

DIGITAL ACCESS TO SCHOLARSHIP AT HARVARD
DASH.HARVARD.EDU

HARVARD LIBRARY


Mutual Accountability and Its Influence on Team Performance

Citation

Rashid, Faaiza. 2015. Mutual Accountability and Its Influence on Team Performance. Doctoral dissertation, Harvard University, Graduate School of Arts & Sciences.

Link

http://nrs.harvard.edu/urn-3:HUL.InstRepos:14226095

Terms of use

This article was downloaded from Harvard University's DASH repository, and is made available under the terms and conditions applicable to Other Posted Material (LAA), as set forth at

https://harvardwiki.atlassian.net/wiki/external/NGY5NDE4ZjgzNTc5NDQzMGIzZWZhMGFlOWI2M2EwYTg

Accessibility

https://accessibility.huit.harvard.edu/digital-accessibility-policy

Share Your Story

The Harvard community has made this article openly available.
Please share how this access benefits you. Submit a story

Mutual Accountability and Its Influence on Team Performance

A dissertation presented

by

Faaiza Rashid

to

The Department of Business Studies

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

in the subject of

Organizational Behavior

Harvard University

Cambridge, Massachusetts

December, 2014

Copyright © 2014 Faaiza Rashid
All rights reserved.

Dissertation Chair: Professor Amy C. Edmondson Author: Faaiza Rashid

Mutual Accountability and Its Influence on Team Performance

ABSTRACT

Many teams, especially in dynamic knowledge-intensive environments, face interdependent tasks with unscripted responsibilities. The centrality of this challenge to the team process notwithstanding, theories of how team members hold one another accountable for accomplishing interdependent work are underdeveloped. I integrate theory and research on accountability and teams to advance the construct of team mutual accountability – a reciprocally authorized behavior among team members of evaluating one another's progress on the team's task. Unlike performance pressure, which is externally enforced accountability on a team, mutual accountability is internal to a team. I theorize the effects of team mutual accountability and performance pressure on team performance and develop a model of team mutual accountability, proposing its antecedents and outcomes. I test this model in a multi-organization multi-method field study.

Findings from qualitative research on five teams in two knowledge-based organizations show that team mutual accountability varies across teams, verify that the theoretical construct of team mutual accountability can be operationalized in organizations, and help develop survey items for measuring team mutual accountability. Results of survey research on 45 teams in five knowledge-based organizations show that team mutual accountability is positively associated with team performance, controlling

for performance pressure. Both team structures and shared beliefs among team members facilitate team mutual accountability.

Overall, this dissertation illuminates the phenomenon of team mutual accountability and demonstrates its link to team performance. Teams with mutual accountability are likely to make timely performance adjustments because team members, by virtue of their intimate understanding of the team's work and impromptu conversations, can actively evaluate team progress and adjust ongoing performance issues. As teamwork becomes more dynamic and interdependent in organizations, the "right" processes and task divisions become difficult to predict in advance. This renders external team accountability insufficient and mutual accountability among team members critical for timely performance adjustments. This research contributes to the literatures on teams and accountability and offers practical insights for enhancing team performance, especially in dynamic knowledge-intensive environments.

TABLE OF CONTENTS

ABSTRACT ..... **iii**

LIST OF TABLES AND FIGURES ..... **vii**

ACKNOWLEDGEMENTS ..... **viii**

CHAPTER 1. INTRODUCTION **1**

Accountability in Organizations 1

Research Questions 5

Dissertation Overview 6

CHAPTER 2. A MODEL OF TEAM MUTUAL ACCOUNTABILITY **8**

Team Mutual Accountability 8

Theorizing a Model of Team Mutual Accountability 10

Theorizing Effects on Team Performance 12

Antecedents of Team Mutual Accountability 15

CHAPTER 3. PHASE ONE: PRELIMINARY QUALITATIVE RESEARCH **26**

Research Sites 26

Method 27

Results 34

Preliminary Support for the Team Mutual Accountability Model 42

Summary of Findings 46

CHAPTER 4. PHASE TWO: SURVEY RESEARCH 48

Research Sites 49

Method 50

Adequacy of Measures 52

Creating a Group-level Data Set 55

Results 59

Summary of Findings 62

CHAPTER 5. DISCUSSION 65

Divergent Findings 66

Implications for Theory 67

Implications for Practice 70

Study Limitations and Directions for Future Research 71

Conclusion 73

Appendix A. Research Sites 74

Appendix B. Survey Scales 75

Appendix C. Adequacy of Measures 78

Bibliography 80

LIST OF TABLES AND FIGURES

Title	Pg.
Figure 1. A Model of Team Mutual Accountability	10
Table 1. Hypotheses for Testing in Phase Two, Survey Research	25
Table 2. Selected Qualitative Data from Phase One	38
Table 3. Analyses of Variance, Intraclass Correlation Coefficients (ICCs), and Inter-member Agreement Index (rwg(j)) for Group-level Survey Variables	57
Table 4. Descriptive Statistics for Group-level Scales	58
Table 5. Regression Models of Self-Reported Team Performance (N = 45)	59
Table 6. Regression Models of Observer-Reported Team Performance (N = 45)	60
Table 7. Summary of Phase Two Results	64

ACKNOWLEDGEMENTS

I am indebted to the members of my dissertation committee, Amy C. Edmondson, Robin J. Ely, and Filiz Garip. Amy is wisdom and thoughtfulness personified and has shown me what it takes to accomplish rigorous and useful research. This dissertation and my doctoral experience would be far less rewarding and productive without her. I am indebted to Robin for her insights, patience, and generosity. Robin is a phenomenal and tireless mentor. She made this research better with each review, question, and suggestion. Throughout my doctoral studies and research, Filiz Garip gave me support, insight, and encouragement. Filiz is an incredible mentor, listener, and teacher. I have greatly benefited from her positive energy, breadth of knowledge, and ability to get to the heart of the matter in any discussion. Amy, Robin, and Filiz have given me the most precious valuable of all – time. They not only improved my research, but showed me what it takes to be a great teacher and a dedicated advisor. I am confident that I will continue to benefit from all that I have learned from them for a very long time to come. The only way to truly thank them is to pass onward all the wisdom they have shared with me.

I am deeply grateful to the late Richard Hackman. Richard gave me the freedom to disagree with myself. He congratulated me on every internal debate, considering it a wonderful sign of learning. He taught me that the gifts of learning are more worthy than the comforts behind our veils of consistency. I thank Richard for teaching me that the curious are often confused. And, a smile is a better companion to a deliberating mind than a frown. Our conversations made me thoughtful, joyful, and hopeful about research and life – all at once.

I am indebted to the research participants in this study for their time and insights. My primary contacts at each of the participating organizations were kind, helpful, and enthusiastic, making my research experience rewarding as well as enjoyable. I gratefully acknowledge the Division of Research at the Harvard Business School, the Susan G. Cohen Doctoral Research Award, the Weatherhead Center for International Affairs, and the Institute of Quantitative Social Science at Harvard University for providing financial support for this research.

This research would not be possible without the unwavering support of my family and friends. I thank my parents and siblings for giving me love and confidence and for being there whenever the need arose. My life (including my doctoral journey) has had more laughter, joy, wisdom, beauty, and meaning because of Juan Martin. I thank the stars above for smiling upon me and bringing him into my life. I thank him for being my champion all along and bringing out the best in me in easy as well as tough times.

I am grateful to my dear friend Sujin Jang. When I think of our friendship, I remember Seneca's wisdom, "As is a tale, so is life: not how long it is, but how good it is, is what matters." I thank Andreea Gorbatai, Kim Pernell-Gallagher, Erin Reid, Sameer Srivastava, and Melissa Valentine for all their help. Their guidance and generosity of spirit improved my decisions throughout my doctoral studies.

I am thankful to Jane Barrett, Karla Cohen, Malin Deon, John Korn, LuAnn Langan, Dianne Le, Jessica Matteson, Janice McCormick, Jennifer Mucciarone, Sheba Raza, Suzanne Ogungbadero, Susan Thyne, Sara Valverde, and Marais Young for their support. I was lucky to have them by my side. At every turn they helped me with kindness and a smile. I am grateful to Robert Eccles for helping me find my first

research site as a doctoral student. The project that followed was rewarding and productive. It created many research opportunities for me.

My gratitude extends to my teachers who helped me grow and encouraged me to learn in the classroom and beyond. They enlightened my mind and paved my way to the vast sea of knowledge.

CHAPTER 1. INTRODUCTION

Teams, defined as groups with clearly delineated membership and shared responsibility for work outcomes (Alderfer, 1987; Hackman, 1987), are used as primary organizing structures in many work settings (Edmondson, 2002; Osterman, 1994). Many teams, especially in dynamic knowledge-intensive environments, face interdependent tasks with unscripted responsibilities. Traditional top-down evaluations are insufficient for managing teamwork because the "right" processes and task divisions are difficult to predict in advance, and fluid responses to changes in tasks and environments are difficult to evaluate from an external perspective. Team progress thus must be directed and evaluated by members themselves. The centrality of this management challenge notwithstanding, theories of how team members hold one another accountable for accomplishing interdependent work are underdeveloped.

Accountability in Organizations

> Accountability is ubiquitous in social systems, and its necessity is magnified in formal organizations…The very notion of organizing necessitates answering to others. (Frink et al., 2008, p. 177)

Accountability involves evaluation of one's actions or its consequences (Frink & Klimoski, 2004; Siegel-Jacobs & Yates, 1996), either or both of which may be called into question by an evaluator (Scott & Lyman, 1968). In social systems, accountability serves as a mechanism for bridging discrepancies between actions and expectations (Scott & Lyman, 1968; Tetlock, 1992) and invokes a sense of answerability in people for their conduct (Schlenker, 1986; Schlenker & Weigold, 1989). Considered essential for the viability of organizations, accountability enhances organizational control (Ferris et al.,

1995) by promoting adherence to explicit obligations and implicit agreements (Frink & Klimoski, 2004), thereby shaping behavior in organizationally prescribed directions to maximize goal achievement (Hall et al., 2009). Accountability can also contribute to informed decision-making as those held accountable may engage in critical thinking (Lerner & Tetlock, 1994; Tetlock, 1983; Tetlock, Skitka, & Boettger, 1989) and thorough information-processing (De Dreu, Nijstad, & Van Knippenberg, 2008; Scholten et al., 2007).

Although much has been written on individual and organizational accountability, accountability in teams is understudied. Research in management accounting has focused on the role of organizational structures, in particular performance measurement systems (Antle & Demski, 1988), in holding employees accountable for the results that are within their control (Arrow, 1974; Dalton, 1971; Shillinglaw, 1982; Simons, 2013). In contrast, research in psychology has focused on cognitive factors to explain the impact of accountability on individual thoughts, feelings, and actions. The latter research has been conducted primarily in the laboratory using scenarios that bear little resemblance to real work settings, for example, scenarios in which people engage in non-consequential tasks (Frink et al., 2008) and "expect only a brief encounter with someone they have never met before and never expect to meet again" (Lerner & Tetlock, 1999, p. 270).

Accountability in teams remains under-examined, even though organizational experts have gone as far as to pronounce it critical to the very definition of teams:

> No group ever becomes a team until it can hold itself accountable as a team… Think, for example, about the subtle but critical difference between "the boss holds me accountable" and "we hold ourselves accountable"…without the second, there can be no team (Katzenbach & Smith, 1993, p. 60).

Examining accountability in teams thus can illuminate an understudied critical element of teamwork, and also help balance an otherwise skewed understanding of accountability in organizations in the extant literature. Accountability in existing research is typically considered a unilateral phenomenon, with one party engaged in account-taking and the other in account-giving. In particular, accounting theory and practice, with its singular focus on individual accountability and implicit assumption that organizational members are independent and solitary, overlook the "socializing forms of accountability which flourish in the informal spaces of organizations, and which confirm self in a way that emphasizes the interdependence of self and others" (Roberts, 1991, p. 355). In teams, however, members may have to hold each other accountable to make progress on interdependent tasks.

In today's organizations, teams are frequently assembled to deliver products or services (Edmondson, 2002; Osterman, 1994) and tend to carve social spaces wherein employees depend on one another for achieving common goals and share responsibility for work outcomes (Alderfer, 1987; Hackman, 1987). Because team members must coordinate and mutually adjust their work in pursuit of common goals, it is plausible that their enactment of accountability takes a more interpersonal and reciprocal form than what prior accountability theories suggest. A group-level perspective, by shedding light on the interpersonal dynamics of accountability in organizational teams and their influence on performance outcomes, can provide a fuller picture of accountability at the workplace and a better understanding of the social forms of accountability that operate in the accomplishment of interdependent work.

Organizations' increasing reliance on teams generates yet another theoretical and managerial imperative to understand accountability processes therein. To transform inputs into outputs by means of interdependent tasks relies on team members working in tandem and mutually adjusting their contributions (Galbraith, 1987; March & Simon, 1958; Saavedra, Earley, & Van Dyne, 1993; Thompson, 1967). Hierarchical supervision or management oversight and direction of all aspects of work (Edwards, 1979) is not adequate for this process – lags in progress among interdependent tasks, which manifest out of sight of managers, can accumulate into costly schedule delays and budget over-runs, compromise work quality, and even precipitate accidents. Nor is accountability in the context of teamwork amenable to bureaucratic control (Frink & Ferris, 1999; Ouchi, 1980) or monitoring by means of formalized rules and procedures (Weber, 1978). The latter are practical in routine settings, such as automobile assembly lines, in which the division of labor and transformation processes are clear. In the context of teamwork, individual contributions are inextricable and the transformation process is ambiguous (Ouchi, 1980). This renders the creation of formalized rules and procedures infeasible (Ouchi, 1977) and shifts the locus of evaluation to the team itself, in the form of coworkers' informal appraisals.

Team members' intimate involvement with their daily activities and awareness of the effects of their actions on one another's work ideally positions them to mutually hold one another accountable for team progress and outcomes. In this way, mutual accountability in organizations is potentially better suited to the team context than is external monitoring; moreover, it is central to effective teamwork (Katzenbach & Smith, 1993). Nonetheless, our understanding of accountability in teams is limited.

The few studies that do examine accountability in the team context do not explicitly consider the antecedents and outcomes associated with accountability among team members. For example, a study of teams in two professional service firms found that when clients or managers increased accountability for delivering high quality results, team motivation increased, but the team's use of members' special knowledge and skills was undermined (Gardner, 2012). An ethnographic study of teams in a manufacturing company articulated a rich process theory for a stringent form of peer-monitoring, termed concertive control (Barker, 1993). The study did not, however, engage in explicit hypothesis testing or consider the possibility of a less interpersonally destructive form of peer-monitoring. Also, it did not shed light on the generalizability of the findings to dynamic knowledge-intensive contexts in which team tasks and work processes tend to evolve.

Research Questions

Existing theories on teams do not address how team members hold one another accountable for accomplishing interdependent work, despite the centrality of this team dynamic to effective teamwork (Katzenbach & Smith, 1993). Theories on accountability at the workplace reduce it to a unilateral asocial force in organizational life with little attention to interpersonal (Roberts, 1991) or mutually negotiated forms of accountability (Frink & Klimoski, 2004), accountability-seeking behavior, and accountability that occurs among people out of their volition (Frink et al., 2008). To fill these gaps in our knowledge, I integrate theory and research on accountability and teams to advance the construct of team mutual accountability – a reciprocally authorized behavior among team members of evaluating one another's progress on the team's task. I undertake a multi-

organization field research and use qualitative and quantitative methods to examine the following research questions: first, is team mutual accountability a group-level construct and does it vary across teams? Second, what is the relationship between team mutual accountability and team performance? And third, what enables team mutual accountability?

Dissertation Overview

In Chapter 1, I explicate the imperative for examining mutual accountability in teams. I also identify the research questions guiding this study. In Chapter 2, I introduce the construct of team mutual accountability. Next, I develop a model of team mutual accountability. I theorize the effects of team mutual accountability on team performance. Taking an integrative perspective, in which both team structures and shared beliefs among team members may enable team behaviors, I theorize the antecedents to team mutual accountability. The team mutual accountability model is shown in Figure 1 in Chapter 2. The hypotheses developed for testing the model are reported in Table 1, also in Chapter 2.

This research involved two phases of data collection. In Chapter 3, I describe the method and present the results of the first phase, in which I collected qualitative data on five teams in two organizations to assess whether team mutual accountability is a group-level construct that varies across teams, verify that the theoretical construct of team mutual accountability can be operationalized in organizations, and develop survey items for measuring team mutual accountability for phase two of this research.

In Chapter 4, I describe the method and present the results of the second phase, in which I collected quantitative data by means of surveys administered to 48 teams in five organizations to test the hypotheses in the team mutual accountability model. In Chapter 5, I discuss the implications of my findings for theory on accountability and teams and practice. I also discuss the limitations of this study and present directions for future research.

CHAPTER 2. A MODEL OF TEAM MUTUAL ACCOUNTABILITY

Team Mutual Accountability

Accountability refers to both an outcome and a process. In the management accounting literature, accountability is conceptualized as an outcome derived from formal evaluation systems (Antle & Demski, 1988; Simons, 1994). In contrast, in sociology, accountability is conceptualized as an ongoing process of account-taking and -giving, where an account is defined as "a linguistic device employed whenever an action is subjected to valuative inquiry" (Scott & Lyman, 1968, p. 46). Accountability is considered a daily aspect of social life (Garfinkel, 1956, 1967) involving verbal exchanges (Lyman & Scott, 1970; Scott & Lyman, 1968) intended to manage everyday affairs (Garfinkel, 1956, 1967) and problematic experiences (Goffman, 1959, 1971). Conversation is the medium and interpersonal is the form of accountability (Scott & Lyman, 1968; Semin & Manstead, 1983; Orbuch, 1997). I build on this tradition by conceptualizing accountability at the group level of analysis and introducing the construct of team mutual accountability, a team behavior through which the ongoing process of account-taking and -giving is enacted by team members.

I define *team mutual accountability* as a reciprocally authorized behavior among team members of evaluating one another's progress on the team's task. It consists of activities carried out by team members, such as proactively reviewing and assessing the team's ongoing work, accounting for their progress to one another, inquiring one another about performance issues, and validating that team members get their individual part of the team's work done. Whether the reciprocal authorization to evaluate team progress is implicit or explicit, the activities associated with mutual accountability are informal,

unmediated, and even spontaneous, emerging as members detect or anticipate lags in progress.

Team mutual accountability is a group-level construct. It is not an individual-level construct for it characterizes the team rather than the individual team members. Everyday accountability relationships are dynamic and involve mutual adaptation to others' reactions (Lerner & Tetlock, 1999). Team members' shared experiences, and common social and structural context, are likely to beget convergence on the extent to which team members hold one another accountable. Members who witness fellow teammates evaluating one another's work and collectively approving of intra-team progress appraisals are likely to perceive activities associated with mutual accountability as natural to the way the team works. Conversely, members who witness fellow teammates as apathetic to team progress or condoning performance issues may perceive activities associated with mutual accountability as unsuitable on their team. As these perceptions spread across a team, team members tend to converge in the extent to which they engage in activities associated with mutual accountability. Thus, mutual accountability characterizes the team rather than the individual team members and is likely to vary across teams. In the present study, I will test whether team mutual accountability is a group-level construct that varies across teams.

Team mutual accountability is not to be confused with shared responsibility or concertive control. Shared responsibility involves a sense of duty (Schlenker et al., 1994), but not appraisal, which is a critical component of accountability (Hall et al., 2006). Team mutual accountability differs from concertive control (Barker, 1993). Concertive control describes a situation in which members mitigate discrepancies between actual and

desired team behaviors by enforcing and complying with team rules. These rules pertain to a broad spectrum of team behaviors and are rooted in team values (Barker, 1993). In contrast, team mutual accountability involves reciprocally authorized appraisals and inquiries among team members that help maintain an active assessment of team progress and ensure timely and quality advancement toward team goals.

Theorizing a Model of Team Mutual Accountability

Next, I present a model of team mutual accountability, shown in Figure 1, proposing its antecedents and outcomes. Testing the hypothesized relationships in the team mutual accountability model will help answer two of the research questions guiding this study: what is the relationship between team mutual accountability and team performance and what are the enablers of team mutual accountability?

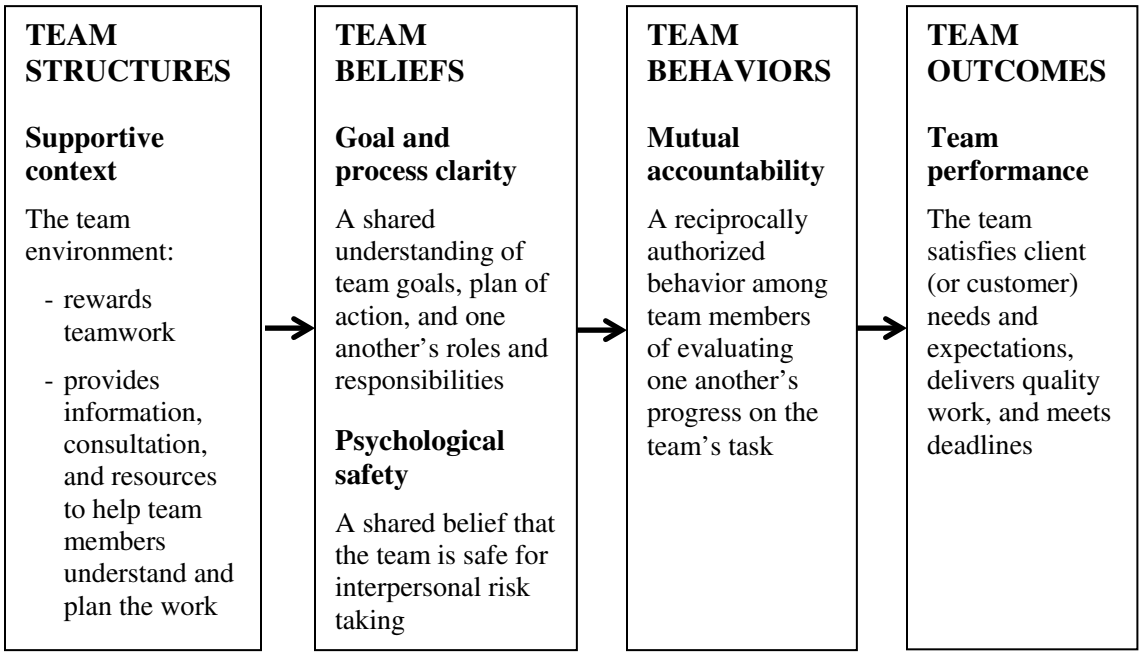


Figure 1. A Model of Team Mutual Accountability

I hypothesize that team mutual accountability improves team performance by enabling timely and comprehensive adjustments in the team's ongoing work. Testing this hypothesis (in the team mutual accountability model, Figure 1) will help answer the research question on the relationship between team mutual accountability and team performance. To examine antecedents to team mutual accountability, I take an integrative perspective, where team structures facilitate team beliefs, which in turn enable team behaviors (Edmondson, 1999). The underlying premise of this perspective is that team structures (for example, reward and recognition systems) do not directly shape team behaviors. Structures alone are not sufficient; they must give rise to beliefs among team members, which in turn enable the translation of team structures into team behaviors. Similarly, team beliefs (for example, beliefs regarding the team's interpersonal climate) do not directly contribute to team performance – the team satisfying client (or customer) needs and expectations, doing quality work, and meeting deadlines. Beliefs enhance performance by promoting performance-enhancing behaviors. Beliefs alone are not sufficient; members have to act on their beliefs to influence team performance. Thus, team behaviors are a mechanism by which team beliefs translate into team performance. Overall, this perspective implies that team beliefs mediate the effects of team structures on team behaviors. And, team behaviors mediate the effects of team beliefs on team performance. In line with this perspective, I examine both team structures and beliefs that may facilitate the team behavior of mutual accountability.

I hypothesize that team beliefs related to the team's task and interpersonal climate – specifically, goal and process clarity and psychological safety among team members – enable the team behavior of mutual accountability, which in turn facilitates team

performance. I hypothesize that these team beliefs are promoted by features of team structure. Specifically, a supportive context that rewards teamwork and supports team members (through provision of resources, information, and consultation to understand and plan their work) facilitates goal and process clarity and psychological safety. These team beliefs, in turn, facilitate the team behavior of mutual accountability. Testing these hypothesized relationships (in the team mutual accountability model, Figure 1) will help answer the research question on what enables team mutual accountability. In the following sections, I discuss the development of the aforementioned hypotheses in detail.

Theorizing Effects on Team Performance

Effects of Team Mutual Accountability on Team Performance. Team mutual accountability should enhance team performance in at least two ways. First, it facilitates active perusal of team progress and thus promotes timely adjustments to ongoing work. Second, it fosters thorough reviews of team progress which promote comprehensive adjustments to ongoing work. Timely and comprehensive adjustments to the team's ongoing work should help improve final team performance.

Most teams experience issues with the timeliness and quality of intermediate deliverables. Failure to resolve such issues promptly is detrimental to final team performance. Team members are particularly well positioned, by virtue of close proximity to their work and one another, to evaluate team progress and hold one another accountable for correcting issues with ongoing work. Team members are suited to quickly raise alerts on work issues because they have an intimate understanding of the team's workflow and minor problems that can snowball into significant failures. In a team where members are reciprocally authorized to evaluate team progress, they are more

likely to take advantage of their knowledge of the team's workflow and initiate impromptu conversations in order to actively flag and adjust problems that may go unnoticed and accrue to large failures in other teams.

In teams where members are mutually authorized to evaluate one another's progress, appraisals of ongoing work are likely to be thorough and non-defensive, and thus effective in detecting and redressing performance issues. When team members volitionally exchange accounts of one another's progress, they are likely to bring up their work approach to explain issues pertaining to the timeliness and quality of their progress and share uniquely held information (Scholten et al., 2007) and engage in thorough information-processing (De Dreu, Nijstad, & Van Knippenberg, 2008). Team members are also likely to react non-defensively when they perceive one another as legitimate account-takers (Tyler, 1997). Research suggests that monitoring by account-takers considered intrusive prompts defensiveness (Baer et al., 1980; Brehm, 1966; Heilman & Toffler, 1976) and emotional overload in account-givers to the detriment of performance (Lerner & Tetlock, 1999; Sutton & Galunic, 1996).

In light of the contributions of team mutual accountability to timely and comprehensive adjustments in ongoing work, I propose that team mutual accountability facilitates team performance.

Hypothesis 1: Team mutual accountability is positively associated with team performance.

Effects of Team Mutual Accountability and Performance Pressure on Team Performance. Team members are usually embedded in a web of accountability (Frink & Klimoski, 1998, 2004), such that they expect evaluation of their work by people internal

and external to the team. In real work settings, team members may be held accountable for delivering high-quality work by fellow teammates as well as by people who review and receive the team's work. The latter is a conventional top-down form of accountability that manifests as performance pressure enforced on a team by outsiders. Performance pressure, defined as "a team's accountability for delivering high quality outcomes" (Gardner, 2012, p. 3), involves heightened scrutiny of the team's work by managers and clients (Gardner, 2012).

Team mutual accountability and performance pressure are two distinct forms of accountability experienced by team members. Team mutual accountability pertains to accountability among team members, and performance pressure is related to the team's accountability to external evaluators. Team mutual accountability is a team behavior rooted in a team's internally espoused activities, and performance pressure is "an external force imposed on the team" by managers and clients (Gardner, 2012, p. 2).

Both performance pressure and team mutual accountability constitute heightened evaluation of the team's work. But, they should have distinct effects on team performance because each enables team performance in a way that the other does not. As organizational members strive for the approval of their superiors and clients, performance pressure enhances motivation and, thus, the amount of time (Koonce, Anderson, & Marchant, 1995) and physical and mental effort (Weingart, 1992; Weldon, Jehn, & Pradhan, 1991) that team members spend on their task. This, in turn, improves the quality of their work (Gardner, 2012; Hackman & Morris, 1975; Matsui, Kakuyama, & Onglatco, 1987) and enhances team performance.

Conversely, team mutual accountability should enhance team performance by facilitating timely and comprehensive adjustments to ongoing work through active and thorough perusal of team progress by team members. In contrast to team members, managers and clients are generally not involved with a team on a day-to-day basis. Performance pressure is usually exerted at project inception, at pre-planned progress review meetings, and in the wake (seldom in anticipation) of a performance failure, when managers emphasize the importance of a team's task and underscore that it is under their scrutiny. Moreover, managers and clients are often busy with multiple projects and teams. This makes their systematic involvement with a particular team unfeasible. Thus, the scrutiny of the team's work by managers and clients has a different form and frequency than that by team members, who have authorized one another to evaluate team progress.

Since team mutual accountability and performance pressure are distinct forms of team accountability and because each facilitates performance in a way that the other does not, I predict that team mutual accountability should improve team performance, controlling for the effects of performance pressure.

Hypothesis 2: Team mutual accountability is positively associated with team performance, controlling for the effects of performance pressure.

Antecedents of Team Mutual Accountability

As a starting point for examining the antecedents of team mutual accountability, I take an integrative perspective in which team structures facilitate team beliefs, which in turn enable team behaviors (Edmondson, 1999). I first theorize the team beliefs that

contribute to the team behavior of mutual accountability, and then theorize the structures that facilitate those team beliefs. I hypothesize the conditions that enable team mutual accountability not in the sequence in which they are presented in Figure 1, but in the order of importance. If I cannot hypothesize that a given team belief enables team mutual accountability, it is moot to hypothesize the team structures that facilitate the team belief, at least for the purpose of answering the research question on what enables team mutual accountability. Accordingly, below, I first present the hypotheses regarding the team beliefs that enable team mutual accountability. Then, I present the hypotheses regarding the team structures that facilitate the team beliefs, which were predicted to enable team mutual accountability.

Team mutual accountability – a reciprocally authorized behavior among team members of evaluating one another's progress on the team's task – encompasses two features of a team. As a progress evaluation behavior, team mutual accountability pertains to the team's task. As a reciprocally authorized behavior, team mutual accountability pertains to the team's interpersonal dynamic. Thus, in the next section, I examine shared beliefs among team members pertaining to the team's task and interpersonal climate that may facilitate team mutual accountability. Specifically, I predict that goal and process clarity (a shared understanding of team goals, plan of action, and one another's roles and responsibilities) (Hu & Liden, 2011; Kahn et al., 1964; Sawyer, 1992) and psychological safety (a shared belief that the team is safe for interpersonal risk taking) (Edmondson, 1999) enable the team behavior of mutual accountability.

Team Beliefs as Antecedents of Team Mutual Accountability. When individuals are held accountable and asked to explain their actions (Ferris et al., 1997; Semin & Manstead, 1983; Tetlock, 1985), it is in reference to prescribed goals, obligations, and responsibilities (Schlenker, 1986; Schlenker & Weigold, 1989) that their actions are accounted for and evaluated. Similarly, in a team context, to hold one another accountable for making progress on the team' task, team members first need goal and process clarity – a shared understanding among members of team goals, plan of action, and one another's roles and responsibilities. Without goal and process clarity, team members will be uncertain about what they are aiming to achieve, the links between their work and the work of other team members, and who is responsible for what, when, and to whom in pursuit of team goals (Hu & Liden, 2011; Kahn et al., 1964; Sawyer, 1992). Goal and process clarity can guide regulatory activities within a team by offering team members a shared understanding of team goals, plan of action, and the connection between their own work and team goals (Hu & Liden, 2011).

Goal and process clarity among team members should foster team mutual accountability in two ways. First, clarity on team goals and plan of action means the team has clear objectives and milestones, which enables team members to appraise their progress. When there is confusion on team goals and plan of action, team members are likely to question the validity of their progress assessments as they struggle to track progress and decipher what it means to be 'on task' and 'on schedule'. They may refrain from raising red flags in one another's work out of concern that their apprehensions are an outcome of their own confusion, merely a personal reaction, and voicing them will only spread their private anxiety. Instead, they may restrict their focus and energy to their

own limited contribution and abstain from evaluating fellow teammates' ongoing work. Conversely, on a team where goal and milestones are clear, team members are better set-up to compare actual progress with desired progress and thus more likely to detect issues with ongoing work. And, when they do detect issues, team members are less likely to spend time deliberating whether their apprehensions are valid.

Second, clarity on one another's roles and responsibilities for pursuing team goals and delivering on the team's plan of action should foster reciprocal authorization for evaluating one another's progress on the team's task. In the absence of clarity on one another's roles and responsibilities, team members may question the validity of others' concerns and attempts at account-taking. Team members are likely to enter dysfunctional conflicts due to ambiguity regarding their responsibilities (Gladstein, 1984; Hu & Liden, 2011). They may contest, reject outright, or accept with resentment the responsibility assigned onto them for a given issue with the team's progress. However, when team members hold one another accountable with prior clarity on one another's roles and responsibilities, it is more likely that their interaction is mutually considered legitimate.

Thus, to the extent that it facilitates progress evaluation activities and reciprocal authorization for such activities among team members, goal and process clarity should contribute to episodes of team mutual accountability that may otherwise not occur and that improve team performance.

Hypothesis 3: Team mutual accountability partially mediates the effects of goal and process clarity on team performance.

A non-threatening interpersonal climate among team members should facilitate team mutual accountability. Team psychological safety, described by Edmondson (1999,

p. 354) as "a team climate characterized by interpersonal trust and mutual respect in which people are comfortable being themselves," in particular, may promote team mutual accountability. On a team where there is excessive concern among team members that they will be judged or considered incompetent when in error, team members are less likely to invite evaluations from one another. Team members will prefer keeping their work to themselves when they fear that issues in their work will put their image at risk. They may choose to stay silent about what they perceive as issues with others' work out of fear that voicing such concerns will deem them as intrusive or even paranoid.

Psychological safety is likely to facilitate mutual accountability because a safe interpersonal climate frees team members from spending excessive time and effort cogitating on the interpersonal consequences of holding one another accountable. The mutual respect among team members that is at the core of psychological safety (Edmondson, 1999; 2004) tends to promote a sense among team members that their evaluations are constructive rather than destructive (Kahn, 1990). This, in turn, encourages team members to openly share their appraisals of ongoing work and thus facilitates team mutual accountability.

In addition, the less team members are preoccupied with their image on the team, the more time they can potentially spend on reviewing the team's ongoing work. When team members notice issues with one another's ongoing work, they may focus less on the interpersonal consequences and more on the potential performance benefits of speaking up. When team members feel confident that others on the team will not embarrass or punish them for speaking up (Edmondson, 1999), they are likely to freely appraise one another's progress on the team's task.

Taken together, psychological safety should facilitate mutual accountability by promoting progress appraisals on a team in two possible ways. First, psychological safety may help team members feel more comfortable with inviting and giving progress appraisals as they are less concerned with embarrassment or punishment associated with the surfacing of issues with their ongoing work. As team members focus less on the interpersonal consequences associated with progress appraisals, they may focus more on the performance gains that flow from them. And second, on a team with psychological safety team members spend less time on impression management and potentially more time evaluating their progress on the team's task. Thus, I predict that team psychological safety facilitates episodes of team mutual accountability that may otherwise not occur and that improve team performance.

Hypothesis 4: Team mutual accountability partially mediates the effects of team psychological safety on team performance.

Features of Team Structure as Antecedents of Team Mutual Accountability. The features of team structure, for example, availability of resources, are known to increase team performance (Hackman, 1987; Wageman, Hackman, & Lehman, 2005) by fostering shared beliefs (Edmondson, 1999) that facilitate performance-enhancing behaviors among team members. A supportive context that rewards and supports teamwork (Hackman, 1987, 1990, 2002; Wageman, Hackman, & Lehman, 2005) provides a starting point for examining the features of team structure that foster shared beliefs – such as goal and process clarity and psychological safety– that in turn promote team mutual accountability.

A supportive context encompasses three aspects of a team's environment. First, organizations often evaluate and reward individual work through individual-focused appraisal and compensation systems. In a supportive context for teams, reward systems provide positive consequences for excellent team performance. In addition, rewards and recognition for individual achievements are not necessarily a disincentive for collaboration and teamwork. Second, a supportive context provides teams with the information for understanding and planning their work and with the material resources needed for accomplishing their work. And third, when team members do not already have the knowledge, experience, or skills for accomplishing any aspect of the team's work (for example, skills to collaborate on interdependent aspects of the team's work), a supportive context provides them with technical and educational assistance (Hackman, 1987, 1990, 2002; Wageman, Hackman, & Lehman, 2005).

A supportive context is likely to facilitate team beliefs – goal and process clarity and psychological safety– that promote mutual accountability in teams. Goal and process clarity in teams is difficult to establish because team members, in general, do not thoroughly discuss the team task and how they plan to accomplish it (Hackman & Morris, 1975; Hackman & Wageman, 2005; Weick, 1969). They tend to focus on generating solutions rather than taking even a little time to try to better understand the task (Maier, 1963). Team members usually give low priority to planning activities even when they are aware that planning may benefit their work (Hackman & Morris, 1975; Shure et al., 1962). Experimental research has shown that it is difficult, at the beginning of their work, to get team members to engage in more than a perfunctory discussion of how they will carry out their task (Hackman, Brousseau, & Weiss, 1976; Hackman & Wageman, 2005).

Moreover, teams in organizations often face a context with reward and recognition systems, training programs, and information inventories that are designed and fine-tuned over time to support work performed by individuals. This serves as an added disincentive for task-oriented collaboration among team members (Wageman, Hackman, & Lehman, 2005) critical for the development of goal and process clarity on a team.

When a team operates in a supportive context (Hackman, 1987, 1990, 2002) that rewards and celebrates teamwork and provides team members with access to information, resources, and consultation to help understand and plan the work (Hackman, 1987, 1990; Wageman, Hackman, & Lehman, 2005), team members are more likely to collaborate and communicate about team goals and process. In helping team members to appreciate the value of teamwork, a supportive context can motivate team members to view themselves as a collective and encourage them to frame their goal as shared. This, in turn, may foster conversations about how to work together to achieve a common goal. In providing team members with information, resources, and consultation to understand and plan their work, a supportive context should improve the content of conversations among team members regarding team goals, plan of action, and one another's roles and responsibilities. Taken together, a supportive context should facilitate goal and process clarity and, in turn, team mutual accountability.

Hypothesis 5: Goal and process clarity partially mediates the effects of a supportive context on team mutual accountability.

A supportive context should foster team psychological safety in two possible ways. First, access to resources, information, and assistance helps mitigate defensiveness in a team (Edmondson, 1999; 2004). When a team suffers from a scarcity of resources,

team members can become easily stressed by mistakes and errors. With resources already stretched, there is little room for error. Instead of feeling comfortable with admitting mistakes, team members may suppress them. They may even devolve to the dynamic of 'blaming the messenger' when someone on the team flags issues with team progress. As team members feel defensiveness, they are likely to cultivate a shared belief that the team's interpersonal environment is punitive rather than safe. Access to resources should alleviate defensiveness by creating a perception among team members that they have a cushion against errors. Access to information and assistance should lessen insecurity among team members as they feel they have support for developing strategies for redressing ongoing issues.

Second, a supportive context should foster team psychological safety by rewarding and celebrating teamwork. Team psychological safety reflects a tacit calculus performed by team members who ask themselves whether they will be given the benefit of the doubt when they make a mistake or speak up. This tacit calculus involves asking "If I say or do X, will I be criticized, embarrassed, punished, or rejected" (Edmondson, 1999, 2004). When the team's environment does not reward and celebrate teamwork, it is likely that team members will retreat to their personal space and consider the cost of speaking up as higher than its benefits. In such an environment, engaging with others and speaking one's mind takes time and poses risks to one's image without any assurance that the outcome will be celebrated by others. The risk to one's image is perceived as too high for the benefits such exposure promises. As team members retreat within and seldom engage with one another, they are less likely to expect the benefit of the doubt from others when they make mistakes, to the detriment of psychological safety.

Conversely, contexts that reward and celebrate teamwork signal the importance of cooperation and openness, potentially promoting an interpersonal climate where team members are not preoccupied with impression management and instead are comfortable being themselves, evaluating one another's ongoing work, and speaking up about issues with team progress.

Taken together, by helping team members feel less defensive and more comfortable about raising issues in one another's work, a supportive context should facilitate team psychological safety and, in turn, team mutual accountability.

Hypothesis 6: Team psychological safety partially mediates the effects of a supportive context on team mutual accountability.

In Table 1, below, I report the hypotheses developed in this chapter and the research questions that the testing of these hypotheses will help answer.

Table 1. Research Questions and Hypotheses

Research Question	Hypothesis
What is the relationship between team mutual accountability and team performance?	Hypothesis 1: Team mutual accountability is positively associated with team performance. Hypothesis 2: Team mutual accountability is positively associated with team performance, controlling for the effects of performance pressure.
What enables team mutual accountability?	Hypothesis 3: Team mutual accountability partially mediates the effects of goal and process clarity on team performance. Hypothesis 4: Team mutual accountability partially mediates the effects of team psychological safety on team performance. Hypothesis 5: Goal and process clarity partially mediates the effects of a supportive context on team mutual accountability. Hypothesis 6: Team psychological safety partially mediates the effects of a supportive context on team mutual accountability.

CHAPTER 3. PHASE ONE: PRELIMINARY QUALITATIVE RESEARCH

To deepen our understanding of team mutual accountability and further examine both the construct and hypothesized relationships in the team mutual accountability model, I conducted a two-phase, multi-method field study in five organizations. In the first phase, I collected qualitative data on five teams in two organizations to assess whether team mutual accountability is a group-level construct and varies across teams, verify that the theoretical construct of team mutual accountability can be operationalized in organizations, and if so, develop survey items for measuring team mutual accountability in the second phase.

Research Sites

To ensure that findings were not merely attributes of a single organization, teams in two organizations were included in the study. These organizations are referred to below by pseudonyms. I examined teams at AdvertisingCo, an advertising agency, and DesignCo, an interior and furniture design firm. Organizations participated in this research to get feedback on the teams that were an integral part of each. Only project and product development teams, being the teams the participating organizations wanted to further understand, were included in the study. Unlike other teams in the two organizations (such as staffing and technical support teams), the participating teams were time-limited and their members were interdependent for accomplishing team goals.

At the time of this research, AdvertisingCo had nearly 600 employees. Its teams had people with different expertise, including strategy, industrial design, graphic arts, web design, psychology, and writing. With offices and clients in North America and

Europe, it was internationally reputed for its multidisciplinary team approach to advertising and digital and social marketing. The organization was well known for its high standards of creativity and world famous advertising campaigns, having won prestigious awards and accounts from globally recognized clients.

DesignCo was an internationally reputed firm specializing in interior and furniture design for hospitality and retail industries. With nearly 150 employees, offices in North America, and clients in Asia, Europe, the Middle East, and North America, DesignCo had an award-winning track record and a portfolio of high profile projects around the world. Its teams had people with different expertise, including architecture, design, engineering, and management.

In both DesignCo and AdvertisingCo the participating teams were feasible subjects because they were time-limited and their members were interdependent for accomplishing team goals. Taken together, both AdvertisingCo and DesignCo were good sites in which to explore team mutual accountability and the factors that enable it.

Method

At each organization, my initial contacts were members of senior management who introduced me to my primary contact, the person in-charge of maintaining the organizational roster of active projects and teams. All interviews were scheduled through electronic mail, in which I introduced the purpose of the study as understanding work dynamics in organizations, explained participant rights and confidentiality terms of the study, and requested an interview. Everyone responded to an interview request with enthusiasm. Four individuals at AdvertisingCo and two individuals at DesignCo

expressed a desire to participate, but left their respective organizations before they could follow through.

Sample. I examined three teams at AdvertisingCo and two at DesignCo. The teams varied in size, project duration, and scope of work. One of the three teams at AdvertisingCo was working on a national advertising campaign, another on a regional advertising campaign, pseudo named A-Nat and A-Reg1 respectively. A-Nat and A-Reg1 each had two aspects to their respective assignment – a traditional and a digital component. The traditional component involved advertising through television, radio, and newspapers, and the digital component involved advertising through websites, mobile applications, and social media. AdvertisingCo's third team, A-Reg2, was working on a regional digital advertising campaign. Average team size was five, with a range of three to eight members. The average project duration was four months. When data collection began, the teams had been working on their projects for nearly 10 weeks.

One of DesignCo's two teams, D-Hotel, was working on an innovative interior design for a hotel. The team had to go beyond conventional aesthetics of hotels and create a hospitality environment that was a blend between artistic sophistication and modern sensibilities. The second DesignCo team, D-Retail, was tasked with a meticulous interior design for a retail store. The team had to create an artistic retail environment meant to enhance customer experience and augment the aesthetics of the merchandise at display. In both projects team members worked on the design of multiple interior spaces simultaneously, making coordination across various project components and among team members critical and challenging. Average team size was six, with a range of four to

eight members. Average project duration was two years. Both D-Hotel and D-Retail had been working on their projects for a little over twelve months when data collection began.

Data Collection. I conducted 32 semi-structured interviews, 12 with team members and six with observers at AdvertisingCo and 10 with team members and four with observers at DesignCo. Interviews lasted from 45 to 90 minutes. On average, I interviewed 85 percent of the members per team. Team members who were not interviewed had left the organization before an interview could be scheduled. For each team, I interviewed two observers. Observers were members of senior management in their respective organization. A team observer participated in meetings when a team presented its work to its client. They were generally aware of a client's assessment of the team's work. They were not involved with teams on a daily basis. Thus, they provided an outside perspective on teams and commented on a given team's work without significant bias to the nature of its internal dynamics.

Due to the nascent state of research on accountability dynamics within teams, the interviews were an open-ended inquiry (Edmondson & McManus, 2007) on team mutual accountability – the focal phenomenon of this research. I asked interviewees to describe team goals, work approach and processes, members' roles and responsibilities, the quality and timeliness of team progress to date, and methods used to review team progress. I was attentive to examples of team mutual accountability, such as members seeking and providing evaluations of team progress amongst themselves, proactively reviewing and assessing the quality and timeliness of one another's ongoing work, validating that team members get their individual part of the team's work done, and questioning whether an

intermediate deliverable meets project specifications (for example, budgetary and/or schedule constraints).

When interviewees recounted episodes of holding one another accountable for team progress, I noted details on who was involved; who took account of the work of whom, when and how; and how the team member(s) in question accounted for their work. I noted what happened to the work in question and to team dynamics subsequent to the encounter. When interviewees were finished with their recount, I followed up with questions if the aforementioned details were missing.

When interviewees described issues with the team's ongoing work, including ones that burgeoned to large performance failures, I noted the nature of the initial issue, for example, whether it pertained to the work's timeliness or quality. I asked interviewees when the issue occurred, how it developed, and how it came to the attention of team members (and if applicable of observers and clients). I asked how it was addressed, by whom, and what happened to the work in question and team dynamics subsequently.

When behaviors on a team were described, for example, team members show lack of concern for one another's progress on the team's task or team members actively review one another's progress, I asked contrast questions (Spradley, 1979), such as "do others on the team demonstrate this behavior?" Answers given to these questions helped me understand whether a given report represented a single instance or a natural way of working together on a team.

When interviewees compared a project under discussion with other projects they had been involved with in their respective organizations, I tried to learn more about the referenced project to understand its comparability to the project under discussion. I asked

interviewees to provide details on the referenced project. For example, I asked them to describe team goals, work approach, members' roles and responsibilities, the quality and timeliness of team progress to date, and the methods used to review team progress on the referenced project. When the referenced projects were post completion, I asked about the quality and timeliness of the final team outcome.

Data Analyses. I conducted data collection and analyses in parallel. With the permission of interviewees, I tape-recorded and took notes during interviews. Within 24 hours after an interview, I wrote down a two to four page summary, elaborating my field notes and recording details (Emerson, Fretz, & Shaw, 1995). For example, I noted an interviewee's offer to share follow-up details on particular team events recounted during the interview or recommendation to interview an observer who could provide an outsider's perspective on the team's work. Interviews were transcribed. For three out of a total of 32 interviews, there were a few instances during the tape recordings when the noise level made transcription difficult. In these instances, I relied on my field notes to decipher as best as possible the issues under discussion. Project archives and meeting documents provided by team members, with the consent of their respective organization, were appended to the data documents for a given team. Project, client, or individual identifiers were removed from the data and replaced with generic identifiers to respect and protect the confidentiality of the study participants.

I analyzed the data in multiple rounds to achieve the objectives of this qualitative study, which were as follows: first, assess whether team mutual accountability is a group-level construct that varied across teams. Second, verify that the behaviors associated with the theoretical construct of team mutual accountability were discernable in practice so

that the construct can be operationalized in organizations. And third, develop survey items for measuring team mutual accountability for phase two, in which I collected quantitative data by administering surveys to a large number of respondents to test the team mutual accountability model.

To achieve these objectives I coded data in three rounds. First, I read each summary of field notes and transcript marking up portions of the data with broad categories, such as team task, team beliefs, team behaviors, and interim team outcomes (for example, the quality or timeliness of team progress). This helped me generate a one page memorandum summarizing the themes of an interview under each broad category and identifying any follow-up questions for an interviewee. The memorandums served as a snapshot of a team from the perspective of one of its members or observers.

Second, I re-read each summary of field notes and transcript highlighting positive and negative reports of team mutual accountability. A positive report entailed team members reviewing the quality and timeliness of one another's progress on the team's task and approving of conducting such intra-team progress evaluations. For example, the following were coded as positive reports of team mutual accountability:

> We don't wait around for others to review our work. As a team that is our responsibility.
>
> [Two team members] are the brand keepers and I get that so it was totally cool that they held me responsible for specs that work with the brand…I fixed it right away.
>
> [A team member] checked in on Tuesday asking if everything is set for Thursday. I told her I am going to run late…We talked. She said, if you get me 80 percent, we'll be okay…We checked ahead of our deadline if we were still on time and were able to work around the unexpected stuff added to my plate last week.

A negative report of team mutual accountability involved an absence of reciprocally authorized progress appraisals among team members. To illustrate, the following were coded as negative reports of team mutual accountability:

> [Team members] don't realize that someone [with my expertise] can push them to a better solution… I should be allowed to raise a red flag when we are steering off course.
>
> There are warning signs. Trouble is we aren't aligned enough to do anything about them.
>
> Issues are coming up and it isn't clear who exactly is accountable.

A research assistant – blind to the purpose of this study – coded a random selection of 15 interviews. This was meant to serve as a check on my coding structure (Yin, 2003). There was minimal disagreement on the codes.

After coding reports of team mutual accountability as positive or negative, I tried to establish the validity of team mutual accountability as a group-level construct and whether it characterized the team or individual team members. To do so, I clustered summary field notes and interview transcripts by teams and assessed whether members of a team converge on their (positive or negative) reports of team mutual accountability, and if so, whether the collective reports of team mutual accountability vary across teams.

Third, I developed items that could be used to measure team mutual accountability in survey research. I used a modified empathic strategy (Alderfer & Brown, 1972) to develop survey items in a language that would be meaningful to members of teams in real work settings. To do so, I combed through the data to collect words and phrases used by team members to narrate team behaviors during episodes of team mutual accountability. For example, "we proactively review our progress" and "we

hold each other accountable to high standards of performance" were marked as phrases that could be used in survey items for measuring team mutual accountability. Through an iterative process of moving back and forth between data and tentative items, I gradually developed a set of items to measure the theoretical construct of team mutual accountability in the second phase of this research.

Results

Examples of positive and negative reports of team mutual accountability in the data converged among members of a team, but not across teams, suggesting three preliminary conclusions. First, team mutual accountability is a group-level construct that characterizes the team rather than its individual members. Second, team mutual accountability varies across teams. Third, teams within each organization varied in their level of team mutual accountability, suggesting that the findings are not merely an attribute of a single organization. Of the three teams from AdvertisingCo, one demonstrated a high (A-Reg1), and two a low (A-Nat and A-Reg2), level of team mutual accountability. Of the two teams from DesignCo, one team demonstrated a high (D-Retail), and the other a low (D-Hotel), level of team mutual accountability. In contrast to members of A-Nat, A-Reg2, and D-Hotel, members of A-Reg1 and D-Retail seemed to reciprocally authorize one another to evaluate their progress on the team's task.

Team members seem to provide consistent reports of the levels of mutual accountability on their teams. To illustrate, a member of AdvertisingCo's A-Reg1 narrated a personal episode of mutual accountability among three team members. It involved one team member appraising the progress of two fellow teammates at an impromptu meeting. He inquired whether they were "on track" to produce the visuals for

a segment of the proposed concept in time for the client presentation the following week. The two team members who were questioned said, “We should be fine,” and, as a precaution, added that they would do a full status check and reaffirm their positive progress assessment by the end of the day. However, by the end of the day, they realized their “list of to-dos” was longer than what they had estimated earlier. They reluctantly concluded that it is unlikely they would meet their deadline without “additional helping hands” or “some finessing” of the scope of the deliverable to exclude details that are “nice to have” but not essential to the “integrity of the concept.”

To finesse the scope of their deliverable, the three team members consulted the concept designer to highlight the essentials for the client presentation. In addition, three days prior to the deadline, the team recruited help from a member of another team who had just become temporarily available. With this joint strategy of getting outside help and fine-tuning the scope of the deliverable, A-Reg1 met their deadline. In a separate interview, the team observer reported that the client presentation was a success and “compelling, with just enough detail”. The narrator of this specific episode concluded with a succinct testimonial of the team’s high level of mutual accountability as follows, “We keep [ourselves] on time, on target, and focused.”

In a similar vein, another member of A-Reg1 corroborated the team’s high level of mutual accountability. She alluded to the reciprocal authorization experienced while evaluating team progress and holding teammates to high standards of performance as follows: “On [this team] I can say this isn’t cutting it.” This comment was in reference to her evaluating team progress against team goals and finding it lagging. She shared her appraisal in a “spur-of-the-moment meeting” with fellow teammates and proposed to

push forward the existing campaign concept by integrating the client's new brand direction with their traditional values. Team members reflected on her assessment and proposition to enhance the concept. They not only took it into consideration, but, as she further explained, "welcomed it."

AdvertisingCo's A-Reg2, like A-Reg1, was working on a regional advertising campaign, but in contrast to positive reports of mutual accountability in A-Reg1, a member of A-Reg2 mentioned, unprompted, that the members of this team did not actively evaluate one another's work. He commented, "Expectations were never openly discussed on [this team]…we review last minute and when problems surface everyone gets disappointed."

Another team member's description also hinted at the absence of mutual accountability on A-Reg2 by describing what a team observer referred to as a "blunder" in a recent presentation to a client, "Someone should have checked on this and weeded it out…it made a bad impression on [the client]." The mistake involved the use of a template in depicting the proposed concept for the campaign. The template, however, ran counter to the symbols currently used by the client to depict their brand values. A team member on A-Reg2 explained the lack of approval among team members to appraise the team's progress as an inhibitor to "early check-ins" or proactive progress reviews:

> Normally I prefer to do early check-ins, just casually going around and asking if we are all set…When I did this [on this team] it wasn't appreciated…It makes me nervous because I get very little time to check things and make sure everything is in place for the client.

These descriptions capture the negative reports of mutual accountability from members of A-Reg2. In similar vein, a member of A-Nat explained, "I can't say, hey

don't you think this is a tangent to the core of our proposal?" and another member on A-Nat remarked, "Accountability is a challenge for us…You get this look that says, hey quit poking holes in my bubble." The negative reports of mutual accountability from A-Nat and A-Reg2 contrast with the positive reports from members of A-Reg1. This suggests that within the same organization there are discernable differences in the level of mutual accountability across teams.

Data from DesignCo teams provided further support for the conclusions that members provide consistent assessments of the level of mutual accountability on their teams and within the same organization mutual accountability varies across teams. Consider the following two reports from D-Hotel about problems with accountability among team members, "Our mistake is we never sat down to flesh out the big idea and our contributions in making it happen. We jumped into the details right away and now issues are coming up and it isn't clear who exactly is accountable." Echoing this description, another team member on D-Hotel recalled an attempt at appraising team progress and asking a fellow teammate whether they had over-defined the scope of a deliverable, "I did ask for an explanation. Sadly, it was less of a conversation and felt more like a confrontation."

Table 2 presents selected excerpts from the qualitative data, organized by team, to depict the agreement among team members with regard to the presence or absence of mutual accountability on their team and the variance in mutual accountability across teams. Table 2 also presents the use of positive and negative reports of mutual accountability as the basis for the development of items to measure the construct of team mutual accountability in survey research.

Table 2. Selected Qualitative Data from Phase One

Variance in Mutual Accountability Across Teams and Development of Construct Items		
Construct Item	Positive Form	Negative Form
This team proactively reviews its own progress and performance	"[This team] is very active in reviewing progress." D-Retail "We don't wait around for others to review our work. As a team that is our responsibility." D-Retail "[A team member] brought it up saying it was not going to work within budget. …The team internally worked on ways to bring the cost to a reasonable level. It worked out though it required checking our tracks early on." A-Reg1 "We keep [ourselves] on time, on target, and focused." A-Reg1	"This [failure] was waiting to happen." D-Hotel "Expectations were never openly discussed on [this team]. On top we review last minute and when problems surface everyone gets disappointed." A-Reg2 "I feel we are always extinguishing big fires. We need to stop them before they become bigger than us." A-Nat "[This team] needs more forward thinking. Right now they are in damage control." A-Nat "There are warning signs. Trouble is we are not aligned enough to do anything about them." A-Nat
Team members hold one another to high standards of performance	"On [this team] I can say this isn't cutting it." A-Reg1	"[Team members] let problems slip by." A-Nat

Table 2. (Continued) Selected Qualitative Data from Phase One

Variance in Mutual Accountability Across Teams and Development of Construct Items		
Construct Item	Positive Form	Negative Form
(Continued) Team members hold one another to high standards of performance	"[Team members] raise the bar for everyone on the team." A-Reg1 "We ask everyone to keep up." D-Retail "[We] hold ourselves to a high standard from day 1." D-Retail	"I am a little bit limited on [this team]. My role is not clear to everyone and they don't realize that someone [with my expertise] can push them to a better solution…I should be allowed to raise a red flag when we are steering off course." A-Reg2
Team members consider it appropriate to hold one another accountable for their performance – coded as a positive form of team mutual accountability Team members consider it intrusive to hold one another accountable for their performance – coded as a negative form of team mutual accountability	"We were inching real close to our planned start of production. I called [the art directors] and pressed them for [the concept]. I said, listen I can't do justice to our ambitions, your ideas, if I don't have enough time to make it happen. They seemed too wrapped in their work and needed to step back…They had something for me by the end of day and at least I could get started." A-Reg1 An art director on A-Reg1 recalled the above episode in a separate interview: "We got push back on that from production. That was good. It kept us alert on our responsibilities, our commitments, deadlines." A-Reg1	"I did ask for an explanation. Sadly, it was less of a conversation and felt more like a confrontation." D-Hotel "Accountability is a challenge for us…You get this look that says hey quit poking holes in my bubble." A-Nat "I can't say hey don't you think this is a tangent to the core of our proposal?" A-Nat "On [this team] protect your idea otherwise people start talking about budget and money and you don't want to get trapped in all that." A-Reg2

Table 2. (Continued) Selected Qualitative Data from Phase One

Variance in Mutual Accountability Across Teams and Development of Construct Items		
Construct Item	Positive Form	Negative Form
(Continued) Team members consider it appropriate to hold one another accountable for their performance – coded as a positive form of team mutual accountability Team members consider it intrusive to hold one another accountable for their performance – coded as a negative form of team mutual accountability	"I was running late. We had agreed on this [deadline]. I wasn't surprised when [the producer] called me. I explained what was happening… [The producer] understood and actually even pitched in to help. We got it done." A-Reg1 "[Two team members] are the brand keepers and I get that so it was totally cool that they held me responsible for specs that work with [the brand]... I fixed it right away." A-Reg1 "We don't shy away from keeping each other honest." D-Retail	"[Team members] prefer if we all mind our own business." A-Reg2 "Normally I prefer to do early check-ins, just casually going around and asking if we are all set…When I did this [on this team] it wasn't appreciated…It makes me nervous because I get very little time to check things and make sure everything is in place for the client." A-Reg2
Team members hold one another accountable for getting their individual part of the team's work done	"We break everything down into deliverables…You can ask for help…but you're responsible for that piece of work." D-Retail	"Our mistake is we never sat down to flesh out the big idea and our contributions in making it happen. We jumped into the details right away and now issues are coming up and it isn't clear who exactly is accountable." D-Hotel

Table 2. (Continued) Selected Qualitative Data from Phase One

Variance in Mutual Accountability Across Teams and Development of Construct Items		
Construct Item	Positive Form	Negative Form
(Continued) Team members hold one another accountable for getting their individual part of the team's work done	"The milestones here [interviewee points to a team-wide work chart] tell you how everything is connected, if we miss a deadline, how late we'll be…how quickly we should fix a delay, who to talk to if you are running late…This gives us a pulse on where we are." D-Retail "We have been forthright in our steps, our roles, and expectations…Gives us clarity on which step we missed when we fall short, who is responsible, how to work it out." A-Reg1 "[A team member] made this mistake. We called him…He took responsibility…He figured out how to fix it…That's how [this team] works. That's why the work is star quality." A-Reg1	"The roles of traditional and interactive sides are not accurately understood…On [a project from last year] we got the roles clear and it was the best use of our talents because we called on each other in line with our value-add on the project." A-Nat "[On this project] I couldn't tell you our specific deliverables …Like on [another project team] we are pretty clear on what we need to get done for others. Like a week was crazy and [a team member] checked in on Tuesday asking if everything is set for Thursday. I told her I am going to run late…We talked. She said, if you get me 80 percent, we'll be okay…We checked ahead of our deadline if we were still on time and were able to work around the unexpected stuff added to my plate last week. It is not like that on [this team]." A-Nat

The distinct levels of mutual accountability reported per team in Table 2 cannot be attributed to team member's unique style of working because team members referenced their experiences on other teams where the level of mutual accountability was different from the one on their current team. For example, a member of the D-Retail team noted, "[This team] is unlike any other. We set out with a sound understanding of our goals and roles, our schedule…we put in the hours and we don't shy away from keeping each other honest." Conversely, a member of A-Nat reported, "I am a little bit limited on [this team]. My role is not clear to everyone."

Preliminary Support for the Team Mutual Accountability Model

Effects of Team Mutual Accountability on Team Performance. The qualitative data suggested that team mutual accountability may be positively associated with team performance. Team performance was assessed based on the quality and timeliness of a team's ongoing work. According to the observers, A-Reg1 and D-Retail were making satisfactory advancement towards the team's task with one observer describing A-Reg1 as "performing quite well." An observer of D-Retail described the team's work as "superb" and another observer echoed a similar appraisal calling the team's ongoing work "exceptional." A-Nat, A-Reg2, and D-Hotel were exhibiting issues with their progress, such as missed deadlines and quality problems. To illustrate, an observer of D-Hotel noted, "They are not quite there"; an observer of A-Reg2 remarked, "There are some quality issues that they definitely need to take care of"; and an observer of A-Nat commented, "They are missing the mark."

Effects of Team Mutual Accountability and Performance Pressure on Team Performance. Qualitative data also show support for the prediction that internally

espoused activities associated with team mutual accountability contribute to team performance in a way that externally enforced accountability on a team or performance pressure does not. Performance pressure does not seem to guarantee that team members will have tangible strategies for making and appraising progress on team goals. Team members alluded to the distinction between understanding the gravity of their work, which is what performance pressure attempts to impart, and having what one team member termed a "game plan" for accomplishing and holding one another accountable for progress on the team's task, which is what team mutual accountability involves. A member of AdvertisingCo's team, A-Reg2, elucidated the distinction thus. "Of course this is an important project.… That didn't mean on Monday we had a game plan…that end of month we were still keeping our game on."

Data suggest that team mutual accountability, being rooted in day-to-day progress evaluations rendered by team members, is likely to be more effective than evaluations that originate with superiors or clients. A considerable amount of team members' time is consumed in bringing outsiders, who are often not abreast of team activities, up to speed. Team members, explained a member of DesignCo's team, D-Retail, knowing their teams' inner workings more intimately than outsiders, can quickly come together over problems surfaced by their ongoing evaluations. Another member of D-Retail ascribed to performance pressure the problem of distance from team realities. "[Superiors], [clients] don't know all that's on our plate, and we get pressured to deliver something that's unrealistic for the team," he explained. "For us [team members] it's different. Everyone's schedule is in front of us…We are able to make realistic demands of others."

Furthermore, external evaluations may be at odds with what is feasible for the team process or beneficial to the work outcome. Consider the following illustration from the data reported by a member of AdvertisingCo's team, A-Nat. "[A senior member of the organization] got a call from [the client] and came to [the team] saying [the concept] will not work, change this, change that, all sorts of solutions. That's not what we need as a team. Don't give us the solution. Tell us the problem." When attempts to understand the problem with the proposed concept proved futile, the team acquiesced to outside pressure and implemented the requested changes. Eventually, the client rejected the concept on the grounds that the requested changes did not appear to resolve the root problem.

Team Beliefs as Antecedents of Team Mutual Accountability. Qualitative data suggest that goal and process clarity promotes team mutual accountability. Goal and process clarity seem to provide team members with shared criteria to actively track and assess progress. Goal and process clarity also appear to help team members coalesce around team goals and process such that they reciprocally authorize progress appraisals amongst themselves. Consider the following comment by a member of DesignCo's team, D-Retail, that reportedly had high levels of mutual accountability: "The milestones here [interviewee points to a team-wide work chart] tell you how everything is connected, if we miss a deadline, how late we'll be…how quickly we should fix a delay, who to talk to if you are running late…This gives us a pulse on where we are." The foregoing comment includes a recurrent use of the word 'we' in detecting issues with progress suggesting that the team has coalesced to some extent with regard to engaging in progress appraisals among themselves. It also includes a theme of how the work is connected – consider the use of the phrase "everything is connected." This suggests that team members have some

understanding of their interdependence, which may arguably compel them to evaluate one another's progress and feel reciprocally authorized in doing so. And finally, the comment mentions a team-wide mechanism to maintain a "pulse" on the team's work, which is likely to facilitate intra-team progress appraisals and mitigate hesitation to raise alerts when a team member senses they are potentially off-track. In a similar vein, a team member from AdvertisingCo's team, A-Reg1, explained, "We have been forthright in our steps, our roles, and expectations…Gives us clarity on which step we missed when we fall short, who is responsible, how to work it out."

In contrast, members of teams with low levels of mutual accountability (A-Nat, A-Reg2, and D-Hotel) reported inadequacies in their shared understanding of team goals, plan of action, and one another's roles and responsibilities. For example, a member of AdvertisingCo's team, A-Nat, struggled to explain team goals: "[On this project] I couldn't tell you our specific deliverables …Like on [another project team] we are pretty clear on what we need to get done." Another member of A-Nat struggled to explain the members' roles and responsibilities, "The roles of traditional and interactive sides are not accurately understood…On [a project from last year] we got the roles clear and it was the best use of our talents because we called on each other in line with our value-add on the project." Similarly, a member of AdvertisingCo's team, A-Reg2 noted, "Expectations were never openly discussed on [this team]." And, a member of DesignCo's team, D-Hotel, commented, "We never sat down to flesh out the big idea and our contributions in making it happen." These qualitative data hint at how critical goal and process clarity may be for facilitating mutual accountability in teams.

Summary of Findings

The qualitative data helped accomplish the three objectives of the first phase of this research – assess whether team mutual accountability is a group-level construct that varied across teams, verify that the activities associated with the theoretical construct of team mutual accountability were discernable in practice to allow the construct to be operationalized in organizations, and develop survey items for measuring team mutual accountability for the second phase.

The qualitative data suggest that mutual accountability among team members was a meaningful and discernable attribute of a team for the interviewees. Interviewees frequently offered unprompted descriptions of the presence or absence of team mutual accountability to capture their experience on a team. Team members seemed to converge in their reports of the presence or absence of mutual accountability on their teams. This provides preliminary credence to the proposition that team mutual accountability is a group-level construct, characterizing the team rather than its individual members. The collective reports of mutual accountability from members of a team seemed to vary across teams. This offers preliminary support for considering teams as a viable unit for analyzing mutual accountability in organizations.

The qualitative data also clarify the elements that constitute the construct of team mutual accountability and verify that team mutual accountability can be operationalized in organizations. Several features of the construct of team mutual accountability that were derived from theory, such as proactive progress reviews and mutual approval of progress appraisals, emerged as salient for team members. The data analyses helped identify a set of related behaviors on a team as suggestive of the presence or absence of

team mutual accountability. These behaviors became the basis of survey items for measuring team mutual accountability in phase two, survey research, described in detail in the next chapter.

CHAPTER 4. PHASE TWO: SURVEY RESEARCH

In phase two, I collected and analyzed quantitative data by means of surveys administered to members of 48 teams in five organizations to answer the research questions articulated in Chapter 1: Is team mutual accountability a group-level construct, and does it vary across teams; what is the relationship between team mutual accountability and team performance; and what enables team mutual accountability?

Quantitative data from this phase are analyzed to test all the hypotheses developed in Chapter 2 and in the team mutual accountability model. Specifically, I tested the predictions that team mutual accountability is positively associated with team performance (hypothesis 1); and team mutual accountability is positively associated with team performance, controlling for the effects of performance pressure (hypothesis 2). I investigated the role of shared beliefs among team members and team structures in enabling team mutual accountability. Specifically, I examined whether shared beliefs among team members regarding team goals, process, and interpersonal climate promote team mutual accountability by testing whether team mutual accountability partially mediates the effects of goal and process clarity and team psychological safety on team performance (hypotheses 3 and 4). I also examined the features of team structure – such as a supportive context– that may promote shared beliefs on a team by testing whether goal and process clarity, together with team psychological safety, partially mediate the effects of a supportive team context on team mutual accountability (hypotheses 5 and 6).

Research Sites

I surveyed teams in five organizations referred to below by pseudonyms. Two of the organizations were from the first phase: AdvertisingCo, an advertising agency, and DesignCo, an interior and furniture design firm. The other three organizations included ConstructionCo, a construction management company; EngineeringCo, a professional services firm; and SoftwareCo, a software development corporation. As in the first phase of this research, organizations participated in exchange for feedback on their teams. Only project and product development teams, being the teams the participating organizations wanted to further understand, were included in the research. The participating teams were feasible subjects because they were time-limited and their members were interdependent for accomplishing team goals.

At the time of this research, ConstructionCo's approximately 250 employees offered construction management services to a North American client base that included notable academic and cultural institutions, industrial and commercial buildings, and landmark construction projects in the healthcare, retail, and entertainment sectors. Teams at ConstructionCo were composed of engineers, designers, cost analysts, project coordinators, site superintendents, and client representatives. In the construction industry, the company was known for its lean approach to operations, focus on minimizing waste, and capability to balance across multiple project constraints to achieve optimal results for clients. ConstructionCo had earned professional and project awards for excellence in technical complexity, design, management, and safety.

EngineeringCo provided a range of professional services, including project management, engineering consultancy, and design planning for building and

infrastructure projects worldwide. The firm employed about 1,500 people. Teams at EngineeringCo were multidisciplinary and, depending on the needs of the project, included engineers, economists, strategists, urban planners, and infrastructure experts. Over the decades, EngineeringCo had garnered a reputation for coming up with innovative, aesthetically appealing, and sustainable solutions for its clients. EngineeringCo's portfolio included a wide range of projects with services rendered for the design, building, or maintenance of airports, sports and concert venues, museums, visitor centers, theatre complexes, hotels, power stations, urban spaces, and transportation structures (such as, bridges and railway systems).

SoftwareCo, with about 7,000 employees, developed software for the architecture, construction, design, engineering, manufacturing, and entertainment industries around the world. Team members facilitated unique facets of the software development process, including management, design, implementation, and testing. SoftwareCo was renowned for its virtual-modeling software products that allowed clients in various industries to engage in real-world performance simulations. Its software products for visual effects in game development and in Academy Award winning films had made SoftwareCo highly reputed in the entertainment industry.

Method

At each organization, my initial contacts were members of senior management who introduced me to my primary contact, the person in-charge of maintaining the organizational roster of active projects and teams. My primary contacts facilitated data collection by recruiting teams, in which members were available for voluntary participation in survey research for understanding work dynamics at their organization.

Their recruiting efforts yielded an aggregate list of 48 teams in five organizations. Teams recruited were time-limited, and their members were interdependent for accomplishing team goals, making the five organizations good sites for exploring team mutual accountability and its enablers.

I made contact with members of all 48 teams through electronic mail, in which I introduced the purpose of the study as understanding work dynamics in organizations, explained participant rights and confidentiality terms of the study, and requested their voluntary participation in a survey.

Sample. Forty-five teams participated in this phase. Forty-one were project teams and four were product development teams. Average team size was six. The range of team size was two to 15 members. Tasks varied across teams. Selected examples of team tasks include designing hotel interiors; designing retail spaces; developing advertising campaigns; developing software for users in the manufacturing industry; creating and integrating new functions in an existing software product for users in the construction industry; constructing a medical space; constructing a science research facility; developing a master plan for an urban space; reengineering a sports venue; and providing engineering services for infrastructure projects, such as bridge structures and water delivery systems. Further details on the participating teams are provided in Appendix A.

I electronically administered a survey prepared for this research to all members of the resulting sample. Three teams were excluded from the sample because fewer than half of their members returned the survey. The final sample consisted of 45 teams with 246 team members, 220 of whom completed the survey. The average response rate at the team level was 86 percent.

My primary contacts at the respective organizations identified observers for each team. The 99 observers generally declined to comment on team dynamics, reporting insufficient knowledge. They completed a short, electronically administered survey, with items on team performance. The 87 observers who completed the survey represented an average response rate of 87 percent per team. Data from team observers and team members served as two independent sources of data on team performance. Hypotheses involving team performance were tested with data from these two sources to assess the consistency of results.

Adequacy of Measures

The survey contained items measuring all of the constructs referenced in the hypotheses. The survey also measured control variables, such as project complexity. With the exception of the survey scale for measuring the new construct of team mutual accountability, all survey scales were adapted from prior studies on teams.

Respondents used a seven point Likert scale to rate the degree to which each item in the survey described their team. Items were administered in random order and included a mix of positively and negatively worded items to reduce response-set bias. Appendix B presents all items for each survey scale.

Dependent variables. I adapted Wageman, Hackman, and Lehman's (2005) survey scale on team performance to measure the extent to which a team satisfies client (or customer) expectations, delivers high quality work, and meets deadlines. Sample items include: "This team does superb work"; "This team runs behind schedule (reverse

scored)"; "This team meets or exceeds client expectations"; and "Critical quality errors occur frequently in this team's work (reverse scored)."

Team members and observers responded to the same scale. Factor analysis (principal component, varimax rotation), using a cut-off criterion of .40 for factor loadings and eigenvalues of 1.0 or above, of the individual-level survey data resulted in a single factor for self-reported as well as observer-reported team performance. Cronbach's alpha was .72 for both self-reported and observer-reported team performance and close to the benchmark of .70, suggesting the appropriateness of averaging the team performance items for a single scale.

Independent variables. I developed a survey scale to measure team mutual accountability using the qualitative data obtained in the first phase. The items in the survey scale for team mutual accountability assessed several features of the theoretical construct. Sample items include: "This team proactively reviews its own progress and performance" and "Team members consider it intrusive to hold one another accountable for their performance (reverse scored)." Factor analysis resulted in a single factor. Cronbach's alpha was .73.

I adapted Gardner's (2012) survey scale on performance pressure. Sample items include: "This project has a lot of visibility with senior members of our organization"; "Future projects with this client depend on client's satisfaction with this project"; and "The team is under a lot of pressure to perform well." Factor analysis resulted in a single factor. Cronbach's alpha was .75.

Antecedent variables. I adapted Sawyer's (1992) survey scale on goal and process clarity to measure the extent to which team members had a shared understanding of team

goals, plan of action, and one another's roles and responsibilities. Sample items include: "We all agree to a plan of action with intermediate deliverables for achieving project goals" and "The role of each team member is clear to everyone." Factor analysis resulted in a single factor. Cronbach's alpha was .84. I adapted Edmondson's (1999) survey scale on team psychological safety, with items, such as "It is safe to take a risk on this team." Factor analysis resulted in a single factor. Cronbach's alpha was .72.

I used the Wageman, Hackman, and Lehman (2005) survey scale on supportive context for teams. Sample items include: "Team members are kept in the dark about information that could affect their work and schedule (reverse scored)"; "Scarcity of resources is a real problem for this team (reverse scored)"; "When something comes up that team members do not know how to handle, it is easy to obtain the help, training or advice needed"; "This organization recognizes and reinforces teams that perform well." Factor analysis resulted in a single factor. Cronbach's alpha was .70.

Control variables. Team size, project duration, and project complexity were used as control variables in testing hypotheses. The extent of support teams receive may vary with team size, project complexity and duration. For example, a 15-person team working on a complex six-month project may receive greater levels of support from its organizational context in terms of rewards and recognition, resources, information, and coaching than a two-person team working on a routine two-week project.

To measure project complexity, in line with prior research on teams (e.g., Gardner, 2012), team members were asked to compare the complexity of their focal project (or product) with others they had been involved in. Factor analysis yielded a single factor. Cronbach's alpha was .69.

I also controlled for organization-specific factors using fixed-effects models at the level of the organization. In multi-organization studies, correlations among observations within organizations and correlations between unobserved organization-specific factors and the variables in this study could lead to inconsistent and biased regression estimates respectively, and, in turn, incorrect inferences.

To check for common-method bias, I conducted factor analysis (principal components, varimax rotation) using all survey items. Using a cut-off criterion of .40 for factor loadings and eigenvalues of 1.0 or above, 9 factors emerged, accounting for 62 percent of the total variance observed. As multiple factors emerged and no one factor accounted for majority of the total variance observed (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff & Organ, 1986), the survey did not carry excessive common-method bias based on Harman's single factor test. Results of additional analyses that establish discriminant validity of variables are presented in Appendix C.

Creating a Group-level Data Set

Prior research had established constructs in this study – for example, team psychological safety (Edmondson, 1999), goal and process clarity (Hu & Liden, 2011), performance pressure, project complexity (Gardner, 2012), supportive context, and team performance (Wageman, Hackman, & Lehman, 2005) – as conceptually meaningful at the group-level. This meets the first criterion for creating a group-level data set (N = 45) by aggregating group means for group-level variables (Kenny & La Voie, 1985). The new construct of team mutual accountability was conceptualized at the group-level, a conceptualization supported in the first phase of this study; accordingly, the survey scale

items of this construct asked participants to respond with the team, or all team members, in mind.

I further assessed the appropriateness of creating a group-level data set by checking for significant within-team agreement and between-team differences among respondents (Chan, 1998; Kozlowski & Klein, 2000). Table 3, which reports the results for all variables in the study, establishes the appropriateness of an aggregation strategy. The measure of inter-member agreement, rwg(j) (Bliese, 2000; James, Demaree, & Wolf, 1984), for example, indicated that members shared assessments of team mutual accountability: mean rwg(j) was .88 and median rwg(j) .91. The median and average rwg(j) is greater than or equal to .70 (Chen, Mathieu, & Bliese, 2004; Klein et al., 2000) for team mutual accountability as well as the rest of the variables in the study (Table 3), which suggests strong support for aggregating individual ratings at the group-level.

Intraclass correlation coefficient (ICC) was calculated for each variable in the model. Results are reported in Table 3. ICC compares between- and within-unit variance. It is an indicator of the percent of variance in responses explained by group membership. To illustrate, an ICC of .07 means that 7 percent of the variability in an individual's ratings is explained by group membership. In field research ICC values above .05 are typically taken as support for an aggregation strategy (Bartko, 1976; Bliese, 2000). ICC for the new construct of team mutual accountability provided evidence of adequate inter-member reliability: ICC = .16, $F_{(44, 220)} = 1.88$, $p < .01$. ICC values for all variables in the study were high enough to support aggregating individual ratings at the group-level (Table 3).

Table 3. Analyses of Variance, Intraclass Correlation Coefficients (ICCs), and Inter-member Agreement Index (rwg(j)) for Group-level Survey Variables

Variable	$F_{(44, 220)}$	p	ICC	$\bar{r}$wg(j)	Median rwg(j)
Supportive context	1.69	<.01	.13	.81	.82
Project complexity	3.07	<.01	.30	.70	.79
Performance pressure	3.48	<.01	.34	.77	.88
Goal and process clarity	1.53	<.05	.10	.86	.92
Team psychological safety	1.85	<.01	.15	.87	.91
Team mutual accountability	1.88	<.01	.16	.88	.91
Team performance (self-reported)	1.85	<.01	.18	.86	.90
	$F_{(44, 87)}$	p	ICC	$\bar{r}$wg(j)	Median rwg(j)
Team performance (observer-reported)	2.04	<.05	.35	.92	.96

Table 4 presents descriptive statistics and correlations for all variables at the group level of analysis (N = 45). The Variance Inflation Factors (VIFs) and tolerance values were analyzed to test for potential multicollinearity, where one independent variable can be linearly predicted from the others because they are highly correlated. The results showed multicollinearity was not a significant problem. The highest VIF was 2.14, below the threshold of 10.0, and the lowest tolerance value was .47, above the benchmark value of .10 (Hair et al., 1995; Mason, Gunst, & Hess, 1989; O'Brien, 2007).

Table 4. Descriptive Statistics for Group-level Scales

Variable	Mean	S.D.	1	2	3	4	5
1. Supportive context	4.63	.62	**.70**				
2. Performance pressure	4.89	.89	.31	**.75**			
3. Project complexity	4.62	.86	(.25)	.69	**.69**		
4. Team size	5.47	2.87	(.21)	(.21)	(.07)	*	
5. Project duration (months)	13.19	12.92	(.02)	.40	.35	.34	*
6. Goal and process clarity	5.31	.52	.67	(.14)	(.07)	(.11)	(-.20)
7. Team psychological safety	5.41	.53	.35	(.24)	(.23)	(-.24)	(-.12)
8. Team mutual accountability	5.39	.61	.67	.30	(.29)	.33	(.14)
9. Team performance (self-reported)	5.21	.63	.46	.31	.45	(.26)	(.12)
10. Team performance (observer-reported)	5.11	.71	.49	.42	.37	.41	(.13)

Variable	Mean	S.D.	6	7	8	9	10
6. Goal and process clarity	5.31	.52	**.84**				
7. Team psychological safety	5.41	.53	.55	**.72**			
8. Team mutual accountability	5.39	.61	.63	.43	**.73**		
9. Team performance (self-reported)	5.21	.63	.54	.52	.70	**.72**	
10. Team performance (observer-reported)	5.11	.71	.49	.44	.52	.55	**.72**

Cronbach's alpha coefficients are presented on the diagonal.
All correlations are significant at $p < .05$, with the exception of the ones in parentheses.
* denotes that the variable was measured with only one survey item.

Results

I used ordinary least squares regression to test the hypotheses relating team mutual accountability to team performance. I used self-reported team performance as the dependent variable and then repeated the analyses using observer-reported team performance as the dependent variable. As shown in Tables 5 and 6, there is consistency across results of regression analyses conducted with data on team performance from the two different sources, team members and observers.

Regression models using self-reported team performance data are presented in Table 5. Hypothesis 1, which predicted team mutual accountability to be positively associated with team performance, was supported (model 3). Hypothesis 2, which predicted team mutual accountability to be positively associated with team performance when controlling for performance pressure, was supported (model 4). These results were robust to the inclusion of fixed-effects at the level of the organization.

Table 5. Regression Models of Self-Reported Team Performance (N = 45)

Variable	Model 1	Model 2	Model 3	Model 4
Team mutual accountability		.70***	.60***	.61***
Performance pressure				-.13
Project duration	-.14		-.10	-.08
Team size	.27		.07	.08
Project complexity	.48**		.31*	.39*
Adjusted R-squared	.22	.48	.52	.52

Standardized coefficients are shown; *p<.05 **p<.01 ***p<.001

Regression models using observer-reported team performance data are presented in Table 6. Hypothesis 1, which predicted team mutual accountability to be positively associated with team performance, was supported (model 3). Hypothesis 2, which predicted team mutual accountability to be positively associated with team performance when controlling for performance pressure, was supported (model 4). These results were robust to the inclusion of fixed-effects at the level of the organization.

Table 6. Regression Models of Observer-Reported Team Performance (N = 45)

Variable	Model 1	Model 2	Model 3	Model 4
Team mutual accountability		.52**	.37*	.35*
Performance pressure				.20
Project duration	-.14		-.08	-.11
Team size	.41*		.25	.23
Project complexity	.32*		.26	.14
Adjusted R-squared	.21	.25	.31	.31

Standardized coefficients are shown; *p<.05 **p<.01 ***p<.001

To test hypotheses relating antecedent team beliefs to the team behavior of mutual accountability, I conducted mediation analyses (Baron & Kenny, 1986) with goal and process clarity and team psychological safety (as the antecedent variables), team mutual accountability (as the mediator variable), team performance (as the dependent variable), and project duration, team size, and project complexity (as the control variables). The results obtained using self-reported and observer-reported team performance data reveal a high degree of consistency in magnitude and direction. In addition, the results, reported

below in further detail, were robust to the inclusion of fixed-effects at the level of the organization.

Hypothesis 3, which predicted team mutual accountability to partially mediate the effects of goal and process clarity on team performance, was supported. Analyses using self-reported team performance data provide support for full mediation. A positive association between goal and process clarity and team mutual accountability ($B = .50$, $p < .001$) met the first mediation condition. A positive association between goal and process clarity and self-reported team performance ($B = .50$, $p < .001$) met the second mediation condition. The association between goal and process clarity and self-reported team performance ($B = .22$, $p = .13$) dropped and became insignificant when controlling for team mutual accountability, meeting the third condition for mediation. These analyses were repeated using observer-reported team performance data. The results provided support for partial mediation.

Hypothesis 4, which predicted team mutual accountability to partially mediate the effects of team psychological safety on team performance, was not supported. Team psychological safety was not significantly associated with team mutual accountability ($B = .21$, $p = .15$). Thus, the first mediation condition was not met and hypothesis 4 was not supported.

To test hypotheses relating team structure to team beliefs that facilitate the team behavior of mutual accountability, I conducted mediation analyses with supportive context (as the antecedent variable), goal and process clarity (as the mediator variable), team mutual accountability (as the dependent variable), and project duration, team size, and project complexity (as the control variables). Hypothesis 5, which predicted goal and

process clarity to partially mediate between a supportive context and team mutual accountability, was supported. A positive association between a supportive context and goal and process clarity ($B = .67$, $p < .001$) met the first mediation condition. A positive association between a supportive context and team mutual accountability ($B = .60$, $p < .001$) met the second mediation condition. The association between a supportive context and team mutual accountability dropped ($B = .32$, $p < .05$), but did not become insignificant when controlling for goal and process clarity, providing support for partial mediation. These results were robust to the inclusion of fixed-effects at the level of the organization.

Hypothesis 6, which predicted team psychological safety to partially mediate between a supportive context and team mutual accountability, was not supported. As stated above, team psychological safety was not significantly associated with team mutual accountability.

Summary of Findings

The findings of this phase help answer the three research questions of this study: first, is team mutual accountability – conceptualized as a reciprocally authorized behavior among team members of evaluating one another's progress on the team's task – a group level construct, and, does it vary across teams? Second, what is the relationship between team mutual accountability and team performance? And third, what enables team mutual accountability?

With respect to the first research question, the findings of the second phase are consistent with those of the first phase. Results from the second phase, obtained from the

analyses of quantitative data collected through surveys, show the existence of team mutual accountability at the group level of analysis. The survey items measuring a set of salient activities associated with the construct of team mutual accountability showed high internal consistency reliability.

With respect to the second research question, results from the second phase show that team mutual accountability is associated with team performance, controlling for performance pressure. Results from analyses of team performance data from two different sources, team members and observers, show consistent support for the positive effects of team mutual accountability on team performance. These effects are distinct from the effects of performance pressure on team performance.

Results suggest that when a team operates in a supportive context that recognizes and celebrates teamwork and provides team members with access to information, consultation, and resources to help understand and plan the work, team members are more likely to develop goal and process clarity – a shared understanding of team goals, plan of action, and one another's roles and responsibilities. Goal and process clarity among team members, in turn, facilitates team mutual accountability.

Table 7 reviews the hypotheses and research questions developed in this dissertation and summarizes the results obtained in the second phase.

Table 7. Summary of Phase Two Results

Research Question	Hypothesis	Result
What is the relationship between team mutual accountability and team performance?	Hypothesis 1: Team mutual accountability is positively associated with team performance.	Supported
	Hypothesis 2: Team mutual accountability is positively associated with team performance, controlling for the effects of performance pressure.	Supported
What enables team mutual accountability?	Hypothesis 3: Team mutual accountability partially mediates the effects of goal and process clarity on team performance.	Supported
	Hypothesis 4: Team mutual accountability partially mediates the effects of team psychological safety on team performance.	Not supported
	Hypothesis 5: Goal and process clarity partially mediate the effects of a supportive context on team mutual accountability.	Supported
	Hypothesis 6: Team psychological safety partially mediates the effects of a supportive context on team mutual accountability.	Not supported

CHAPTER 5. DISCUSSION

In this dissertation, I integrated theory and research on accountability and teams to conceptualize accountability as an ongoing interpersonal process of account-taking and -giving at the group level of analysis. I advanced the construct of team mutual accountability – a reciprocally authorized behavior among team members of evaluating one another's progress on the team's task. I used a combination of qualitative and quantitative methods to investigate the existence, impact on team performance, and enablers of team mutual accountability.

The results demonstrate that team mutual accountability is a group-level construct that varies across teams. The existence of team mutual accountability at the group level of analysis was supported by qualitative and quantitative data. A set of salient activities associated with the construct of team mutual accountability emerged from the qualitative data collected in the first phase of the study and provided the basis for developing survey items to capture the experience of mutual accountability among team members. Data on team mutual accountability obtained through survey research, in the second phase of the study, showed high internal consistency reliability.

Results from multiple analyses using team performance data from independent sources consistently supported the hypothesized relationship between team mutual accountability and team performance. Team mutual accountability contributes to team performance, and this contribution is distinct from that of performance pressure. In addition, the findings support an integrative perspective and suggest that both team structures and shared beliefs among team members contribute to the team behavior of mutual accountability. In particular, team mutual accountability is facilitated by a shared

understanding among team members of team goals, plan of action, and one another's roles and responsibilities and a context that celebrates teamwork and supports it by providing team members with access to information, consultation, and resources for understanding and planning their work.

Divergent Findings

With respect to the enablers of team mutual accountability, team psychological safety was predicted to contribute to team mutual accountability. However, in regression analyses the relationship between team psychological safety and team mutual accountability was insignificant. A possible explanation for this result is that team mutual accountability requires more than team members feeling comfortable with one another and speaking openly. When psychological safety is high on a team, its members are less preoccupied with managing their self-image (Edmondson, 1999; 2004). However, this may not necessarily result in team members turning their focus to the team's task and collectively striving for high performance, elements central to team mutual accountability. A team in which members are not preoccupied with impression management and avoiding embarrassment is likely to have open discussions, but that may not guarantee that members will actively review their progress on the team's task and hold each other to high standards of performance. Edmondson (2008, p. 65) briefly alludes to this distinction,

> In general, psychological safety is independent from employee accountability, and healthy organizations foster both by setting high performance aspirations while acknowledging areas of uncertainty that require continued exploration or debate.

Thus, both psychological safety and mutual accountability are likely to be important for team performance, but their pathways to improving team performance may be unique. Psychological safety improves team performance by fostering learning behaviors – such as exploration and debate – among team members (Edmondson, 1999; 2004). As the results of this study suggest, its link to team performance may not be through active progress appraisals among team members – an activity central to team mutual accountability.

Implications for Theory

Implications for Theory on Accountability. This dissertation makes three contributions to theory on accountability. First, by showing the existence of team mutual accountability in five different organizations, this dissertation broadens the extant view, in organizational theory, of accountability as a predominantly unilateral force exerted upon subordinates by superiors. "Accountability has typically been viewed as an aspect of organizational life that is assumed or bestowed by those with the power to do so" and there is a lack of research on accountability that occurs among people out of volition (Frink et al., 2008, p. 228) in pursuit of shared goals. This dissertation suggests that accountability also takes on a mutual form when employees nested in teams hold one another accountable for making progress on their collective goals.

Second, the findings of this dissertation extend the conceptualization of accountability, in management accounting literature, as primarily an outcome of formal evaluation systems. Existing literature on accountability in organizations overlooks the significance of informal accountability in ongoing social interactions. As a result, theory on interpersonal forms of accountability among employees who depend upon one another

is limited (Roberts, 1991). This yields a skewed picture of life in organizations, and the enactment of accountability therein. This dissertation reveals the existence and significance of accountability as an ongoing process that is mutually enacted by employees nested in teams. Accountability in organizations can take a structural as well as an interpersonal form, and the latter form has important implications for team performance. Organizational research stands to benefit from further investigations of mutual accountability processes that affect work on a daily basis and their interplay with formal accountability structures.

Third, this dissertation suggests that organizations, instead of having a unified culture of mutual accountability, may be carriers of subcultures of mutual accountability that are driven by behaviors of employees situated in teams. In contrast to prior research where accountability is examined at the organizational or individual level, this research took a group-level perspective. The finding that mutual accountability varies at the team level within organization suggests that people's collective enactment and shared experiences of accountability in organizations are localized within teams. Thus, teams can provide an important source of accountability among individuals and foster pockets of mutual accountability within organizations.

Implications for Theory on Teams. This dissertation makes three contributions to theory on teams. First, it illuminates the phenomenon of mutual accountability, a previously unexamined enabler of team performance. There is a lack of systematic research on accountability among team members, even as organizational scholars deem mutual accountability as critical to teamwork (Katzenbach & Smith, 1993). This is surprising because in teams people tend to share responsibility for work outcomes and

face interdependent tasks with unscripted responsibilities. The centrality of this challenge to the team process notwithstanding, we know little of whether, and to what effect, team members hold one another accountable for accomplishing interdependent work. Theory on teams is at present silent on how team members enact an essential element of successful teamwork, namely, mutual accountability among team members. Although implied when teams are assembled, team mutual accountability is not guaranteed, as the findings of this research show. Teams vary, even within the same organization, in the extent to which their members hold one another accountable for making progress on the team's task.

Second, this dissertation shows that the internal dynamics of accountability in teams contribute to team performance in a way that externally enforced accountability on teams does not. This dissertation is an initial step in establishing the unique salience of accountability dynamics within teams for team performance. It can potentially help team scholars to consider accountability as an internal team phenomenon in its own right, and, thus, worthy of further research.

Third, this dissertation helps advance an integrative perspective (Edmondson, 1999) in team research, in which both team structures and team beliefs contribute to performance-influencing team behaviors. The finding that both a supportive context and a shared understanding of team goals and process among team members facilitate team mutual accountability underscores the significance of examining the interplay between team structures, beliefs, and behaviors for developing a deep (and nuanced) understanding of the enablers of team outcomes.

Implications for Practice

By illuminating the factors that facilitate mutual accountability and the link between mutual accountability and team performance, this dissertation offers four practical insights. First, as organizational leaders assign consequential tasks to teams, the impulse to exert performance pressure is natural. Mutual accountability presents another pathway for improving team performance.

Second, to facilitate mutual accountability in teams, organizational leaders need to balance celebrating individual accomplishments with rewarding teamwork. When individual work is rewarded, organizational leaders need to validate that it is not a disincentive for collaboration and teamwork (Wageman, Hackman, & Lehman, 2005). In a context where individual achievement is rewarded, team members may struggle to frame team outcomes as collective. They may be part of the team but may not deem their fate as shared with other members of the team. Thus, when they come together, they may emphasize their independence rather than their interdependence. Subsequently, team members may dwell on their own objectives and individual job description for the achievement of personal rewards, instead of clarifying the links among one another's roles and responsibilities.

Third, in addition to rewarding teamwork, organizational leaders need to support teamwork by providing team members access to information, resources, and consultation to understand and plan the team's work. Teams that are kept in the dark about information that may influence their work will struggle to develop a shared understanding of team goals and plan of action. They may develop disparate views about what the team ought to accomplish and in the absence of clarifying information hold onto these views.

The picture of one's role and responsibility on the team may, in turn, be uniquely held rather than mutually shared. As differences in interpretation of team task (Cronin & Weingart, 2007) and ambiguity with respect to responsibilities precipitates dysfunctional conflict (Gladstein, 1984; Hu & Liden, 2011), team members may drift further away from developing a key enabler of mutual accountability – a shared understanding of team goals and process.

A fourth implication of the findings of this dissertation is that team members, in order to hold one another accountable for making progress, need to go beyond their silos. They need to understand the interdependent aspects of team goals, plan of action, and one another's roles and responsibilities. The taken-for-granted assumption that members of a team share such an understanding by virtue of their team membership must be challenged. One way to build and verify team members' shared understanding of team goals and process is to foster conversations where they describe to one another how their own work and others' work on the team is interlinked. These conversations may help dispel false notions and mitigate discrepancies in members' understanding of one another's roles and responsibilities.

Study Limitations and Directions for Future Research

This research is an initial step towards establishing team mutual accountability as both a construct and a mechanism for improving team performance. Future work can help to extend this construct. The cross-sectional survey design prevented examination of the evolution of team mutual accountability. Further research is needed to understand how team mutual accountability develops, sustains, or erodes over the life of a team.

Even though beyond the scope of this research, it is possible that team mutual accountability and performance pressure are more or less influential for team performance as teams go through discernible phases over time (Bales & Strodtbeck, 1951; Gersick, 1988; Tuckman, 1965). Team inception provides a unique opportunity to emphasize the importance of the team's task to motivate team members (Hackman, 2002; Hackman & Wageman, 2005). Mutual accountability may assume more importance as team members' engagement with one another, and their work, positions them to benefit from evaluations of fellow team members. Such time-related considerations with respect to team mutual accountability and performance pressure warrant further consideration.

The results of this research should be considered preliminary inasmuch as they rely on variables measured from the same survey questionnaire. Whereas team performance was measured with data from two independent sources (team members and observers), data on team mutual accountability may suffer from single-source bias. To some degree, this is inevitable in research on team dynamics, about which team members are generally the most informed. Future studies might embed informants to generate additional data on team dynamics.

This dissertation sets the stage for future research on mutual accountability with teams as the level of analysis. The findings of this dissertation suggest that mutual accountability within organizations is a local phenomenon, operative in teams with contextual support for teamwork and goal and process clarity among team members. In the future, in-depth examination of when and how goal and process clarity facilitates team mutual accountability can contribute to research on shared mental models (Cannon-Bowers, Salas, & Converse, 1993; Klimoski & Mohammed, 1994) and the mechanisms

through which task conflict impedes team performance (Cronin & Weingart, 2007; De Dreu & Weingart, 2003).

Conclusion

Theory on accountability in organizations and teams overlooks how people in pursuit of common goals hold one another accountable. This has left scholars and practitioners with an incomplete understanding of the forms of accountability in organizations and of the elements that constitute effective teamwork. This dissertation conceptualized and operationalized the construct of team mutual accountability – a reciprocally authorized behavior among team members of evaluating one another's progress on the team's task. In contrast to prior research in organizations where accountability is considered an outcome of formal evaluation systems and conceptualized as an asocial and unilateral phenomenon, the findings of this dissertation show that accountability is also an ongoing social process that is mutually enacted by people nested in teams and in pursuit of common goals.

The findings of this dissertation suggest that organizations that deploy teams with mutual accountability are likely to make critical performance adjustments in time. As team members actively evaluate one another on equal footing and enable prompt and effective adjustments to the team's ongoing work, their collective performance will improve. As work in a variety of settings becomes more dynamic and complex and the efficacy of hierarchical and bureaucratic control declines, mutual accountability will increase in importance as a means of assuring timely evaluation of, and adjustments to, interdependent work.

Appendix A. Research Sites

	AdvertisingCo	ConstructionCo	DesignCo	EngineeringCo	SoftwareCo
Employees (approx.)	600	250	150	1500	7000
Industry	Advertising	Construction	Design	Professional services	Software
Team expertise (selected)	Design, art, writing, strategy	Construction, cost analyses, management	Architecture, engineering, management	Engineering, construction, urban planning	Software development, marketing
Team task (selected)	Developing advertising campaigns, brand promotions	Constructing a medical space, constructing a science lab	Designing hotel interiors, designing retail spaces	Planning an urban space, sports venue reengineering, engineering a railway system	Developing / upgrading software for customers in various industries
Number of teams	18	2	8	13	4
Average team size	4	14	6	5	8
Average project duration (months)	4	18	24	19	11
Male-female distribution (percent)	44-56	68-32	41-59	77-23	81-19
Average age (years)	31 $\pm$ 5	41 $\pm$ 9	35 $\pm$ 8	37 $\pm$ 11	41 $\pm$ 8

Appendix B. Survey Scales

Respondents used a seven point Likert scale to rate to what degree each item in the survey described their team. Items were administered in random order and some were negatively worded to reduce response-set bias.

Survey scale developed in this study

Team mutual accountability

1. This team proactively reviews its own progress and performance
2. Team members hold one another accountable to high standards of performance
3. Team members consider it intrusive to hold one another accountable for their performance (reverse scored)
4. On this team, we hold ourselves accountable
5. This team lacks mutual accountability (reverse scored)
6. Team members hold one another accountable for getting their individual part of the team's work done

Survey scales adapted from prior studies

Supportive context

1. This organization recognizes and reinforces teams that perform well
2. Team members are kept in the dark about information that could affect their work and schedule (reverse scored)
3. When something comes up that team members DO NOT know how to handle, it is easy to obtain the help, training or advice needed

4. Scarcity of resources is a real problem for this team (reverse scored)
5. When team members have trouble working together, there is no one available to help them out (reverse scored)
6. This team has access to "coaches" who can help them learn from their successes and mistakes

Project complexity

1. This is a routine project (reverse scored)
2. This project is more challenging than any other project I have worked on before
3. This project is NOT especially challenging – achieving success is well within reach (reverse scored)
4. This project requires a lot of creativity to be successful

Goal and process clarity

1. We all agree to a plan of action with intermediate deliverables for achieving project goals
2. The role of each team member is clear to everyone
3. The purposes of this project are specified so clearly that all team members should know exactly what the team has to accomplish
4. Team members understand how they affect one another's performance
5. Team members have clarity on how to approach the work this team has to deliver

Team psychological safety

1. It is safe to take a risk on this team
2. Team members feel comfortable sharing their personal difficulties with each other
3. Working with members of this team, my unique skills and talents are valued and utilized
4. Team members feel comfortable sharing their ideas, feelings, and hopes

Performance pressure

1. This project has a lot of visibility with senior members of our organization
2. Future projects with this client depend on client's satisfaction with this project
3. Our organization has a lot at stake in this project
4. The team is under a lot of pressure to perform well
5. Success on this project will significantly affect my prospects for advancement within this organization

Team performance (this scale was administered to team members and observers)

1. This team meets or exceeds client expectations
2. This team runs behind schedule (reverse scored)
3. This team does superb work
4. Critical quality errors occur frequently in this team's work (reverse scored)
5. This team keeps getting better and better

Appendix C. Adequacy of Measures

To check for discriminant validity, factor analyses (principal components, varimax rotation) using a cut-off criterion of .40 for factor loadings and eigenvalues of 1.0 or above, were conducted on each section of the model. For the team structures section of the model, supportive context and the control variable of project complexity are analyzed together. Project complexity measures a facet of the team task, which prior team research considers a part of the team structure (Wageman, Hackman, & Lehman, 2005). Factor analysis yielded two factors, replicating the planned scales for supportive context and project complexity precisely. The average correlation between items for each scale, moreover, was greater than the average correlation between all items for these scales. The average correlation between items for each scale was .33. The average correlation between all items in the two scales was .08.

For the team beliefs section, factor analysis yielded two factors, replicating most of the planned scales for goal and process clarity and team psychological safety. The average correlation between items for each scale was .46. The average correlation between all items in the two scales was .35.

I tested the distinctiveness of team mutual accountability and performance pressure by running factor analyses on all their items. This resulted in two factors that replicated the planned scales precisely. The average correlation between items for each scale was .36. The average correlation between all items in the two scales was .15. Factor analysis on all items for team mutual accountability, performance pressure, and team performance yielded three factors, replicating most of the planned scales. The average correlation between items for each scale was .36 and the average correlation between all

items in the three scales was .20. All items were retained in the planned scales because of their positive contribution to Cronbach's alpha.

I tested the distinctiveness of team mutual accountability and team psychological safety by running factor analyses on all their items. This resulted in two factors that replicated the planned scales precisely. The average correlation between items for each scale was .37. The average correlation between all items in the two scales was .27. Factor analysis on all items for team mutual accountability and goal and process clarity yielded two factors, replicating the planned scales precisely. The average correlation between items for each scale was .45 and the average correlation between all items in the two scales was .34.

Bibliography

Antle, R., & J. Demski. 1988. The Controllability Principle in Responsibility Accounting. ***The Accounting Review***, 63: 700-718.

Alderfer, C. P. 1987. An intergroup perspective on organizational behavior. In J. W. Lorsch (Ed.), ***Handbook of Organizational Behavior***: 190-222. Englewood Cliffs, NJ: Prentice-Hall.

Alderfer, C.P., & D.L. Brown. 1972. Designing an empathic questionnaire for organizational research. ***Journal of Applied Psychology***, 56: 456-468.

Arrow, K. J. 1974. Control in Large Organizations. In M. Schiff & A. Lewin (Eds.), ***Behavioral Aspects of Accounting***: 275-284. Englewood Cliffs, NJ: Prentice-Hall.

Baer, R., S. Hinkle, K. Smith, & M. Fenton. 1980. Reactance as a function of actual versus projected autonomy. ***Journal of Personality and Social Psychology***, 38: 416-422.

Bales, R. F., & F. L. Strodtbeck. 1951. Phases in group problem solving. ***Journal of Abnormal and Social Psychology***, 46: 485-495.

Barker, J, R. 1993. Tightening the iron cage: concertive control in self-managing teams. ***Administrative Science Quarterly***, 38:408-437.

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

Bartko, J.J. 1976. On various intraclass correlation coefficients. ***Psychological Bulletin***, 83, 762-765

Bliese, P. D. 2000. Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & J. Kozlowski (Eds.), ***Multilevel theory, research, and methods in organizations***: 349 - 381. San Francisco, CA: Jossey-Bass.

Brehm, J. W. 1966. ***A theory of psychological reactance***. New York: Academic Press.

Cannon-Bowers, J. E., Salas, E., & Converse, S. 1993. Shared mental models in expert team decision-making. In J. Castellan (Ed.), ***Individual and group decision making: Current issues:*** 221–247. New York: LEA.

Chan, D. 1998. Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. ***Journal of Applied Psychology***, 83: 234–246.

Chen, G., Mathieu, J. E., & Bliese, P. D. 2004. A framework for conducting multilevel construct validation. In F. J. Yammarino & F. Dansereau (Eds.), ***Research in multilevel issues: Multilevel issues in organizational behavior and processes*** (Vol. 3, pp. 273-303). Elsevier: Oxford, U.K.

Cronin, M. A. & Weingart L. R. 2007. Representational gaps, information processing, and conflict in functionally diverse teams. ***Academy of Management Review***, 2007, 32 (3), 761–773

Dalton, G. W. 1971. Motivation and Control in Organizations. In G.W. Dalton, & P. R. Lawrence (Eds.), ***Motivation and Control in Organizations***: 1-35. Homewood, Ill.: Irwin.

De Dreu, C. K. W., B. A. Nijstad, & D. van Knippenberg. 2008. Motivated information processing in group judgment and decision-making. ***Personality and Social Psychology Review***, 12: 22-49.

De Dreu, C. K. W., & Weingart, L. R. 2003. Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. ***Journal of Applied Psychology***, 88: 741–749.

Edmondson, A. C. 1999. Psychological Safety and Learning Behavior in Work Teams. ***Administrative Science Quarterly***, 44: 350-383.

Edmondson, A. C. 2002. The Local and Variegated Nature of Learning in Organizations: A Group-Level Perspective. ***Organization Science***, 13: 128–146.

Edmondson, A. C. 2004. Psychological Safety, Trust and Learning: A Group-level Lens." In R. Kramer & K. Cook (Eds.), ***Trust and Distrust in Organizations: Dilemmas and Approaches***: 239–272. New York: Russell Sage Foundation

Edmondson, A. C. 2008. The Competitive Imperative of Learning. HBS Centennial Issue. ***Harvard Business Review*** 86, nos. 7/8 (July–August 2008): 60–67.

Edmondson, A. C., & McManus, S. E. 2007. Methodological fit in management field research. ***Academy of Management Review***, 32: 1155-1179.

Edwards, R. C. 1979 ***Contested Terrain: The Transformation of the Workplace in the Twentieth Century***. London: Heinemann.

Emerson, R. M., R. I. Fretz, & L. L. Shaw. 1995. ***Writing Ethnographic Fieldnotes***. Chicago: University of Chicago Press.

Enzle, M. E., & S. C. Anderson. 1993. Surveillant intentions and intrinsic motivation. ***Journal of Personality and Social Psychology***, 64: 257-266.

Ferris, G. R., J. H. Dulebohn, D. D. Frink, J. George-Falvy, T. R. Mitchell, & L. M. Matthews. 1997. Job and organizational characteristics, accountability, and employee influence. ***Journal of Managerial Issues***, 9: 162–175.

Ferris, G. R., T. R. Mitchell, P. J. Canavan, D. D. Frink, & H. Hopper. 1995. Accountability in human resource systems. In G. R. Ferris, S. D. Rosen, & D. T. Barnum (Eds.), ***Handbook of human resource management***: 175-196. Oxford, UK: Blackwell.

Frink, D. D., & G. R. Ferris. 1999. The moderating effects of accountability on the conscientiousness-performance relationship. ***Journal of Business and Psychology***, 13: 515-524.

Frink, D. D., & R. J. Klimoski. 1998. Toward a theory of accountability in organizations and human resource management. In G. R. Ferris (Ed.), ***Research in personnel and human resource management***, 16: 1-51. Stamford, CT: JAI Press.

Frink, D. D., & R. J. Klimoski. 2004. Advancing accountability theory and practice: Introduction to the human resource management review special edition. ***Human Resource Management Review***, 14: 1–17.

Frink, D. D., A. T. Hall, A. A. Perryman, A. L. Ranft, W. A. Hochwarter, G. R. Ferris, & M. T. Royle. 2008. Meso-level theory of accountability in organizations." In J. J. Martocchio (Ed.), ***Research in Personnel and Human Resources Management***, Emerald Group Publishing Limited, 27: 177–245.

Galbraith, J. R. 1987. Organizational Design. In J. W. Lorsch (Ed.), ***Handbook of Organizational Behavior***: 343-357. Englewood Cliffs, NJ: Prentice-Hall.

Gardner, H. K. 2012. Performance Pressure as a Double-Edged Sword: Enhancing Team Motivation but Undermining the Use of Team Knowledge. ***Administrative Science Quarterly***, 57: 1-46.

Garfinkel, H. 1956. Conditions of successful degradation ceremonies. ***American Journal of Sociology***, 61: 420-24.

Garfinkel, H. 1967. ***Studies in Ethnomethodology***. Engelwood Cliffs, NJ: Prentice Hall.

Gersick, C. J. G. 1988. Time and transition in work teams: Toward a new model of group development. ***Academy of Management Journal***, 31: 9-41.

Gladstein, D. 1984. Groups in context: A model of task group effectiveness. ***Administrative Science Quarterly***, 29, 499–517.

Goffman, E. 1971. ***Relations in Public***. New York: Basic Books.

Hackman, J. R. 1987. The design of work teams. In J. W. Lorsch (Ed.), ***Handbook of Organizational Behavior***: 315-342. Englewood Cliffs, NJ: Prentice-Hall.

Hackman, J. R. 1990. ***Groups that work (and those that don't).*** San Francisco: Jossey-Bass.

Hackman, J. R. 2002. ***Leading teams: Setting the stage for great performances***. Boston, MA: Harvard Business School Press.

Hackman, J. R., K. R. Brousseau, & J. A. Weiss. 1976. The interaction of task design and group performance strategies in determining group effectiveness. ***Organizational Behavior and Human Performance***, 16: 350–365.

Hackman, J. R., & C. G. Morris. 1975. Group tasks, group interaction process, and group performance effectiveness: A review and proposed integration. In B. Leonard (Ed.), ***Advances in Experimental Social Psychology***, 8: 45-99, Academic Press.

Hackman, J. R., & R. Wageman. 2005. A theory of team coaching. ***Academy of Management Review***, 30: 269-287.

Hair, J. F. Jr., Anderson, R. E., Tatham, R. L. & Black, W. C. 1995. ***Multivariate Data Analysis***. 3rd Edition. New York, Macmillan.

Hall, A. T., M. T. Royle, R. A. Brymer, P. L. Perrewe´, G. R. Ferris, & W. Hochwarter . 2006. Relationship between felt accountability as a stressor and strain reactions: The neutralizing role of autonomy across two studies. ***Journal of Occupational Health Psychology***, 11: 87–99.

Hall, A. T., R. Zinko, A. A. Perryman, & G. R. Ferris. 2009. Organizational citizenship behavior and reputation: Mediators in the relationships between accountability and job performance and satisfaction. ***Journal of Leadership and Organizational Studies***, 15: 381- 392.

Heilman, M. E., & B. L. Toffler. 1976. Reacting to reactance: An interpersonal interpretation of the need for freedom. ***Journal of Experimental Social Psychology***, 12: 519-529.

Hu, J., & R. C. Liden. 2011. Antecedents of Team Potency and Team Effectiveness: An Examination of Goal and Process Clarity and Servant Leadership. ***Journal of Applied Psychology***, 96: 851–862.

James, L. R., R. G. Demaree, & G. Wolf. 1984. Estimating within group interrater reliability with and without response bias. ***Journal of Applied Psychology***, 69: 85-98.

Kahn, W. A. 1990. Psychological conditions of personal engagement and disengagement at work. ***Academy of Management Journal***, 33(4), 692-724.

Kahn, R. L., D. M. Wolfe, R. P. Quinn, J. D. Snoek, & R. A. Rosenthal. 1964. ***Organizational stress: Studies in role conflict and ambiguity***. New York, NY: Wiley.

Katzenbach, J. R., & D. K. Smith. 1993. ***The Wisdom of Teams: Creating the High-performance Organization***. Boston: Harvard Business School.

Kenny, D. A., & L. LaVoie. 1985. Separating individual and group effects. ***Journal of Personality and Social Psychology***, 48: 339-348.

Klein, K. J., Bliese, P. D., Kozlowski, S. W. J., Dansereau, F., Gavin, M. B., Griffin, M. A., Hofmann, D. A., James, L. R., Yammarino, F. J., & Bligh, M. C. 2000. Multilevel analytical techniques: Commonalities, differences, and continuing questions. In J. Klein & J. Kozlowski (Eds.), ***Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions***. 512–553. San Francisco, CA: Jossey-Bass.

Klimoski, R., & Mohammed, S. 1994. Team mental model: Construct or metaphor. ***Journal of Management***, 20: 403-437.

Koonce, L., U. Anderson, & G. Marchant. 1995. Justification of decisions in auditing. ***Journal of Accounting Research***, 33: 369–384.

Kozlowski, S. W. J., & K. J. Klein. 2000. A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), ***Multilevel theory, research and methods in organizations***: 3-90. San Francisco, CA: Jossey-Bass.

Lerner, J. S., & P. E. Tetlock. 1994. Accountability and social cognition. In V. S. Ramachandran (Ed.), ***Encyclopedia of human behavior***, 1: 3098-3121. San Diego, CA: Academic Press.

Lerner, J., & P. E. Tetlock. 1999. Accounting for the effects of accountability. ***Psychological Bulletin***, 125: 255–275.

Lyman, S. M., & M. B. Scott. 1970. ***A Sociology of the Absurd***. New York: Appleton-Century Crofts.

Maier, N. R. F. 1963. ***Problem solving discussions and conferences: Leadership method and skills***. New York: McGraw-Hill.

March, J. G., & H. A. Simon. 1958. ***Organizations***. New York: Wiley.

Mason, R. L., Gunst, R. F. & Hess, J. L. 1989. ***Statistical Design and Analysis of experiments***, John Wiley.

Matsui, T., T. Kakuyama, & M. L. U. Onglatco. 1987. Effects of goals and feedback on performance in groups. ***Journal of Applied Psychology***, 72: 407-415.

O'Brien, R. M. 2007. A Caution Regarding Rules of Thumb for Variance Inflation Factors. ***Quality and Quantity***, 41:673–690.

Orbuch, T. L. 1997. People's accounts count: The sociology of accounts. ***Annual Review of Sociology***, 23: 455–478.

Osterman, P. 1994. How common is workplace transformation and who adopts it? ***Industrial and Labor Relations Review***, 47: 172-188.

Ouchi, W. G. 1977. The Relationship Between Organizational Structure and Organizational Control. ***Administrative Science Quarterly***, 22: 95-113.

Ouchi, W. G. 1980. Markets, Bureaucracies, and Clans. ***Administrative Science Quarterly***, 25: 129-141.

Podsakoff, P. M. & Organ, D. 1986. Reports in organizational research: Problems and prospects. ***Journal of Management***, 12, 531-544.

Podsakoff, P.M., MacKenzie, S. B., Lee, J.Y., & Podsakoff, N.P. 2003. Common method Biases in behavioral research: a critical review of the literature and recommended remedies. ***Journal of Applied Psychology***, 88(5), 879-903.

Roberts, J. 1991. The possibilities of accountability. Accounting, ***Organizations and Society***, 16: 355-368.

Saavedra, R., P. C. Earley, & L. Van Dyne. 1993. Complex interdependence in task-performing groups. ***Journal of Applied Psychology***, 78: 61-72.

Sawyer, J. E. 1992. Goal and process clarity: Specification of multiple constructs of role ambiguity and a structural equation model of their antecedents and consequences. ***Journal of Applied Psychology***, 77: 130-142.

Schlenker, B. R. 1986. Self-identification: Toward an integration of the private and public self. In R. Baumeister (Ed.), ***Public self and private self***: 21-62. New York: Springer-Verlag.

Schlenker, B. R., & M. F. Weigold. 1989. Self-identification and accountability. In R. A. Giacolone & P. Rosenfeld (Eds), ***Impression management in the organization***: 21–43. Hillsdale, NJ: Lawrence Erlbaum.

Schlenker, B. R., T. W. Britt, J. Pennington, R. Murphy, & K. Doherty . 1994. The triangle model of responsibility. ***Psychological Review***, 101: 632–652.

Scholten, L., D. van Knippenberg, B. Nijstad, & D. De Dreu . 2007. Motivated information processing and group decision-making: Effects of process accountability on information processing and decision quality. ***Journal of Experimental Social Psychology***, 43: 539-552.

Scott, M. B., & S. Lyman. 1968. Accounts. American Sociological Review, 33: 46-62.

Semin, G. R., & A. S. R. Manstead. 1983. ***The Accountability of Conduct***. New York: Academic Press.

Shillinglaw, G. 1982. ***Management Cost Accounting***. Homewood, Ill.: R.D. Irwin Inc.

Shure, G. H., M. S. Rogers, I. M. Larsen, & J. Tassone. 1962. Group planning and task effectiveness. ***Sociometry***, 25: 263-282.

Siegel-Jacobs, K., & Yates, J. F. 1996. Effects of procedural and outcome accountability on judgment quality. ***Organizational Behavior and Human Decision Processes***, I, 1-17.

Simons, R. 1994. How New Top Managers Use Control Systems as Levers of Strategic Renewal. ***Strategic Management Journal***, 15: 169-89.

Simons, R. 2013. The Entrepreneurial Gap: How Managers Adjust Span of Accountability and Span of Control to Implement Business Strategy. ***Harvard Business School Working Paper,*** No. 13-100.

Spradley, J. P. 1979. ***The ethnographic interview***. New York: Holt Rinehart, and Winston.

Sutton, R. I., & D. C. Galunic 1996 Consequences of public scrutiny for leaders and their organizations. In L. L. Cummings & B. M. Staw (eds.), ***Research in organizational behavior***, 18: 201-250. Greenwich, CT: JAI Press.

Tetlock, P. E. 1983. Accountability and complexity of thought. ***Journal of Personality and Social Psychology***, 45: 74-83.

Tetlock, P. E. 1985. Accountability: The neglected social context of judgment and choice. ***Research in Organizational Behavior***, 7: 297–332.

Tetlock, P. E. 1992. The impact of accountability on judgment and choice. Toward a social contingency model. In M. Zanna (Ed.), ***Advances in experimental social psychology***: 331–377. New York: Academic Press.

Tetlock, P. E., L. Skitka, & R. Boettger. 1989. Social and cognitive strategies for coping with accountability: Conformity, complexity, and bolstering. ***Journal of Personality and Social Psychology***, 57: 632–640.

Thompson, J. D. 1967. ***Organizations in action***. New York: McGraw Hill.

Tuckman, B. W. 1965. Developmental sequence in small groups. ***Psychological Bulletin***, 63: 384-399.

Tyler, T. 1997. The psychology of legitimacy: A relational perspective on voluntary deference to authorities. ***Personality and Social Psychological Review***, 1: 323-345.

Wageman, R., J. R. Hackman, & E. V. Lehman. 2005. Team Diagnostic Survey: Development of an instrument. ***Journal of Applied Behavior Science***, 41: 373-398.

Weber, M. 1978. ***Economy and Society***, University of California Press.

Weick, K. E. 1969. ***The social psychology of organizing***. Reading, MA: Addison-Wesley.

Weingart, L. R. 1992. Impact of group goals, task component complexity, effort, and planning on group performance. ***Journal of Applied Psychology***, 77: 682-693.

Weldon, E., K. A. Jehn, & P. Pradhan. 1991. Processes that mediate the relationship between a group goal and improved group performance. ***Journal of Personality and Social Psychology***, 61: 555-569.

Yin, R. K. 2003. ***Case study research: Design and methods***. Thousand Oaks, CA: Sage Publication.