high reliability organizations in health care. *BMJ Quality & Safety*, *15*, i4-i9. https://doi.org/10.1136/qshc.2005.015867

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155-159. https://doi.org/10.1037/0033-2909.112.1.155

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*(4), 385-396. https://doi.org/10.2307/2136404

Condly, S. J., Clark, R. E., & Stolovitch, H. D. (2008). The effects of incentives on workplace performance: A meta-analytic review of research studies. *Performance Improvement Quarterly*, *16*(3), 46-63. https://doi.org/10.1111/j.1937-8327.2003.tb00287.x

Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, *18*, 76-82. https://doi:10.1002/da.10113

Conrad, C. (2011). *Organizational rhetoric: Strategies of resistance and domination.* Polity.

Cumming, G. (2009). Interference by eye: Reading the overlap of independent confidence intervals. *Statistics in Medicine*, *28*(2), 205-220. https://doi.org/10.1002/sim.3471

Dionne, S. D., Yammarino, F. J., Atwater, L. E., & Spangler, W. D. (2004). Transformational leadership and team performance. *Journal of Organizational Change Management*, *17*(2), 177-193. https://doi.org/10.1108/09534810410530601

Dorrance Hall, E. (2018). The communicative process of resilience for marginalized family members. *Journal of Social and Professional Relationships*, *35*(3), 307-328. https://doi.org/10.1177/0265407516683838

Eisenberg, E. M., Murphy, A. G., Sutcliffe, K., Wears, R., Schenkel, S., Perry, S., & Vanderhoef, M. (2005). Communication in emergency medicine: Implications for patient safety. *Communication Monographs, 72*(4), 390-413. https://doi.org/10.1080/03637750500322602

Erdfelder, E., Faul, F., & Buchner, A. (1996). G*Power: A general power analysis program. *Behavior Research Methods, Instruments, & Computers, 28*(1), 1-11. https://doi.org/10.3758/BF03203630

Fairhurst, G. T., & Grant, D. (2010). The social construction of leadership: A sailing guide. *Management Communication Quarterly, 24*(2), 171-210. https://doi.org/10.1177/0893318909359697

Fink, E. L. (2009). The FAQs on data transformation. *Communication Monographs, 76*(4), 379-397. https://doi.org/10.1080/03637750903310352

Fonner, K. L., & Fetherston, M. (2017). Stress. In C. R. Scott, L. Lewis, J. R. Barker, J. Keyton, T. Kuhn, & P. K. Turner (Eds.), *The International Encyclopedia of Organizational Communication* (pp. 1-13). https://doi.org/10.1002/9781118955567.wbieoc196

Ford, J. L. (2018). Revisiting high-reliability organizing: Obstacles to safety and resilience. *Corporate Communications: An International Journal, 23*(2), 197-211. https://doi.org/10.1108/CCIJ-04-2017-0034

Ford, J. L., & Ivancic, S. R. (2020). Surviving organizational tolerance of sexual harassment: An exploration of resilience, vulnerability, and harassment fatigue. *Journal of Applied Communication Research, 48*(2), 186-206. https://doi.org/10.1080/00909882.2020.1739317

Ford, J. S. (2018). (Dis)identification as resilience in dirty volunteer work. *Corporate Communications: An International Journal, 23*(2), 242-256. https://doi.org/10.1108/CCIJ-04-2017-0035

Fuller, B., Wood, K., Rapoport, T., & Dornbusch, S. M. (1982). The organizational context of individual efficacy. *Review of Educational Research, 52*(1), 7-30. https://doi.org/10.3102/00346543052001007

Garnett, J. L., Marlowe, J., & Pandey, S. K. (2008). Penetrating the performance predicament: Communication as a mediator or moderator of organizational culture's impact on public organizational performance. *Public Administration Review, 68*(2), 266-281. https://doi.org/10.1111/j.1540-6210.2007.00861.x

Grant, A. M. (2014). The efficacy of executive coaching in times of organisational change. *Journal of Change Management, 14*(2), 258-280. https://doi.org/10.1080/14697017.2013.805159

Gully, S. M., Incalcaterra, K. A., Joshi, A., & Beaubien, J. M. (2002). A meta-analysis of team efficacy, potency, and performance: Interdependence and level of analysis as moderators of observed relationships. *Journal of Applied Psychology, 87*(5), 819-832. https://doi.org/10.1037//0021-9010.87.5.819

Haggard, D. L., Robert, C., & Rose, A. J. (2011). Co-rumination in the workplace: Adjustment trade-offs for men and women who engage in excessive discussions of workplace problems. *Journal of Business and Psychology, 26*(1), 27-40. https://doi.org/10.1007/s10869-010-9169-2

Harrison, M. A., & Stephens, K. K. (2019). Shifting from wellness *at* work to wellness *in* work: Interrogating the link between stress and organization while theorizing a move toward wellness-in-practice. *Management Communication Quarterly, 33*(4), 616-649. https://doi.org/10.1177/0893318919862490

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Ishak, A. W., & Williams, E. A. (2017). Slides in the tray: How fire crews enable members to borrow experiences. *Small Group Research, 48*(3), 336-364. https://doi.org/10.1177/1046496417697148

Ishak, A. W., & Williams, E. A. (2018). A dynamic model of organizational resilience: Adaptive and anchored approaches. *Corporate Communications: An International Journal, 23*(2), 180-196. https://doi.org/10.1108/CCIJ-04-2017-0037

Jahn, J. L. S. (2016). Adapting safety rules in a high reliability context: How wildland firefighting workgroups ventriloquize safety rules to understand hazards. *Management Communication Quarterly, 30*(3), 362-389. https://doi.org/10.1177/0893318915623638

Jahn, J. L. S. & Black, A. E. (2017). A model of communicative and hierarchical foundations of high reliability organizing in wildland firefighting teams. *Management Communication Quarterly, 31*(3), 1-24. https://doi.org/10.1177/0893318917691358

Jones, G. R. (1986). Socialization tactics, self-efficacy, and newcomers' adjustments to organizations. *Academy of Management Journal, 29*(2), 262-279. https://doi.org/10.5465/256188

Länsisalmi, H., Peiró, J. M., & Kivimäki, M. (2000). Collective stress and coping in the context of organizational culture. *European Journal of Work and Organizational Psychology, 9*(4), 527-559. https://doi.org/10.1080/13594320050203120

Lewis, L. K. (2014). Organizational change and innovation. In L. L. Putnam & D. K. Mumby (Eds.), *The SAGE handbook of organizational communication: Advances in theory, research, and methods* (3rd ed., pp. 503-524). Sage.

Lewis, L. K. (1999). Disseminating information and soliciting input during planned organizational change: Implementers' targets, sources, and channels for communicating. *Management Communication Quarterly, 13*(1), 43-75. https://doi.org/10.1177/0893318999131002

Lucas, K., & Buzzanell, P. M. (2012). Memorable messages of hard times: Constructing short- and long-term resiliencies through family communication. *Journal of Family Communication, 12*(3), 189-208. https://doi.org/10.1080/15267431.2012.687196

Malvani Redden, S., Clark, L., Tracy, S. J., & Shafer, M. S. (2019). How metaphorical framings build and undermine resilience during change: A longitudinal study of metaphors in team-driven planned organizational change. *Communication Monographs, 86*(4), 501-545. https://doi.org/10.1080/03637751.2019.1621361

Miller, K. I., Ellis, B. H., Zook, E. G., & Lyles, J. S. (1990). An integrated model of communication, stress, and burnout in the workplace. *Communication Research, 17*(3), 300-326. https://doi.org/10.1177/009365090017003002

Minei, E., & Bisel, R. (2013). Negotiating the meaning of team expertise: A firefighter team's epistemic denial. *Small Group Research, 44*(1), 7-32. https://doi.org/10.1177/1046496412467830

Myers, K. K., & McPhee, R. D. (2006). Influences on member assimilation in workgroups in high-reliability organizations: A multilevel analysis. *Human Communication Research, 32*(4), 440-468. https://doi.org/10.1111/j.1468-2958.2006.00283.x

Myers, K. K., & Sadaghiani, K. (2010). Millennials in the workplace: A communication perspective on millennials' organizational relationships and performance. *Journal of Business and Psychology, 25*(2), 225-238. https://doi.org/10.1007/s10869-010-9172-7

Okamoto, K. E. (2020). 'As resilient as an ironweed:' Narrative resilience in nonprofit organizing. *Journal of Applied Communication Research, 48*(5), 618-636. https://doi.org/10.1080/00909882.2020.1820552

Ray, E. B., & Miller, K. I. (1991). The influence of communication structure and social support on job stress and burnout. *Management Communication Quarterly, 4*(4), 506-527. https://doi.org/10.1177/0893318991004004005

Rice, R. M., & Jahn, J. L. S. (2020). Disaster resilience as communication practice: Remembering and forgetting lessons from past disasters through practices that prepare for the next one. *Journal of Applied Communication Research, 48*(1), 136-155. https://doi.org/10.1080/00909882.2019.1704830

Richardson, G. E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology, 58*(3), 307-321. https://doi.org/10.1002/jclp.10020

Riggs, M. L., & Knight, P. A. (1994). The impact of perceived group success-failure on motivational beliefs and attitudes: A causal model. *Journal of Applied Psychology, 79*(5), 755-766. https://doi.org/10.1037/0021-9010.79.5.755

Rings, R. L., Stinson, J. E., & Johnson, T. W. (1979). Communicative behaviors associated with role stress and satisfaction variables. *Journal of Applied Communication Research, 7*(1), 15-22. https://doi.org/10.1080/00909887909365187

Roberts, K. H., Stout, S. K., & Halpern, J. J. (1994). Decision dynamics in two high reliability military organizations. *Management Science, 40*(5), 614-624. https://doi.org/10.1287/mnsc.40.5.614

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg self-esteem scale. *Personality and Social Psychology Bulletin, 27*(2), 151-161. https://doi:10.1177/0146167201272002

Roeder, A. C., Bisel, R. S., & Howe, W. T. (2021). High-reliability organizing and communication during naturalistic decision making: US National Weather Service (NWS) forecasting teams' use of 'floating'. *Journal of Applied Communication Research, 49*(4), 441-459. https://doi.org/10.1080/00909882.2021.1907855

Roeder, A. C., Bisel, R. S., & Morrissey, B. S. (2021). Weathering the financial storm: A professional forecaster team's domain diffusion of resilience. *Communication Studies, 72*(1), 1-16. https://doi.org/10.1080/10510974.2020.1807379

Roeder, A. C., Garner, J. T., & Carr, K. (2020). Workplace relationships, stress, and verbal rumination in organizations. *Southern Communication Journal, 85*(2), 63-72. https://doi.org/10.1080/1041794X.2019.1697893

Rosete, D., & Ciarrochi, J. (2005). Emotional intelligence and its relationship to workplace performance outcomes of leadership effectiveness. *Leadership & Organization Development Journal, 26*(5), 388-399. https://doi.org/10.1108/01437730510607871

Salas, E., DiazGranados, D., Klein, C., Burke, C. S., & Stagl, K. C. (2008). Does team training improve team performance? A meta-analysis. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 50*(6), 903-933. https://doi.org/10.1518/001872008X375009

Sánchez, V. S., & Lillie, H. (2019). And then the war came: A content analysis of resilience processes in the narratives of refugees from Humans of New York. *International Journal of Communication, 13*, 4240-4260.

Scharp, K. M., Kubler, K. F., & Wang, T. R. (2020). Individual and community practices for constructing communicative resilience: Exploring the communicative processes of coping with parental alienation. *Journal of Applied Communication Research, 48*(2), 207-226. https://doi.org/10.1080/00909882.2020.1734225

Schuler, R. S. (1982). An integrative transactional process model of stress in organizations. *Journal of Organizational Behavior, 3*(1), 5-19. https://doi.org/10.1002/job.4030030103

Schwarzer R., & Warner L. M. (2013). Perceived self-efficacy and its relationship to resilience. In S. Prince-Embury & D. H. Saklofske (Eds.), *Resilience in children, adolescents, and adults* (pp. 139-150). Springer. https://doi.org/10.1007/978-1-4614-4939-3_10

Schweiger, D. M., & DeNisi, A. S. (1991). Communication with employees following a merger: A longitudinal field experiment. *Academy of Management Journal, 34*(1), 110-135. https://doi.org/10.5465/256304

Segrin, C. (2017). Longitudinal design. In M. Allen (Ed.), *The SAGE Encyclopedia of Communication Research Methods* (pp. 894-896). Sage. http://dx.doi.org/10.4135/9781483381411.n311

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine, 15,* 194-200. https://doi.org/10.1080/10705500802222972

Stephens, K. K., Jahn, J. L. S., Fox, S., Charoensap-Kelly, P., Mitra, R., Sutton, J., Waters, E. D., Xie, B., & Meisenbach, R. J. (2020). Collective sensemaking around COVID-19: Experiences, concerns, and agendas for our rapidly changing organizational lives. *Management Communication Quarterly, 34*(3), 426-457. https://doi.org/10.1177/0893318920934890

Sullivan, S. E., & Bhagat, R. S. (1992). Organizational stress, job satisfaction, and job performance: Where do we go from here? *Journal of Management, 18*(2), 353-374. https://doi.org/10.1177/014920639201800207

Van Scotter, J. R. (2000). Relationships of task performance and contextual performance with turnover, job satisfaction, and affective commitment. *Human Resource Management Review, 10*(1), 79-95. https://doi.org/10.1016/S1053-4822(99)00040-6

Venetis, M. K., Chernichky-Karcher, S. M., & Lillie, H. M. (2020). Communicating resilience: Predictors and outcomes of dyadic communication resilience processes among both cancer patients and cancer partners. *Journal of Applied Communication Research, 48*(1), 49-69. https://doi.org/10.1080/00909882.2019.1706098

Vogus, T. J., & Sutcliffe, K. M. (2007). The safety organizing scale: Development and validation of a behavioral measure of safety culture in hospital nursing units. *Medical Care, 45*(1), 46-54. https://doi.org/10.1097/01.mlr.0000244635.61178.7a

Watson, C. B., Chemers, M. M., & Preiser, N. (2001). Collective efficacy: A multilevel analysis. *Personality and Social Psychology Bulletin, 27*(8), 1057-1068. https://doi.org/10.1177/0146167201278012

Weaver, J. L., Bowers, C. A., & Salas, E. (2001). Stress and teams: Performance effects and interventions. In P. A. Hancock & P. A. Desmond (Eds.), *Stress, workload, and fatigue* (pp. 83-106). Erlbaum.

Weber, M. S., Fann Thomas, G., & Stephens, K. J. (2015). Organizational disruptions and triggers for divergent sensemaking. *International Journal of Business Communication, 52*(1), 68-96. https://doi.org/10.1177/2329488414560281

Weick, K. E. (1995). *Sensemaking in organizations*. Sage.

Weick, K. E., & Sutcliffe, K. M. (2001). *Managing the unexpected: Assuring high performance in an age of complexity.* John Wiley & Sons.

Weick, K. E., & Sutcliffe, K. M. (2015). *Managing the unexpected: Sustained performance in a complex world.* John Wiley & Sons.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science, 16*(4), 409-421. https://doi.org/10.1287/orsc.1050.0133

Wieland, S. M. B. (2020). Constituting resilience at work: Maintaining dialectics and cultivating dignity throughout a worksite closure. *Management Communication Quarterly, 34*(4), 463-494. https://doi.org/10.1177/0893318920949314

Wilson, S. R., Kuang, K., Hintz, E. A., & Buzzanell, P. M. (2021). Developing and validating the Communication Resilience Processes scale. *Journal of Communication, 71*(3), 478-513. https://doi.org/10.1093/joc/jqab013

Yang, C., Ding, C. G., & Wen Lo, K. (2016). Ethical leadership and multidimensional organizational citizenship behaviors: The mediating effects of self-efficacy, respect, and leader-member exchange. *Group & Organization Management, 41*(3), 343-374. https://doi.org/10.1177/1059601115594973

Figure 1

Survey Flow (Time 1)

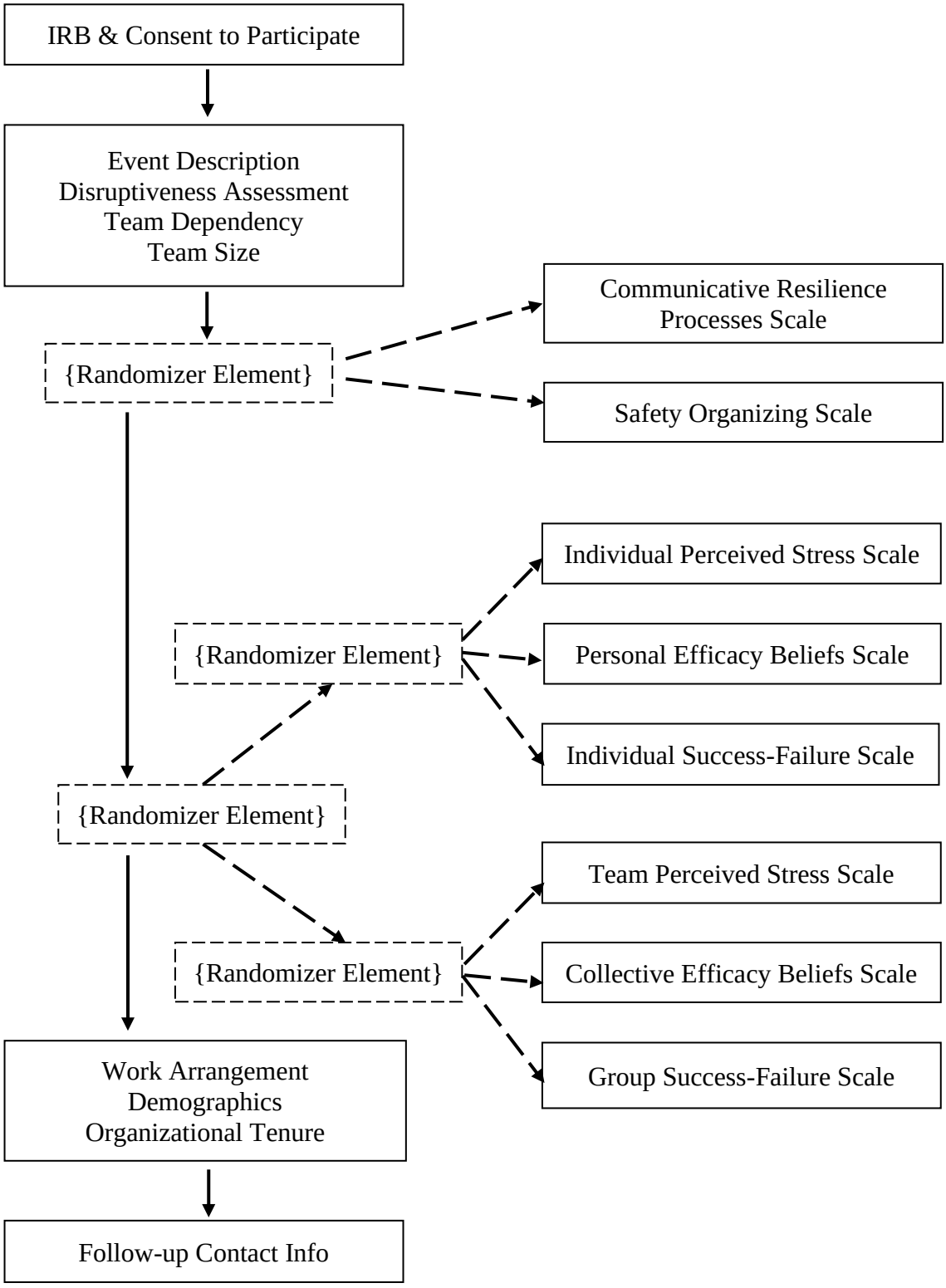


Figure 2

Survey Flow (Time 2)

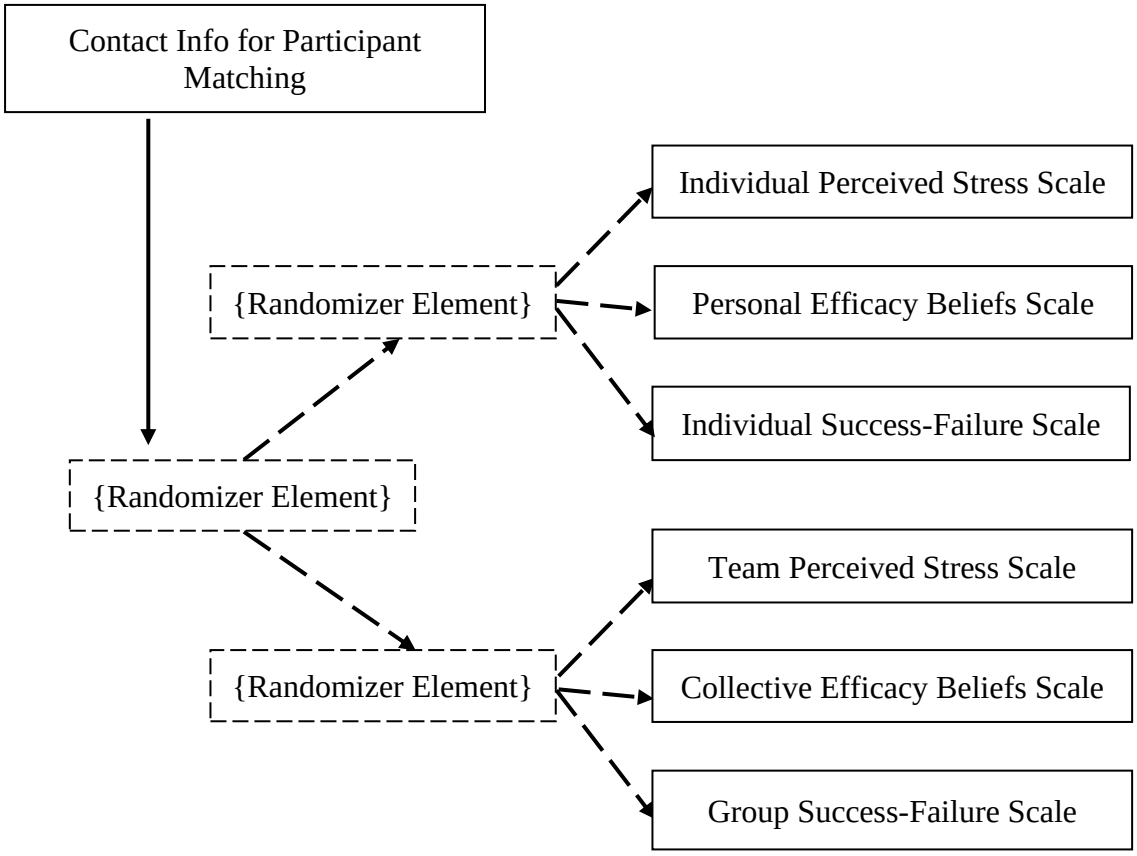
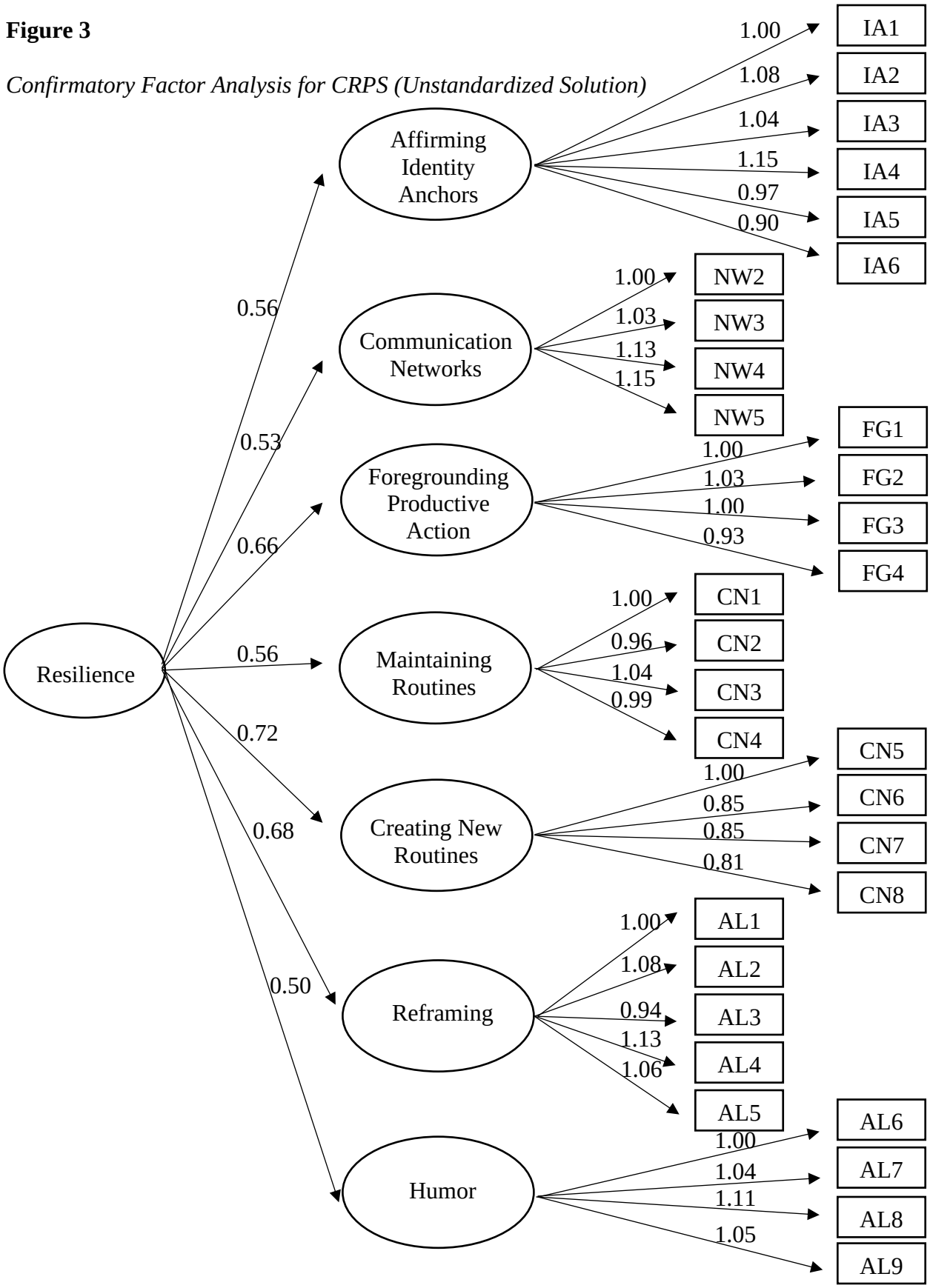


Figure 3

Confirmatory Factor Analysis for CRPS (Unstandardized Solution)



Appendix A

Communication Resilience Processes Scale (CRPS) (Wilson et al., 2020)

DIRECTIONS: Think about the disruptive experience to your work you described above. Please indicate how much you agree with the following statements.

[Scale points: 1 = *strongly disagree*, 2 = *disagree*, 3 = *disagree somewhat*, 4 = *agree somewhat*, 5 = *agree*, 6 = *strongly agree*]

Crafting Normalcy

Maintaining Routines

1. I tried to keep life as normal as possible.
2. I continued to do the things I normally would.
3. I made an effort to keep up with my daily routines.
4. I tried to keep busy doing what I normally do.

Adapting and Creating New Routines

5. I started to build new routines.
6. I started to do new things that over time became ordinary.
7. I adjusted my daily habits to the new circumstances.
8. I adjusted my routines in light of what happened.

Affirming Identity Anchors

9. I maintained key aspects of my identity amidst everything that was going on.
10. I kept in mind who I wanted to be throughout the situation.
11. I held onto the most important parts of myself despite everything that went on.
12. I dug deep into what I value the most as the situation unfolded.
13. I tried to act like the person I ideally wanted to be.

14. I focused on my most important roles during this time.

Maintaining and Using Communication Networks

15. I turned to family and close friends for support.
16. I turned to other people in my network for what I needed.
17. I sought guidance from people I know.
18. I reached out to other people for help.
19. I relied on my connections with others during the situation.

Constructing Alternative Logics

Reframing

20. I found a different way to make sense of the difficult situation.
21. I tried to see the difficult situation in a new light.
22. I found ways of thinking outside of the box in the situation.
23. I found a way to reimagine what was happening in the difficult situation.
24. I thought about the situation in ways that I had not considered before.

Humor

25. I tried to find humor in the situation even though it was difficult to do so.
26. I relied on humor to get through the challenging times.
27. Despite the seriousness of the situation, I found myself using humor to lighten things up.
28. Even though I didn't expect to, I found myself laughing at something funny that happened in the situation.

Foregrounding Productive Action While Backgrounding Negative Feelings

29. I chose to focus on actions that would help me move forward even though it was difficult.
30. Despite how I was feeling, I chose to focus on things that were productive.
31. I focused on what would help me carry on even though it was challenging.

32. Despite how I was feeling, I tried to focus on taking constructive actions.

Appendix B

Safety Organizing Scale (SOS) (Vogus & Sutcliffe, 2007)

DIRECTIONS: The following questions ask you to assess the degree to which you and your teammates with whom you currently and primarily work engage in certain behaviors and practices. By teammates, we mean the coworkers you interact with to get work done (these could be people in your department or unit).

[Scale points: 1 = *not at all*, 2 = *to a very limited extent*, 3 = *to a limited extent*, 4 = *to a moderate extent*, 5 = *to a considerable extent*, 6 = *to a great extent*, 7 = *to a very great extent*]

STEM: "To what extent do the following statements characterize your current work team?"

1. We have a good "map" of each others' talents and skills
2. We talk about mistakes and ways to learn from them
3. We discuss our unique skills with each other so we know who on the team has relevant specialized skills and knowledge
4. We discuss alternatives as to how to go about our normal work activities
5. When giving a report to a teammate, we usually discuss what to look out for next
6. When attempting to resolve a problem, we take advantage of the unique skills of our colleagues
7. We spend time identifying activities we do not want to go wrong
8. When errors happen, we discuss how we could have prevented them
9. When a crisis occurs, we rapidly pool our collective expertise to attempt to resolve it

Appendix C

Assessment of Disruptiveness (adapted from Wilson et al., 2020)

Think about a difficult or troubling event or series of events that disrupted your work routines in the last 3 months.

Please tell the full story about the work experience you have in mind. Everyone's experience is different and there is no right or wrong way to tell a story.

Consider: When/where did this difficult experience start? How did it start? What happened at the beginning, middle, and end? Who was involved? How did you feel at the time? How do you feel about it now? Provide as much detail as you can.

DIRECTIONS: Consider the event(s) you just described. Use the sliding scales to answer the following questions.

[Scale points: 0 = *not at all*, 100 = *completely*]

1. How unexpected was the disruption to your work?
2. How disruptive was the event to your work routines?
3. How disruptive is the event for you currently?
4. To what extent do you feel in control over circumstances related to the disruptive event?
5. To what extent did the disruptive event impact your work life?
6. To what extent do you feel that any initial issues surrounding the disruptive event have been resolved?

Appendix D

Individual Perceived Stress Scale (PSS) (Cohen et al., 1983)

DIRECTIONS: The questions in this scale ask you about your feelings and thoughts *during the last month.* In each case, you will be asked to indicate by selecting *how often* you felt or thought a certain way.

[Scale points: 0 = *never*, 1 = *almost never*, 2 = *sometimes*, 3 = *fairly often*, 4 = *very often*]

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. In the last month, how often have you felt confident about your ability to handle your personal problems? [R]
5. In the last month, how often have you felt that things were going your way? [R]
6. In the last month, how often have you found that you could not cope with all the things that you had to do?
7. In the last month, how often have you been able to control irritations in your life? [R]
8. In the last month, how often have you felt that you were on top of things? [R]
9. In the last month, how often have you been angered because of things that were outside of your control?
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix E

Team Perceived Stress Scale (PSS) (adapted from Cohen et al., 1983)

DIRECTIONS: The questions in this scale ask you about **your perception of your work team's** feelings and thoughts *during the last month.* In each case, you will be asked to indicate by selecting *how often* you believe your team felt or thought a certain way.

[Scale points: 0 = *never*, 1 = *almost never*, 2 = *sometimes*, 3 = *fairly often*, 4 = *very often*]

1. In the last month, how often has your team been upset because of something that happened unexpectedly?
2. In the last month, how often has your team felt that it was unable to control important things?
3. In the last month, how often has your team felt nervous and "stressed"?
4. In the last month, how often has your team felt confident about its ability to handle members' personal problems? [R]
5. In the last month, how often has your team felt that things were going its way? [R]
6. In the last month, how often has your team found that it could not cope with all the things that its members had to do?
7. In the last month, how often has your team been able to control irritations in your team's work? [R]
8. In the last month, how often has your team felt that it was on top of things? [R]
9. In the last month, how often has your team been angered because of things that were outside of members' control?
10. In the last month, how often has your team felt difficulties were piling up so high that you could not overcome them together?

Appendix F

Personal Efficacy Beliefs Scale (Riggs & Knight, 1994)

DIRECTIONS: Think about your ability to do the tasks required by your job. When answering the following questions, answer in reference to your own personal work skills and ability to perform your job.

[Scale points: 1 = *strongly disagree*, 2 = *disagree*, 3 = *disagree somewhat*, 4 = *agree somewhat*, 5 = *agree*, 6 = *strongly agree*]

1. I have confidence in my ability to do my job.
2. There are some tasks required by my job that I cannot do well. [R]
3. When my performance is poor, it is due to my lack of ability. [R]
4. I doubt my ability to do my job. [R]
5. I have all the skills needed to perform my job very well.
6. Most people in my line of work can do this job better than I can. [R]
7. I am an expert at my job.
8. My future in this job is limited because of my lack of skills. [R]
9. I am very proud of my job skills and abilities.
10. I feel threatened when others watch me work. [R]

Appendix G

Collective Efficacy Beliefs Scale (Riggs & Knight, 1994)

DIRECTIONS: Think about the team you work with. This may be an office group, a maintenance crew, an academic department, etc. When responding to the following items, answer in reference to this group's work-related ability.

[Scale points: 1 = *strongly disagree*, 2 = *disagree*, 3 = *disagree somewhat*, 4 = *agree somewhat*, 5 = *agree*, 6 = *strongly agree*]

1. The team I work with has above average ability.
2. This team is poor compared to other departments doing similar work. [R]
3. This team is not able to perform as well as it should. [R]
4. The members of this team have excellent job skills.
5. Some members of this team should be fired due to lack of ability. [R]
6. This team is not very effective. [R]
7. Some members in this team cannot do their jobs well. [R]

Appendix H

Individual Success-Failure Scale (adapted from Riggs & Knight, 1994)

DIRECTIONS: Think about your recent ability to do your work and to accomplish your goals. When responding to the following items, answer in reference to your work-related ability.

[Scale points: 1 = *strongly disagree*, 2 = *disagree*, 3 = *disagree somewhat*, 4 = *agree somewhat*, 5 = *agree*, 6 = *strongly agree*]

1. My recent work deserves an A+.
2. I have been doing poor work. [R]
3. I have recently benefited because my work performance was good.
4. I have been meeting my work goals.
5. I have recently had some costly failures at work. [R]
6. My past performance has had little impact on the success of the larger organization as a whole. [R]
7. Recently, good things have happened because of my work.
8. The organization has recently suffered because of mistakes I made. [R]
9. I recently accomplished some of my work goals.

Appendix I

Team Success-Failure Scale (Riggs & Knight, 1994)

DIRECTIONS: Think about the department in which you work. Think about this department's recent ability to do its work and to accomplish its goals. This department may be an office group, a maintenance crew, an academic department, etc. When responding to the following items, answer in reference to this group's work-related ability.

[Scale points: 1 = *strongly disagree*, 2 = *disagree*, 3 = *disagree somewhat*, 4 = *agree somewhat*, 5 = *agree*, 6 = *strongly agree*]

1. The recent work of this team deserves an A+.
2. This team has been doing poor work. [R]
3. This team has recently benefited because its performance was good.
4. As a group, this team has been meeting its goals.
5. As a group, this team has recently had some costly failures. [R]
6. The past performance of this team has had little impact on the success of the larger organization as a whole. [R]
7. Recently, good things have happened because of the work done by this team.
8. The organization has recently suffered because of mistakes made by this team. [R]
9. This team has recently accomplished some goals.

Appendix J

Demographic Questions

1. What is your age?
2. I identify my ethnicity as (select all that apply):
3. What is your gender?
4. How many years and months of paid work experience do you have?
5. How many years and months of supervisory experience do you have?
6. How many years and months have you worked at your current organization?
7. How many years and months have you worked with your current work team? (The team you were thinking about as you answered the previous sets of questions.)

Appendix K

Final LISREL Syntax for CRPS CFA

```
CRPS_CFA
Raw Data from file
Latent Variables AffAnc Ntwrk PrdAct MntnRt NewRt Rfrm Humor Resil
Relationships
CRP_IA1 = 1*AffAnc
CRP_IA2 CRP_IA3 CRP_IA5 CRP_IA6 CRP_IA7 = AffAnc
CRP_NW3 = 1*Ntwrk
CRP_NW4 CRP_NW5 CRP_NW6 = Ntwrk
CRP_FG1 = 1*PrdAct
CRP_FG2 CRP_FG3 CRP_FG4 = PrdAct
CRP_CN1 = 1*MntnRt
CRP_CN2 CRP_CN3 CRP_CN4 = MntnRt
CRP_CN6 = 1*NewRt
CRP_CN7 CRP_CN8 CRP_CN9 = NewRt
CRP_AL1 = 1*Rfrm
CRP_AL2 CRP_AL3 CRP_AL5 CRP_AL6 = Rfrm
CRP_AL7 = 1*Humor
CRP_AL8 CRP_AL9 CRP_AL10 = Humor
AffAnc Ntwrk PrdAct MntnRt NewRt Rfrm Humor = Resil
LET THE ERRORS OF CRP_CN4 AND CRP_CN2 CORRELATE
LET THE ERRORS OF Rfrm AND Humor CORRELATE
LET THE ERRORS OF CRP_FG4 AND CRP_FG2 CORRELATE
LET THE ERRORS OF CRP_IA7 AND CRP_IA1 CORRELATE
LET THE ERRORS OF CRP_CN6 AND CRP_CN7 CORRELATE
LET THE ERRORS OF CRP_IA7 AND CRP_IA2 CORRELATE
Path Diagram
End of Problem
```