

INTERPRETING RESISTANCE TO CHANGE: THE BEHAVIORS AND LOGICS
THAT GUIDE RESISTANCE INTERPRETATIONS IN THE WORKPLACE

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INTERPRETING RESISTANCE TO CHANGE: THE BEHAVIORS AND LOGICS THAT GUIDE RESISTANCE INTERPRETATIONS IN THE WORKPLACE

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This study represents an exploratory and explanatory look at the behaviors and frames that guide resistance interpretations during innovation implementations within organizations. It was undertaken as a case study to develop behavior and frame grounded typologies from a sustainability program that was put in place in a large midwestern organization in 2013. The research is divided into three main chapters. The first details the types of behaviors that were perceived by participants when making resistance interpretations. Analysis from the behavioral typology indicates that implementer and employee roles are associated with interpreting resistance in different ways, and that this variation might be due to the role knowledge afforded by objective role tasks and structures. The second chapter found that there were six main types of frame combinations used to interpret behaviors as resistance. These frame combinations were anchored by three main role frames that were shared between implementers and employees. The rest of the frame combinations exhibited various degrees of convergence. Analysis from the frame combination typology indicates that the adaptive role was largely used by participants when making resistance interpretations, suggesting resistance scholars should turn their attention to this role. Additionally, differences in these frame combinations between implementers and

employees were generative: the leadership frame combinations were not convergent, which might have led to more divergent interpretations of resistance. More research is needed on how this would affect resistance mobilization and subsequent implementation success or failure. The third chapter represented a baseline review of group issues and research in preparation for the case study. This was done as one of the theories used in the dissertation, role theory, evinces collective levels of analysis; it was determined such a review would assist with laying the groundwork for bulk of the case study. The categories and analysis from this study suggest new avenues for researchers and practitioners in resistance and implementation communication research.

BIOGRAPHICAL SKETCH

The past five years that I've been working on a PhD at Cornell, the climate change news in the media becomes more and more dire – the apocalyptic narrative is evident in news articles called “Apocalypse Soon: 9 Terrifying Signs of Environmental Doom and Gloom” (Knefel, 2015) and “When the End of Human Civilization Is Your Day Job” (Richardson, 2015). I contend that articles of this sort offer little in the way of creative rhetoric to shift thinking (in other words, Martin Luther King didn't give a speech entitled ‘I Have a Nightmare’). Besides contributing to a stultifying sense of hopelessness, these articles also tend to offer little in the way of solutions with one exception: whether over coffee, in the hallway, or on the bus, the refrain is always the same: “we just need to change our behavior”.

This is more difficult than it sounds. I started the PhD because I wanted to learn more about communicating and effecting sustainable behavior change. I'd been working for over ten years in professional communication capacities, including social marketing, which focuses on strategies and tactics to effect mass behavioral change. Yet I believed the field was limited by its focus on provision of information targeted to individuals – I wanted to examine the nuances of behavior, persuasion and social structures that enabled or restricted specific kinds of communicative strategies. To begin this work, I began research on several projects at Cornell with Drs. Katherine McComas and Graham Dixon, investigating how comparative feedback campaigns affected energy conservation behavior, through the CALS Green project. During this work, I was analyzing open responses to surveys and was struck by how often participants expressed difficulty being sustainable, and their attributions for this difficulty. I was also struck by responses that indicated people were not going to undertake sustainable actions, and why not. In fact, a survey question

that I'd developed for the second CALS Green survey based on some initial analysis showed that most respondents would choose work productivity over conservation, if given a choice.

This work, and my qualifying exams led me to begin considering the corollary of change as a phenomenon in its own right – resistance to change. I also began to situate resistance to change within another under researched area in communication – implementation. This led to my dissertation – which is described and detailed in Chapter One.

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TABLE OF CONTENTS

1. Chapter One, Introduction	p. 1
2. Chapter Two, Method	p. 21
3. Chapter Three, “They’re Such Complainers!”: how roles and behavior construct resistance interpretations during organizational innovation implementations	p. 45
4. Chapter Four, Framing Resistance – using frame combinations to guide resistance interpretations at work	p. 81
5. Chapter Five, Energizing Organizational Research – advancing the energy field with group concepts and theories	p. 126
6. Chapter Six, Conclusion	p. 200
7. Chapter Seven, Appendix	p. 215

LIST OF FIGURES

1. Figure One: Search Terms for Review

p. 140

LIST OF TABLES

1. Table One: Coping Behavior and Resistance Categories p. 58
2. Table One: Key Resistance Interpretation from Frame Combinations p. 95
3. Table One: Types of Questions that Can be Generated p. 148
4. Table Two: Typology of Collective Measures p. 155

LIST OF ABBREVIATIONS

1. RI: resistance interpretation
2. RIs: resistance interpretations
3. LOA: Logic of Appropriateness

CHAPTER 1

INTRODUCTION

Summary

This dissertation examines the role of resistance in the implementation of organizational innovations. It does so through a case study into a large educational organization in the Midwest that implemented a sustainability program in 2013. Organizational innovation implementations – attempts to enact changes in policies, processes or behaviors (Lewis & Seibold, 1996) – have had consistently high failure rates over the past thirty years– from 50% to 70% (Ijaz & Vitalis, 2011; Klein & Knight, 2005). One way that scholars have researched failed implementations is by focusing on resistance to change (Erwin & Garman, 2010; Van de Ven & Sun, 2011). However, as critics argue, resistance scholars have prioritized a one-way communication model. According to this model implementers (people who are tasked with putting the change in place within the organization) send change messages to employees, who either enact or don't enact the change. Employees who do not enact the change are labeled 'resistant' (Ford, Ford & D'Amelio, 2008). The model conceives of resistance as a form of non-compliance that is predicted and examined through employees' psychological traits.

This contrasts with more recent work in organizational communication that typically considers communication to be collective, shared and reciprocal (Putnam & Boys, 2006). Such an understanding of the organizational communication context calls for an expanded model: one that proves promising for such efforts, called the double interact occurs in three, instead of two stages. It consists of sending a message, interpreting the message, and interpreting the

interpretation. Considering this in light of an implementation context focused on resistance, this would be demonstrated as: 1) implementers sending change messages to employees; and 2) employees enacting or not enacting the required change. In this representation, employees might undertake additional behaviors besides compliance to understand and engage with the change ask, such as asking questions, complaining or cheering the change (these are called coping behaviors) (Lewis & Seibold, 1996). This leads to the last part of this model: 3) behaviors are then interpreted by the implementer as resistance or not. Resistance becomes an interpretive process that occurs during communication interactions between implementers and employees, rather than as a compliance decision found only in employees (Ford, Ford & D'Amelio, 2008).

The third stage of this model – the interpretation of the interpretation stage - has been understudied (King & King, 1990) and is the focus of this dissertation. (This third stage will be referred to in the rest of this work as resistance interpretations, or RIs). The RI process is theorized to be influenced by three factors: 1) types of coping behaviors; 2) the interpretive structures that guide interpretations of resistance; and 3) the quality of the relationship between parties (Ford, Ford & D'Amelio, 2008). This dissertation examines the first two of these factors using a case study. Specifically, it first develops a grounded typology of the types of coping behaviors that implementers and employees focus on when making resistance interpretations (Chapter Three). (A grounded typology is a categorical system developed by iterating between empirical observation and theory) (Doty & Glick, 1994; Golan & Bamberger, 2015). Second, it develops a grounded typology of the six key 'logics' (interpretive structures) used by implementers and employees when making resistance interpretations (Chapter Four). These grounded typologies provide a research basis to develop and test predictors of resistance to

innovation implementations. Given that implementations are inherently coordinated and collective efforts, the third part of the dissertation (Chapter Five) represented an attempt to better understand the impact of collective levels of analysis on behavior. This was done through a review of group level issues and measures that could be applied to organizational energy studies.

In developing these grounded typologies, this dissertation begins developing the basis for an interpretive communicative approach to resistance, one called for by resistance and communication scholars (Ford, Ford & D'Amelio, 2008; Garner, 2013). In addition, because the work expands the communication model to include implementers as part of the resistance process, the differences and similarities *between* parties' interpretive processes becomes theoretically generative. (For instance, rather than conceiving of resistance as an objective phenomena, this work shows how it is interpreted differently by implementers and employees, becoming a contested definition. What effect this contestation has on resistance or implementation outcomes are not yet known, but would be a promising avenue for researchers).

This next section details the research gaps that were used to develop this dissertation. It then describes the dissertation and how it addresses these gaps, concluding with a detailed outline of each chapter in the dissertation.

Research Gaps

1) *Implementation Communication*: Implementation communication is the study of how changes (innovations) are put in place in organizations from a communication perspective (Lewis, 2007). There are generally understood to be four main stages to innovating:

awareness, adoption, implementation and habituation (Real & Poole, 2005). Adoption is a decision to undertake the change (Real & Poole, 2005), and is typically conceived of as rational, consequential decision making process, while implementation is an enactment of the innovation within the organizational context that involves role adaptation, and is therefore typically conceived of as a contextual form of decision making (Lewis & Seibold, 1996). In particular, implementation decisions are understudied, compared to adoption decisions (Real & Poole, 2005). In addition to having little empirical work on implementation itself, there is also a large gap in implementation communication research with the exception of work done by Laurie Lewis and her colleagues (Lewis, 2007; Lewis, Hamel & Richardson, 2001; Lewis & Russ, 2011; Lewis & Seibold, 1993, 1996). This knowledge gap about the contextual decision-making that occurs during implementation processes may be one reason implementations have had such high, consistent failure rates. More work in this area is needed; this dissertation represents one small step in this direction.

- 2) *Resistance as an interpretive phenomenon*: Turning from implementations writ large to implementation failures in particular, one way for researchers to study such failures is to examine resistance to change (Bouckenooghe, 2010; Erwin & Garmin, 2010; Van de Ven & Sun, 2011). Critics charge resistance has typically been studied using a one-way communication model focused on employee compliance with change messages. Those employees who do not enact the change are understood as resistant (Ford, Ford & D'Amelio, 2008).

However, most organizational communication scholars now focus on the shared,

interdependent nature of communication within organizations (Putnam & Boys, 2006). A model consistent with this focus is the double interact (Putnam, Philips & Chapman, 1995; Weick, 1979). This is a process of sending a message, an interpretation of the message, and interpretations of the interpretations of the message. For example, an implementer might send a message to employees to turn off their computers at the end of the workday; employees might do so or not, in addition to other coping behaviors such as asking questions, complaining or cheering the change; implementers would focus on certain behaviors and interpret them as resistance or not. (In addition to an implementer-employee double interact, implementations might also involve another kind of double interact, that of an employee sending a change message to other employees. Additionally, employees could interpret other employees' reactive behaviors in relation to implementers' change messages).

There are several key implications for the conception of resistance when expanding the communication model to a double interact: first, resistance becomes a shared process of interpreting public coping behaviors, rather than an objective phenomenon of compliance (Ford, Ford & D'Amelio, 2008; Hollander & Einwohner, 2004). In addition, implementers now become an active party in the resistance process, rather than having resistance situated solely in non-compliant employees (Ford, Ford & D'Amelio, 2008). This opens up questions and considerations of how implementers themselves contribute (if at all) to resistance. Finally, as a result of including implementers in the resistance model, we can examine similarities and differences *between* implementers' and employees' interpretations of resistance. Initial research indicates that there are such differences – a small body of work shows that employees do not tend to see their coping behaviors in relation to

implementations as resistance, but rather as a form of engagement with the innovation (Ford, Ford & D'Amelio, 2008). This suggests implementers and employees undertake different kinds of resistance interpretations, indicating that a conceptualization of resistance as interactive and interpretive is a promising approach for researchers.

Focusing on the interpretive approach means understanding how people co-construct and maintain their reality through interpretations (Berger & Luckmann, 1965; Gioia & Pitrie, 1990; Weick, 1996). It necessarily requires a focus on multiple perspectives, and the differences between these perspectives are considered generative (Zorn, Page & Cheney, 2000). Within this tradition, theoretical activities include describing events and processes so that the interpretive structures of the phenomenon, such as the rules or frames guiding interpretations, are illuminated (Gioia & Pitrie, 1990). This paradigm therefore directs attention to the models that structure interpretation. One such model that served as an inspiration for this study, given its focus on contextual decision-making is the Logic of Appropriateness (March & Olsen, 2006).

- 3) *Interpretive Structures*: The Logic of Appropriateness (LOA) is a contextual decision making model that extends from the Carnegie School of organizational research (Gavetti, Levinthal & Ocasio, 2007; March, 1994; March & Olsen, 2006). It essentially depicts decision making as answering the following question: “What does a person like me (role) do (rules) in a situation like this (recognition)” (Weber, Messick & Kopelman, 2004, p. 282). The model sees people combining roles and frames together into different configurations to make sense of and take action in their environments. This necessitates some explanation of

what roles and frames are.

Roles are socially expected behaviors and identities (Biddle, 1986; Merton, 1957).

Researchers differ in how they approach role research, but for the most part they agree that roles are comprised of three main elements: role identity, role behaviors and role expectations (Biddle, 1986). A role episode is a double interact process - expectations about appropriate role behavior are sent from 'role set' members to role holders, who are supposed to enact the role in expected ways. The role set then interprets the role holders' enactments (Bates, 1962; Kahn et al., 1964; Merton, 1957). Because they are interdependent and socially constructed, roles necessarily straddle individual and collective levels of analysis (Barley, 2015).

Turning from roles to frames, within organizational research frames have been conceptualized in two main ways: as cognitive schemas that direct attention and behavior, or as discursive cues that guide interpretations during communication interactions (Dewulf et al., 2009; Miller & Sardais, 2013). The LOA describes frames as cognitive schemas used by individuals to make decisions (March & Olsen, 2006). Types of frames that might be used in the LOA model include issue frames (categorizations of situations); relationship frames (categorizations of yourself and others; this includes role identities); and process frames (expectations about how events will unfold) (Dewulf et al., 2009).

The LOA provided inspiration for a way to fulfill explanatory study of the structures that guide interpretations, per Gioia and Pitrie (1990). This study did so by examining what

combinations of issue, role, relationship and process frames guided resistance interpretations of coping behaviors. This next section describes attempts to begin this work.

Dissertation Description

The bulk of the dissertation is focused on developing grounded typologies of the coping behaviors and interpretation structures perceived by implementers and employees when undertaking resistance interpretations (the third stage of the double interact process. This third stage has been theorized to be affected by 1) types of coping behaviors; 2) the interpretive structures used to make the interpretations; and 3) the relationship quality between the message sender and receiver (Ford, Ford & D'Amelio, 2008). The dissertation attends to the first two of these factors).

To develop the grounded typologies, an exploratory and explanatory case study of the implementation of a turn-key sustainability program was undertaken. The sustainability program, developed by an NGO, was put in place in a large and storied educational enterprise in the Midwest in the summer of 2013. The program focused on a number of different sustainability areas, ranging from energy to water conservation to transportation. Participants were asked by their organization to form teams and undertake daily sustainability actions in both the office and at home. Different actions received different points; the teams competed against each other to achieve the highest amount of points.

The program was implemented by the organization's sustainability team, who wanted to benchmark the organization's sustainability practices. They first obtained buy-in on the project

from top leadership within the organization, and then procured funding to rollout the project through a new technology grant. The sustainability team then coordinated a volunteer advisory committee to guide and lead the implementation strategy, consisting of 12 employees. The program was communicated to staff via e-mail, announcements on conference calls and staff meetings. Out of 700 staff, 333 participated by undertaking at least one sustainability action.

In this case study, N=6 implementers (representing 50% of the implementation advisory group) and N=32 employees were recruited who had participated in the program. Semi-structured qualitative interviews were used to obtain participant accounts of resistance to the program, and to identify the behaviors and frames used to describe those behaviors as resistant. The data was triangulated with other questions that occurred over the course of the interviews, as well as post-program survey data provided by the NGO that developed the sustainability program.

Analysis of the data focused on developing grounded typologies (Doty & Glick, 1994; Golan & Bamberger, 2015) of the coping behaviors and logics that participants employed to make resistance interpretations. This was done using frame analysis: frames are cognitive schemas that guide our attention and behavior (Dewulf et al., 2009). Frame analysis typically uses constant comparative analysis (Strauss & Corbin, 1998) to identify frames in texts.

Because the model used as an inspiration for this dissertation, the LOA, uses roles (which straddle both individual and collective levels of measurement), it was decided to review collective and interdependent levels of analysis issues. This resulted in another chapter in the dissertation (Chapter Five) that identifies key group issues and measures that can be applied to

the study of energy issues in organizations. Undertaking this chapter provided a baseline understanding of how group levels of analysis informs research in the areas of social categorization, context, process and outcome-oriented research.

Theoretical and Social Contributions

Due to the paucity of empirical work in implementation communication and resistance from an interpretive perspective, research in this area can best be labeled nascent (Edmondson & McManus, 2007; Eisenhardt & Graebner, 2007). When the research field is this undeveloped, it is inappropriate to attempt a confirmatory approach, as this begs the question – what should I confirm? Instead, the theoretical contribution of such studies (as this one is) is laid through the descriptive work of pattern identification that suggests issues and areas for research (Edmondson & McManus, 2007). In the interpretive tradition this consists of describing how the rules that guide interpretations are structured (Gioia & Pitrie, 1990). These descriptions (such as the grounded typologies detailed in this project) act as suggestive models for starting to understand how a process like resistance interpretations unfold (Edmondson & McManus, 2007).

This requires addressing several research gaps: the first gap this dissertation tackles is that of expanding the communication model so that resistance becomes a shared process of interpreting public behaviors. Dewey (1902) admonished researchers to pay attention to what attention was being paid (quoted in Weick, 2012), and there has been some work that details interpretations using a behavioral approach. Yet understanding *what* types of behaviors are focused on when making RIs, as well as which ones are not, contributes to a base understanding of resistance as a public interpretation process. For example, this research found that when implementers focused

on negative behaviors they saw this negativity at the organizational level, while employees focused on interpersonal negativity in their regular office or team environment. This employee focus suggests that role knowledge guides interpretations of behavioral types, and that relational transgressions (disruptions in how roles are enacted, Metts & Caupach, 1994) are a key part of their resistance conception. This suggests more attention should be paid to this worldview in implementation communication. Questions, for instance, could include what types of implementation communication strategies engender what kinds of relational transgressions, and with what effect. It appears that the conception of resistance used by researchers and practitioners prioritizes implementers' understandings of resistance writ large, but this research shows how employees focus on different behaviors to construct a different form of resistance. Paying attention to employees' understandings, rather than relying solely on implementers' interpretations yields new avenues for research.

The second major gap this research addresses is understanding what interpretive structures guide resistance interpretations. The content of the resistance structures generated by this case reveal a focus by participants on adaptive roles. This would suggest that this role should be examined more fulsomely by researchers, in addition to other roles that have been examined, such as leadership. This points research attention to the adaptive role itself, as well as the role behavior of adaptiveness, such as everyday role negotiation, which appears under researched (Kramer, 2009). Addressing adaptiveness in implementations could be a promising approach for researchers.

Third, because the expanded communication model in this research now involves implementers in the resistance interpretation process, differences and similarities *between* implementers and employees become generative. Specifically, this research found that implementers and employees do not hold similar interpretive structures and therefore their understandings of resistance are different. What these differences, and the degree of difference between parties, means for resistance or implementation outcomes is unclear, but is potentially promising. For instance, in this case, RIs using the adaptive role were structured in similar ways but RIs using the leadership role were not. This suggests greater cohesion around RIs with the adaptive than leadership roles. The co-orientation model, which addresses both the actual and perceived similarity of agreement on issues between parties, would suggest that the differences in the leadership example evince a communication context of either dissensus or false consensus. Researchers have suggested specific communication tactics to address dissensus or false consensus (Leong, McComas & Decker, 2007); whether or not these are useful in resolving differences about resistance between parties, and the effects of such resolution on both resistance and implementation outcomes remains to be seen, but could be a promising way forward for future research.

In addition to contributing to theoretical suggestions, this work has several social applications. First, change planners can begin to consider how implementers themselves might contribute to resistance or implementation failure, and begin to factor implementers' interpretive processes into their planning. Second, the work suggests that differences in logics should be considered by campaign planners. There has been a seeming assumption on the part of researchers and planners that resistance is conceived similarly by both parties, yet this research shows this is not the case.

Beginning to examine how close or far apart different organizational stakeholders are on what constitutes resistance could be advantageous for implementation communication strategies.

Dissertation Outline

To examine these areas in more detail, this dissertation is broken into several parts. After this introduction is the second chapter. It focuses on the case study method of chapters three and four, detailing the rationale for a case study approach, and delving into the research context, including the setting, the innovation, the implementation approach and data collection and data analysis.

Chapters three and four represent the case study work focused on resistance to change in organizations, particularly in relation to sustainability campaigns. They focus on two of the three factors identified by Ford, Ford and D'Amelio (2008) that contribute to resistance interpretations – coping behaviors and the interpretive structure that guides resistance interpretations around those behaviors. In particular, chapter three investigates the coping behaviors that were interpreted as resistance when putting a sustainability initiative in place. The analysis shows that implementers and employees come to different understandings of resistance using the same coping behaviors, and suggests new ways of conceiving of resistance from employee perspectives. Practically, the piece identifies behaviors that implementers and employees use to make resistance evaluations – practitioners could actively train their implementers and employees to see these behaviors as feedback rather than resistance within the organization, which might further implementation efforts.

Chapter four presents a grounded typology of the logics of resistance between implementers and employees, along with the roles that led to these types of resistance interpretations. Theoretically, this extends work on implementation communication by showing how resistance is structured and understood in a contextual fashion, and that implementers and employees hold different interpretation structures. Practically, it provides practitioners, implementers and policy makers a better understanding of what logics lead to different types of resistance interpretations that could conceivably be accommodated and adapted during implementation training.

Chapter five focused is review of group level issues and approaches to behavior in the energy field. This was done to better understand collective level issues in research, due to the dissertation's use of role theory, which has both individual and collective levels of analysis. The piece, a review article, shows how few researchers have used a group focus in the field, and develops a typology of research questions and associated measures that can be used to begin examining energy behavior at the group level in the commercial sector. Finally, chapter six concludes the dissertation with a brief summary of the work done so far, and a discussion of future work in this area.

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CHAPTER 2

METHOD

Summary

This study design represents a single, exploratory and explanatory case study that used the Logic of Appropriateness model (March and Olson, 2006) as inspiration to examine the logics implementers and employees use when undertaking resistance interpretations of coping behaviors (Yin, 2003). In particular, this study investigates an education enterprise in the Midwest that implemented a turnkey sustainability program. The organization had a volunteer ‘advisory group’ of twelve employees who guided program implementation; in all, about half of the organization’s employees took part in the sustainability campaign by taking at least one sustainability action. This methods section details: a) an overview of the case study itself; b) the setting; c) the sample; d) data collection procedures; e) data analysis procedures; f) analytic rigor; g) the rationale for the choice of a case study; and h) case boundary decisions.

Overview of Case Study

This study design represents a case study focused on exploring the frames and coping behaviors used by implementers and employees to make resistance interpretations during an innovation implementation. It specifically investigates an educational organization in the Midwest that implemented a turn-key sustainability program in 2013. The program consisted of sustainability actions in areas such as energy conservation or transportation that could be undertaken at home or the office; different actions received differing numbers of points. Participants were members of ten-person teams who competed against each other organization-wide.

The implementation of the program was organized by the organization's core sustainability working group, who developed and used a volunteer 'advisory group' of twelve employees to develop and rollout an implementation communication plan. The plan included communiqués from the organizations' most senior leadership, as well as additional e-mails and announcements during regular organizational conference calls. In all, 333 of the organization's 700 employees took part in the sustainability campaign by undertaking at least one sustainability action.

Semi-structured qualitative interview data were collected from participants in the case study, who were recruited using convenience and snowball sampling (Patton, 2002). The sample represented N=32 employees and N=6 implementers (representing 50% of the implementation group). The goal of analysis was to develop grounded typologies of behaviors and frames used to make resistance interpretations; it did this through qualitative content analysis, which subjectively categorizes participants' worldviews into easily accessible categories or themes (Hsieh & Shannon, 2005). To do this the interviews were transcribed and analyzed using the constant comparative method and coding procedures drawn from Miles and Huberman (1994). This method inductively and iteratively develops categories based on participant's own accounts.

The analysis examined the data for key types of behaviors, frames and social roles used by the participants to make resistance interpretations. The typologies were sharpened by iteratively consulting the literature on these behaviors and frames. It was further enriched by triangulation with post-program survey data provided by the NGO that developed the sustainability program. These data were also analyzed using the constant comparative process. This resulted in two

grounded typologies, one of coping behaviors (see Chapter Four) and one of the ‘logics’ that guide resistance interpretations of those behaviors (see Chapter Five).

Setting

The Organization: The organization that developed the turnkey sustainability program, Cool Choices, is an NGO in the Midwest; the organization that implemented the program is a large and storied educational enterprise in the Midwest. Its 700 employees are distributed across the state, and its headquarters are situated in the state capital. Its mission is to turn communities into classrooms and extend knowledge generated from its university to the community setting. Many employees are located in county-owned buildings and share the spaces with county employees and departments. Types of employees range from support staff to community educators to upper management. The organizational mission is comprised of four main goals: to undertake continuing education, cooperative education, economic development and public broadcasting.

The Eco-Innovation: The innovation that was put in place in the organization is a turnkey sustainability program that uses team competition to get players to take sustainable actions. The game is a series of actions that are awarded different points; it is designed to be played in competitive teams and is available online, via computer, tablet or smartphone. Different actions become available for play while others are removed from play. Each self-reported action is linked to a sustainability model designed by the program that calculates modeled energy and water savings, CO2 emissions and cost savings. The game operates in both office and home settings. Card categories include actions pertaining to energy, wellness, travel and water conservation. Players could undertake the following types of actions: 1) repeat certain types of

actions on a daily basis; 2) undertake large actions (such as buying a new energy efficient appliance); 3) research the effects of their actions; and 4) share ideas and photos around the topic areas.

The Implementation: This section presents the facts of the implementation collected during interviews. The implementation originated during an organizational sustainability team meeting, and the project was conceived as a way of benchmarking sustainable behaviors within the organization. The originators of this project first talked to the organizational administration and got buy-in from top management for the program, and then proceeded to apply for and receive a technology grant to fund the project. They also organized an ‘Advisory Team’. The advisory team communicated via Google doc files and conference calls; their purpose was to advise on program issues, for instance, on topics such as the timeline for the program or how teams should be formed. The advisory team faced a challenge when some of its members asked that certain actions, pertaining to eating less meat, be removed from the program. After debate, this action was removed from the program.

The communication plan that the team used to roll out the program to organizational members used multiple communication channels, and included both one-way and reciprocal feedback opportunities for employees. An initial recruitment e-mail was sent from the organization’s top leader to all employees, and he also sent subsequent follow-up e-mails to the whole organization. In addition, team members talked about the program on organization-wide conference calls, and a Google+ community was set up for players.

Players were asked to join a team. Participation required that players report on sustainability actions that they had undertaken. Players could check to see how their team and individuals on their team were doing with the challenge by visiting a website; they could also post questions, thoughts or musings about the challenge on the Google+ community website. The advisory team coordinated to populate the Google+ community with posts from their members during game play, so that the community would not be empty if players did not use it. All players received a daily e-mail reminder about the program. Teams were comprised of ten people, and implementation team members worked to ensure that people who had smaller teams were consolidated into larger ones.

Participation: Of 700 employees within the organization, 333 participated in the innovation by taking at least one action, in addition to creating 55 different teams. Preliminary saving estimates according to the program's model underlying the actions included items such as: annual savings of \$34,300; 197,600 gallons of water, 167 MWh of electricity and 1600 therms of natural gas.

Sample

The sample for this study represented 38 organizational members. This included n=6 implementers, (representing 50% of the implementation team), and n=32 employees. Sampling of participants was purposive, following both a self-selection and snowball approach (Patton, 2002). Recruitment occurred first via an organizational-wide e-mail from top management, followed by individual e-mails from the researcher to program participants.

Participants in the study ranged widely on several characteristics. For instance, in terms of collective behavior, participants ranged from having played on teams that did well to teams that did poorly. Contextually, they ranged from being located in remote rural offices that were owned and operated by another agency to the downtown headquarters of their own organization in a major city. Employees were represented from support staff to top leadership of the organization. This wide range was undertaken to examine if and how frames emerged across different variations; this in turn enhances confidence in the nature of these frames (Brummans et al., 2008; Strauss & Corbin, 1998). Particularly important for this study was the need to obtain implementers. Half of the core working team of implementers was interviewed; the rest of the implementers represented those who had agreed to be on the advisory committee for the program.

Data Collection

Data collection for the study consisted of interviews that the researcher undertook. In addition, due to an agreement with the sustainability program, pre and post program surveys were shared for triangulation purposes.

Interviews: Data collection for the interviews consisted of qualitative semi-structured interviews that took place over the period of a month, from March-April 2014. Whenever possible, interviews were scheduled to take place in person, to build rapport and reduce social desirability bias (Baxter & Jack, 2008), and ranged in length from twenty minutes to two hours, ten minutes. Phone interviews were sometimes a necessity due to scheduling conflicts; six of the interviews (16% of the total sample) occurred over the telephone. In total, in-person interviews occurred in

ten communities, ranging from large cities to small towns or villages, in all areas (north, west, east and south) of the state.

Turning from the details of where and when the interviews happened to the nature of the interviews themselves, they were semi-structured, which allowed detailed questioning pertaining to the study's research questions, while still allowing unexpected findings and themes relevant to participants' worldviews to be identified (Miles & Huberman, 1994). Verification practices associated with the interviews meant that a) interpretations occurred throughout the interview, and b) verification of these interpretations was attempted throughout the interview process (as advanced by Kvale 2007).

Topics covered by the interviews ranged from program participation and adaptation to social roles, coping behaviors and interpretations of these behaviors. The questions themselves were developed using a process where the research questions for the study led to thematic questions, which were then 'translated' into actual questions for participants. Pre-testing of the interview questions occurred in the winter of 2013 with several graduate students, and based on their responses the interview questions were revised to improve participant comprehension and more strongly elicit frames and roles. During the course of the interviews, the researcher developed a hypothesis that due to the distributed nature of the organization, office cultures differed. As a result of this, questions were added to the interview protocol that focused on decision-making, adaptation and leadership in the office. Other topics that emerged over the course of the interviews and seemed important to understanding resistance included how roles impacted team formation and how participants experienced role ambiguity.

Survey: The post survey data contains both closed and open-ended questions pertaining to values, behaviors and evaluations of the program. All datasets were designed and collected by the sustainability program. The post survey (N=198) started several days before the program ended and was open for two weeks.

Data Analysis

The study used frame analysis to identify the frames that are commonly used by both implementers and employees when making resistance interpretations of coping behaviors. Frame analysis is a method that uses different techniques to identify and categorize frames (Brummans et al., 2008; Creed, Langstraat & Scully, 2002; Gray & Putnam, 2003) operationalizing the technique depends in large part on the definition of a frame, as well as how it is unitized. In media framing, for example, analysis ranges from hermeneutic to linguistic approaches (Matthes & Kohring, 2008). In organizational or community framing studies, when frames are defined as interactional discourses between parties, discourse analysis is often used to identify the joint construction of frames (Creed, Langstraat & Scully, 2002; Dewulf et al., 2009). In considering frames as cognitive schemas, frame analysis is often done using constant comparative qualitative analysis to identify and categorize frames (Brass, Gray & Labianca, 2000; Brummans et al., 2008).

In this latter approach, frames are often operationalized as themes or categories that are used by participants to make sense of information (Brummans et al., 2008). In particular, I used the operational definition that Brummans et al (2008) used, which is “categories that surfaced

regularly in participants' accounts" (p. 32). In a text, frames range from short to long, running from a short instance to multiple paragraphs (Gray Putnam & Hanke, 2011). In addition, it is important to note that frames are not necessarily exclusive when discussing a topic; multiple frames might be used when considering an issue (Gray Putnam & Hanke, 2011).

A subsample of interviews was chosen for analysis. The interview transcripts were read through and instances where participants described someone else's behaviors as resistance to the sustainability program were identified. These sections were then open-coded for frames and coping behaviors. Once that occurred, a codebook was created that contained definitions of each frame, role and coping behavior. The literature was consulted to sharpen and strengthen these definitions (Brummans et al., 2008). In addition, peer debriefing with an anthropologist was undertaken. She suggested an alternative category than the ones that I had been coding as a possible explanation for resistance interpretations; I added this category to the codebook as a rival explanation (Miles & Huberman, 1994). Finally, I went over all my memos and a category I'd called 'surprise' to examine any findings that surprised me or caused me to write down thoughts about the topic (Miles & Huberman, 1994). Taking these into consideration I further sharpened my definitions.

After finalizing the codebook, I went through all the instances of the resistance interpretations and coded it using the codebook. I then examined patterns that emerged from the data using comparative grids (Miles & Huberman, 1994). These patterns identified what kinds of roles were associated with what frames and coping behaviors when making resistance interpretations.

Triangulation with survey data

Triangulation is a process whereby multiplicity (of sources, investigators, methods or theories) is used to enhance the analysis in a study (Jick, 1979; Patton, 2002; Yin, 2003), and is arguably a defining feature of case studies (Baxter & Jack, 2006). The point is not to obtain consistency between kinds of evidence but to examine consistency and use it to further enrich analysis (Patton, 2002). For instance, Lee (1991) describes the logics that operate between three research levels: subjective, interpretive and positivist. Lee (1991) describes the first level as generating meaning from participants, the second level sees researchers interpret these meanings and the third level generalizes them (Lee, 1991). In examining the rigor of the interpretation of these meanings (the second level of research), Lee (1991) argues the researcher needs to consider if participants' subjective meanings are captured in the interpretation and explained in a way that would make sense to the participants themselves. He suggests the interpretation can then be subjected to probabilistic logic (Lee, 1991). Triangulation can be used to ensure that the second level (researcher interpretations) are based on first level research logics (participant worldviews). For example, a surprise (an unexpected result) triangulating between data sets using the researchers' interpretations would necessitate a re-examination of either or both the interpretative stage or the subjective meaning stage data. This could entail generating a new interpretation that would involve a back and forth approach between the data and the interpretation stages. It could also involve simply going back to the subjective meaning stage to collect more data from participants. This might be warranted if, for instance, the original data was not thick enough to address the surprise.

This study used different sources of data to triangulate. Specifically, the post survey data were examined for role frames using the codebook; additionally, questions in the interviews pertaining to roles were also coded with the codebook. Those that fit the codebook categories were labeled in the data; those that did not were labeled 'other'. I went back to the 'other' categories to determine if any of them would occasion a new code but four out of five of them were labeled 'other' because they referred to the program interface on the computer or tablet, not to a role. The fifth instance labeled 'other' occurred because the participant statement was unintelligible to me. It therefore appeared there were no additional role categories to be culled from this material.

Analytic Rigor

Criteria for judging the case successful (Yin, 2003) included considerations of rigor from Lincoln and Guba's (1985) conception of trustworthiness. In particular, the tradition that Lincoln and Guba are working in dovetails with the interpretive and interactive model that is used in this study, which focuses on the interpretive structures behind communication in interaction (Biddle, 1986; Gioia & Pitrie, 1990; Kahn, Wolfe, Quinn & Snoeke, 1964; March & Olsen, 2006). In particular, the trustworthiness criteria comes from a naturalistic tradition which ontologically considers that there are multiple realities, not just one and that there are no universal truths, but rather conditions under which working hypotheses flourish or wither (Guba, 1981). Lincoln and Guba (1981) developed four criteria within this tradition, which roughly correspond to traditional positivist criteria: credibility (internal validity); transferability (external validity); dependability (reliability); and confirmability (objectivity). The next section details each of these criteria and how they were considered in this study.

Credibility: Lincoln and Guba (1985) define this as a way to “carry out inquiry in a way that the probability that the findings will be found credible is enhanced” (p. 296); in a naturalistic inquiry, this requires that the logic of the argument not be divorced from the context (Cepeda & Martin, 2005). In other words, is the work sensible and authentic? (Miles & Huberman, 1994). Although a key method to do this is member checks another method, triangulation, also supports this criteria, and was chosen because it was more efficient to obtain different materials at the beginning of the study than to contact participants post-analysis (Jick, 1979; Lincoln & Guba, 1985). Triangulation was undertaken as described above, as a way to enhance the study analysis and ensure the findings were robust. Another form of support for this criteria can occur through the seeking of rival explanations, which was also done in this study. This tactic does what it sounds like; researchers develop and seek alternative explanations for their findings (Miles & Huberman, 1994; Patton, 2002; Yin, 2003). In this study, I suspected that power might be an issue in terms of how resistance was interpreted. To examine this, I developed codes based on the four types of bases of social power identified by Raven and French (1959) and still used by researchers in conflict and resistance studies today (Brummans et al., 2008): reward, coercive, legitimate, referent and expert power (pp. 156-163). It seemed that it was a possible factor in resistance interpretations and has been considered in Chapter 5.

However, as a researcher working in context, it is important to consider credibility not only in initial design (triangulation) or post-hoc analysis (rival explanations), but also in terms of how participants were engaged *during* the study. For example, as Morse, Olson & Spiers (2002) point out, the single most important thing in good qualitative research from a constructivist perspective is to ensure representativeness of participants’ perspectives via the researchers’ responsiveness.

This was done throughout the interview process by verification techniques as advanced by Kvale (2007), such as interpretive questions where I offered my interpretation of what the participant had said and they had the opportunity to confirm, disconfirm or extend my interpretation.

Transferability: This concept has to do with how likely it is that study findings can be found in other contexts (Miles & Huberman, 1994). Within case studies in particular, the goal is not to generalize to populations and detail frequencies through probabilistic logic, but rather to contribute to theories through their expansion (Yin, 2003). With one case in particular, as in this study, the point is not to find universal truths but to identify causal mechanisms (Gerring, 2008) that might expand theory through falsification (Flyvberg, 2006). Whether or not a study is transferable to another set of conditions depends on the argument and knowledge of the person attempting to make that case (Lincoln & Guba, 1985). The responsibility of the original researcher, therefore, lies in Lincoln & Guba's (1985) admonition to provide rich enough description of the setting, method, data and analysis that the study can be applied elsewhere.

Dependability: In the positivist perspective, this concept rests on universal, unassailable truths – however, in an interpretive ontology, Lincoln & Guba (1985) indicate that change and instability in phenomena require a different conception of dependability. Rather than assuming that the results are driven by some unchangeable universal truth, in this tradition dependability means whether or not the process of research was stable over time (Miles & Huberman, 1994). To show this, researchers need to clearly describe and document their procedures (Elo & Kyngas, 2008; Yin, 2003) – this is done in my reflexive research journal that this provides a record of how I

interacted with the data and the methods I chose based on my own interpretations of what was occurring with the data and analysis (Lincoln & Guba, 1985).

Confirmability: This concept pertains to whether or not the research is confirmable (Lincoln & Guba, 1985). A key way to show confirmability is to provide a record of the research process via a reflexive journal – this provides a record of how I interacted with the data and the methods I chose based on my own interpretations of what was occurring with the data and analysis (Lincoln & Guba, 1985). For example, in the process of working with the definition of what a resistance interpretation was, several issues arose. I realized I'd been conflating whether resistance was considered intentional or not by participants with responsibility for the resistance. Decoupling these two aspects of resistance interpretations allowed me to come up with four categories of resistance interpretations. The four categories are: a) intentional and responsible resistance; b) intentional resistance but not responsible for it; c) non-intentional resistance but responsible for it; d) non-intentional and non-responsible resistance. Some of these categories line up with other typologies (see Hollander & Einwohner, 2008) but others do not, and future work might benefit from using these categories in analysis.

Justification for Case Study

Case studies exhibit divergent definitions (Gerring, 2007). The one that this project used is of observing a defined phenomenon using multiple evidence within the phenomenon's context (Flyvberg, 2006; Gerring, 2007; Yin, 2003). Several areas that authors differ over in case definitions involve whether they emerge from theoretical questioning or are considered empirical fact; whether they're inductive or deductive; and whether they expose particular configurations

or universal generalities (Cepeda & Martin, 2005; Gerring, 2007; Yin, 2003). Case studies have several key strengths (that can also be considered weaknesses, depending on the purpose of the study and the research questions evoked). The next section details some of the features of case studies that made this method particularly suited to this project.

The first key need of this research project was to find a method that could examine contextual, rather than consequentially based decision-making. The Logic of Appropriateness (LOA) served as inspiration for this study as it is based on contextual combinations of roles and situation frames, rather than assuming a rational, future oriented perspective on decision-making (Weber, Kopelman, & Messick, 2004). Because of this, a case study method, which is particularly useful for identifying context-specific processes and factors was chosen (Gerring, 2007). The second key factor for deciding on a case study approach was the lack of control I needed over participants' behaviors (Yin, 2003); in fact, the project does not study behavior, but the frames that guide interpretations of recalled behavior. Rather than conceiving of frames as an interactional process that requires the study of behavior (Dewulf et al. 2009), this study defines frames as cognitive schema, which is called on when making sense of a situation (March & Olson, 2006). Because of this, a method that allowed participants to undertake a process of describing how they made sense of the situation (interviews) was needed; interviews, which allow this process, are often a key component to case studies (Yin, 2003).

Another key consideration to using a case study approach was its strong heritage in evaluation research (Yin, 2003). Cases are typically used to explore interventions, or to illustrate processes that occur during interventions, such as the sustainability program that formed this study's

context. A review of implementation studies (a particular subset of evaluation studies) found there tend to be four main types; this study falls under the type that seeks to “understand the social construction of implementation processes and impacts on innovation” (Real and Poole, 2005). In particular, studies of this type examine processes and factors that shape these processes, in this case, how frames and roles in combination effect resistance interpretations (Real & Poole, 2005). This often requires inductive and/or qualitative work to identify and typify these processes (Real & Poole, 2005). As Real & Poole (2005) note, such study requires rich, close analysis rather than more general methods; case study methods are well suited to providing this.

Bounding the Case

The purpose of this research was to better understand what frames guided the interpretation of coping behaviors as resistance, during the implementation of an innovation in an organization. In other words, this study was not examining implementation as a phenomenon in and of itself, but the behavior and frame combinations that were used during resistance processes triggered by an implementation.

To study this, the investigation examined the role, issue, process and relationship frames that were used to make sense of coping behaviors during retrospective resistance interpretations.

These frames and behaviors comprise the study’s units of analysis. More specifically: a) issue frames refer to categorizations of the situation; b) relationship frame refers to how self, other or self in relation to collectives are framed; and c) process frames refer to expected sequences of

behavior; and d) role frames refer to status, behavior and identity (Dewulf, 2009; Weber, Kopelman & Messick, 2004).

It was determined that this organization and its implementation were a good fit for this study for a number of reasons. First, there was a number of alternative datasets that could be used for triangulation purposes from the Cool Choices program. Additionally, Cool Choices had a trusted organizational contact that was willing to assist in assessing if the organization would support the research. This contact was also a member of the original implementer team, and was able to identify the members of the volunteer implementer advisory board who had guided the implementation. There were also a large number of participants on this implementer board, and therefore a higher likelihood that I would be able to interview some of them. Fourth, most eco-innovations are optional programs (Norton, Parker, Zacher & Ashkanasy, 2015); this program was typical in that it was also implemented in an optional fashion (i.e.: employees had a choice about whether they participated in the program or not).

While this case study was predicated on being a ‘typical’ case (Yin, 2003) there is unfortunately no definitive work on what comprises typical implementations (Real & Poole, 2005). Moreover, there appear to be four epistemic understandings of implementation by researchers, based on four combinations of variance/process or fixed/adaptive qualities of the implementation. For instance, an understanding of implementations from a fixed-variance perspective tends to study how the implementation should have been put in place (Real & Poole, 2005). This study, given its focus on the “social construction of implementation processes”, in this case, resistance interpretations, takes what Real & Poole (2005) call a transformation approach to implementation. This

understanding of implementations is rooted in conceptions of change as a developing process. Studies in this tradition require close process observation, and methods of examining patterns related to change (Real & Poole, 2005), but there are not necessarily any quantifiable, objective elements of the implementation that would be considered ‘typical’.

Given the lack of consensus on typical implementations, I looked for other ‘typical’ rationale from a communication perspective. Unfortunately, there has been little work in this area either (Lewis, Hamel & Richardson, 2001; Lewis & Russ, 2011). However, there are some indications of what might be thought ‘typical’ communication approaches to implementations. In 2011 Lewis & Russ identified how implementers seek input on implementations – they found that the most common type of input sought by implementers is the use of ‘select stakeholders’, followed by a strategy of ‘advisory stakeholders’. This second approach, which Lewis & Russ (2011) detail as the second most common in their study, uses a wide array of stakeholders to provide implementation contributions, and was found in this case. Secondly, Lewis Hamel & Richardson (2001) identified six key communicative approaches to implementation – however they did not identify which one is most likely to be used, or typical, by implementers. However, this case did appear to fit the criteria for one of these approaches (equal participation) where information is distributed and input is gathered (Lewis, Hamel & Richardson, 2001).

Due to the lack of consensus around implementations themselves or the communications associated with them, I decided to choose a case based not on typical outcomes (such as participation rates or achieving a certain amount of modeled CO2 reductions) but on the possible, typical variance that would be encountered during the case (Strauss & Corbin, 1998). In

this sense, then, the variation among participant characteristics for this case represents a typical sustainability program implementation. For instance, there were people who played frequently and those who did not; teams that did well or did not do well; players from the lowest positions in the organization to the highest. This level of variance to me, represented a typical implementation.

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THE FOLLOWING CHAPTER, CHAPTER THREE, IS INTENDED AS A STANDALONE
JOURNAL ARTICLE

CHAPTER 3

“THEY’RE SUCH COMPLAINERS!”: HOW ROLES AND BEHAVIORS CONSTRUCT RESISTANCE INTERPRETATIONS DURING ORGANIZATIONAL INNOVATION IMPLEMENTATIONS

Abstract

Advocates of organizational change, including sustainability campaigns, seek to promote behavioral change, yet research shows that efforts to implement these changes have consistently resulted in 50-70% failure rates. This may be because of a lack of research into resistance to change, which is a different phenomenon than change itself. In addition, research has failed to examine resistance as an interpretive, interactive communication process, traditionally conceiving of resistance as employee's' psychological attributes that shape their non-compliance with the change request. Yet employees often interpret their behavioral reactions to change requests (called coping behaviors) as forms of engagement rather than resistance. This suggests differences between employee and implementer interpretations of resistance that might be key to better understanding implementation approaches within workplaces and subsequent ways to improve it. This study is a first step in such a direction. A case study using role theory, it explores what types of behaviors employees and implementers perceive others to enact when making resistance interpretations. The analysis indicates that the coping behaviors implementers use leads them to focus on a conception of resistance as confrontational, while employees also see some of these behaviors contributing to a withdrawal form of resistance. This indicates that different roles are associated with different resistance interpretations and suggests the role that knowledge -- implicit in these differing roles -- contributes to this variance. This work represents

a first step in an effort to examine the micro-processes that contribute to resistance interpretations in organizational implementations.

Introduction

Putting something new – whether a behavior, a policy or process – in place within organizations, regularly exhibits 50-70% failure rates (Ijaz & Vitalis, 2011; Klein & Knight, 2005; Lewis & Seibold, 1996). This raises a key question – why do implementations fail, and what can be done to reduce these rates? Innovation itself consists of four main steps: “awareness, adoption, implementation and habituation” (Real & Poole 2005, p. 64). An adoption decision identifies if the innovation will or will not be undertaken. In contrast, the implementation step occurs when change is introduced to the workplace and roles adapt the change into the organization’s social fabric (Lewis & Seibold, 1996). Importantly, implementation decisions are understudied compared to adoption decisions, and empirical study of implementation is rarer still (Klein & Knight, 2005; Real & Poole, 2005). Better understanding of the implementation process could lead to more implementation success and is therefore needed (Stagmaier & Sonntag, 2010).

In addition to a lack of empirical work on implementations, there is also a research gap in attending to implementation communication (Lewis, 2006B), even though implementations are inherently coordinated and constructed by communication interactions (Baron, 2010; Lewis & Seibold, 1996). For example, implementation requires communication to: a) articulate concepts; b) provide social support; and c) socially coordinate feedback between implementation parties (Lewis, 2006A). While research into organizational communication in the past used a one-way model that focused on sending a message from one party to another, today’s researchers now

tend to focus on communication as a reciprocal interaction between parties (Putnam & Boys, 2006). In studies that prioritize these interactions, the communication model becomes a two-way feedback process called the 'double interact' occurring through behavioral interpretations (Putnam, Philips & Chapman, 1995; Weick, 1979). The model consists of an action, an interpretive response to the action and an interpretive reaction to the response (Putnam, Philips & Chapman, 1995). Role theory suggests that roles (collective behavioral expectations) are created and maintained through this double interact process (Biddle, 1986; Kahn, Wolfe, Quinn & Snoeke, 1964; Merton, 1957). An example could be implementers asking employees to become sustainable by undertaking conservation behaviors, employees responding with coping behaviors to understand and implement (or not) the requested behaviors, and implementers reacting to these coping behaviors. (Implementers are defined as those "...empowered by organizations, through role responsibilities or expertise, to introduce change" (Lewis, 2006B, p. 24). Coping behaviors are actions that employees undertake during implementations to process and engage with the innovation (Lewis & Seibold, 1996)).

Specifically, expanding the communication model in this way makes implementers part of the implementation process and contributors to implementation success or failure. One way practitioners and researchers have considered such failure is by investigating it as resistance (Bommer, Rich & Rubin, 2005; Decelles, Tesluk & Taxman, 2008). This resistance typically understood as a psychological problem of employee non-compliance with change requests (Boukenoughee, 2010; Ford, Ford & D'Amelio, 2008). Critics charge that this singular focus on employees limits theoretical development because it neglects how implementers themselves might contribute to resistance (Boukenoughee, 2010; Ford, Ford & D'Amelio, 2008; Oreg,

Vakola & Armenakis, 2011). This is an important omission given studies showing that employees interpret their own reactions to innovation requests differently from implementers, seeing them not as resistance but as a form of engagement with the implementation (Ford, Ford & D'Amelio, 2008). This suggests differences between employee and implementer interpretations of resistance that might be key to better understanding implementation approaches within workplaces and subsequent ways to improve it.

In addressing this need for research, this study uses a combination of role theory and the double interact model to examine what behaviors employees and implementers perceived when making resistance interpretations during implementation of a sustainability campaign. The campaign was a three-month long turnkey sustainability program that was put in place in a large educational enterprise in the Midwest. Employees were asked to participate in daily sustainability behaviors, such as turning off lights or computers, and implementation was guided by a volunteer 'advisory group' of twelve employees. In total, about half of the organization's employees took part in the conservation campaign. Resistance interpretations and the behaviors that generated them were gathered and analyzed with semi-structured qualitative interviews and frame analysis. The study provides a better understanding of what coping behaviors were focused on when making resistance interpretations, and how roles were associated with similarities and differences in the interpretive process.

Role Theory and Implementation

Roles are socio-cultural constructs that provide a way to examine how shared interpretations guide decision-making. Rich with a storied history in psychological, sociological and

communication research, role theory argues that social roles are comprised of collective expectations from groups called 'role sets' that guide people's role identities and associated behavior choices in differing contexts (Biddle, 1986; Merton, 1957). A 'role episode' consists of a role double-interact: "...a cycle of role sending, response by the focal person, and effects of the response on the role sender" (Kahn et al, 1964, p. 26). Although there are various schools that differently interpret role theory, Biddle (1986) argues that they all agree on three components of roles: that of a 'role identity' (social position), role behavior (role) and expectations for the behavior (norms). The theory necessarily straddles the individual and collective levels of analysis.

Role identities encompass both objective and subjective aspects (King and King, 1990). The subjective facet is considered psychological (King & King, 1990). Changes in the subjective role identity are called 'micro-role shifts' and occur when role holders themselves change their perceived role identity to another one, or make adaptations to it (Shumate & Fulk, 2004). In contrast, objective role identity is comprised of the social structure that guides identity formation and maintenance (King & King, 1990). This necessarily includes the relational aspect of the identity, such as the degree of others involved in creating the role (role set) or the level of dependence on those members (Barley, 1990; Bates, 1962).

Key roles within organizational implementations include implementers, as well as employees expected to participate in the program, yet most of the research within the resistance tradition has focused on employees (Ford, Ford & D'Amelio, 2008). But examining the role communication *between* implementers and employees (send message; react to message; react to reaction)

provides a framework for investigating implementation communication in a more fulsome way. (Additionally, employees might send change messages to other employees in another kind of double interact. And finally, employees might also interpret other employees' behaviors that are undertaken in reaction to implementers' change messages).

In particular, focusing on the third part of the process (reacting to reactions to change messages) has been understudied, both in the organizational (King & King, 1990), as well as the implementation communication literature (Lewis & Russ, 2011). As Lewis & Russ note (2011): "We know little about the manner in which implementers process input and the value they place on input" (p. 269). They were discussing planned opportunities for input, but the same could also be said for informal feedback processes. Attending to this research gap seems a promising approach to begin more expansively investigating implementation communication as a process that involves both parties.

Unfortunately, there has been little work done on implementer's communicative roles; what work exists has been done by Lewis and her colleagues (Lewis 2006; 2007; Lewis, Hamel & Richardson, 2001; Lewis & Russ, 2011; Lewis & Seibold 1993, 1996) in the past decade. For example, research into how implementers themselves communicate during implementations identified several types of strategic models, such as: "equal dissemination; equal participation; quid pro quo; need to know" (Lewis, Hamel & Richardson, 2001). Earlier research (Nutt, 1986) had identified four models – "intervention, participation, persuasion and edict" (p. 242).

Implementers decided on these communicative strategies by assessing who the stakeholders are, and their interests; this assessment guides expectations about implementation outcomes as well

as communication tactics, such as dissemination versus feedback processes (Lewis, 2007).

Employees realize the importance of implementers and their communication within implementation processes – for instance, research has shown that the higher the quality employees perceived implementation communication to be, the less likely they were to perceive resistance to the implementation (Lewis, 2006). This research shows that how employee input is evaluated by implementers is considered key to implementation success by employees themselves (Lewis, 2006).

This relationship between employee and implementer conceptions of implementation draws attention to the relational quality of communication between these roles. There seems to have been an implicit assumption within implementation communication studies that implementers and employees conceive of innovation and implementation similarly, but this has not been extensively investigated. For instance, as Lewis and Russ (2011) detail, implementer and employee focus is often different in terms of inputs, message production, and audience segmentation. Role theory seems like a promising approach to address expectations about change and innovation between implementers and employees.

Interpreting Resistance

This study situates itself within the interpretive tradition of resistance studies (Hollander & Einwonher, 2004; Prasad & Prasad, 1998) of which there is a small but growing field within organizational communication. As Lewis (2006) notes, resistance has not been well examined from a communication perspective, and despite calls for an interpretive approach (Garner, 2013; Mumby, 2005) the field has typically seen and examined resistance as a form of micro politics

(Pal & Buzanell, 2013). Features of an interpretive approach involve an underlying assumption that reality is socially constructed (Berger & Luckmann, 2011; Garner, 2013; Gioia & Pitrie, 1990; Putnam & Boys, 2006; Weick, 1993): in essence, resistance is understood to be an interpretation of reality rather than an objective fact (Ford, Ford & D'Amelio, 2008; Hollander & Einwohner, 2004). The assumption that reality is interpreted points researchers to examining the social structures, such as roles and frames, which guide resistance interpretations. Frames in this study are defined as cognitive expectations about situations gained through experiences; they drive what we focus our attention on, and also how we interpret incoming information (Miller & Sardais, 2013). There are three major types of frames: issue (categorization of the situation); relationship (categorization of the self, others and relations between self and others); and processes (series of events) (Dewulf et al., 2008). Roles can be considered relationship and process frames.

This interpretive model includes not only cognitive elements such as role expectations and identities, but also interactions - where reality is co-constructed through overlapping interpretations between roles that might be similar or dissimilar. This requires a consideration of resistance interpretations happening not only from employees' perspectives, but also from implementers' perspectives (Ford, Ford & D'Amelio, 2008; Garner, 2013). This makes implementers part of the resistance phenomenon (Ford, Ford & D'Amelio, 2008), and necessarily leads to a consideration of how both roles interpret resistance – are there similarities or differences among their interpretations?

An additional research gap revolves around the fact that most work in this tradition has focused on the interpretations themselves rather than what is interpreted as resistance – the behavior. Yet, as Ford, Ford & D’Amelio (2008) remind us, resistance interpretations themselves are necessarily based on public behaviors that are then interpreted; are there certain kinds of behaviors that are used consistently in making resistance interpretations? Do implementers and employees use different or similar behaviors in their resistance interpretations? Answering these questions will begin building a foundation to examine resistance interpretation processes in organizations.

Coping Behaviors

Research examining behavior within the field of interpretive resistance studies has mainly followed the sociological tradition. For example, studies have examined gossip, and how these behaviors are interpreted as resistance (Prasad & Prasad, 1998; Prasad & Prasad 2000). In addition, Tucker (1993) offered a typology of behavior used in workplace resistance, ranging from ‘confrontations’ to ‘non-cooperation’ (p. 32, 37). However, these behaviors were classified descriptively, without a conceptual framework. Overall, there has been little conceptual work about behavioral interpretations in implementations with the exception of Lewis’ contributions (Lewis 2007; Lewis & Seibold, 1993; 1996; Lewis 2006; Lewis, Hamel & Richardson, 2001; Lewis & Russ, 2011). This body of research details the coping behaviors that employees undertake during implementations to process and engage with the innovation (Lewis & Seibold, 1996; Oreg, Vakola & Armenakis, 2011). These behaviors are goal oriented, and they vary on three key dimensions: 1) affect (positive or negative); 2) uncertainty (decidedness or undecidedness); and 3) orientation (self or other oriented) (Lewis & Seibold, 1996). Examining

behaviors in this way is consistent with Dewey's (1902) admonition that researchers attend "to what attention is being paid" (Weick, quoting Dewey, 2012, p. 146). Taking such an approach leads to this study's research questions:

RQ1: What types of coping behaviors do employees and implementers perceive when making resistance interpretations during implementations?

RQ2: What similarities and differences exist in what coping behaviors implementers and employees perceive when making resistance interpretations?

Answering these questions will assist resistance and implementation communication researchers to better understand the micro processes that contribute to resistance outcomes during innovation implementation.

Method

Approach: Data were collected within an exploratory and explanatory case study focused on the frames and social roles implementers and employees use in undertaking resistance interpretations and the types of resistance interpretations that occur (Yin, 2003). It investigated a large educational enterprise in the Midwest that implemented a turnkey sustainability program in 2013. The organization had a volunteer 'advisory group' of 12 employees who guided program implementation; in all, about half of the organization's employees took part in the program.

Data: The interview sample represented 38 employees, of whom six were implementers (representing 50% of the implementation group). Sampling was purposive, following both a self-selection and snowball approach (Patton, 2002). Recruitment occurred first via an organizational-wide e-mail from top management, followed by individual e-mails from the researcher to program participants. Participants in the study ranged widely on several characteristics, such as team accomplishment or office location. This wide variety of participants enabled the researcher to examine what interpretations emerged across different variations of the phenomena being studied (Strauss & Corbin, 1998).

Data collection for the interviews consisted of qualitative semi-structured interviews that took place from March-April 2014. Whenever possible, interviews were scheduled to take place in person, and they ranged in length from 20 minutes to 130 minutes. Topics covered by the interviews ranged from program participation to coping behaviors. Verification practices associated with the interviews meant that a) interpretation occurred throughout the interview, representing ‘member checks’; and b) verification of these interpretations was attempted throughout the interview process (as advanced by Kvale 2007; see also Lincoln & Guba, 1985; Morse, Olson & Speirs, 2002). Data collection and analysis were designed rigorously according to Lincoln and Guba’s (1985) conception of trustworthiness. In particular, peer debriefing was used to develop credibility (Lincoln & Guba, 1985). Further, the interviews were recorded, and a reflexivity journal was used for dependability and conformability purposes (Golan & Bamberger, 2015; Lincoln & Guba, 1985).

Analysis: The study used frame analysis to identify the frames that are commonly used by participants when making resistance interpretations of coping behaviors. Frame analysis identifies and categorizes frames (Brummans et al., 2008; Cornelissen & Werner, 2014; Creed, Langstaat & Scully, 2002; Gray, 2004); operationalizing the technique depends on the definition of a frame. For example, in organizational framing studies, when frames are defined as discourses between parties, discourse analysis is often used to identify the joint construction of frames (Creed, Langstaat & Scully, 2002; Dewulf et al., 2009). In considering frames as cognitive schemas (Dewulf et al., 2009), frame analysis uses constant comparative analysis to identify frames as categories used by participants to make sense of information (Brummans et al., 2008; Creed, Dejordy & Lok, 2010; Gray, 2004).

This frame analysis included detailing what coping behaviors participants used as a catalyst for their resistance interpretations. To do this I looked for behaviors that participants themselves explicitly judged as resistant, based on the Oxford English Dictionary definitions of resistance and resisting. This meant looking for explicit judgments from participants of others' behaviors that the participant thought were evidence of resisting, opposing, withstanding, slowing, stopping, hindering, preventing, impeding or opposing the program or a part of it. In addition, the participants had to view the behavior as an intentional form of resistance.

The analysis took several steps. First, the transcripts of a subsample were read, instances of resistance interpretations were noted, and memos were written. These interpretations were open and axial coded (Strauss & Corbin, 1990), resulting in major frame and behavior categories. To test the categorical logic, I debriefed with a colleague, who challenged the category definitions

and fit (Lincoln & Guba, 1981). In addition, I reviewed literature to sharpen the definitions.

Regarding the coping behaviors that are being reported on in this study, three major categories of behavior that had emerged from the data were found in Lewis and Seibold's (1996) work, giving some confidence in the categories. I also used instances that I had coded as surprising (Miles and Huberman, 1994) to make sure I was not missing material that refuted, changed or extended my categories. This resulted in a grounded typology of coping behaviors (Golan & Bamberger, 2015), which I refined with further, iterative consultations with the literature. I then coded all the transcripts again with this final codebook.

Analysis

The frame analysis reported in this study refers to the types of coping behaviors that implementers and employees perceived when making resistance interpretations (See Table 1).

These categories emerged from the data and were found in other studies (Lewis & Seibold, 1996; Prasad & Prasad, 2000) lending some confidence to the typology. This next section details these categories and how they were used to make resistance interpretations.

<p>Negative CB “Negativity of CB” 1</p>	<p>When people talked to me about it, I was like, “Guys. It was just a game, so if you don’t want to play, don’t play. You don’t need to be the negative Nellie in the group either.” The people that did play and that liked it, it was fun. It was different.</p>
<p>Other oriented CB CB related to “...influencing behavior of others” 1</p>	<p>When that decision came out, there was a couple who weren’t on the [conference call] that jumped on the e-mail and was like ‘No, no. That’s not what we think should happen,’ some of those kinds of things so some of that pushback on some of the decisions.</p>
<p>Self oriented CB CB related to own behavior. 1</p>	<p>...so for some people they maybe you know, looked at it, glanced at it and then just put it in the trash and there was no, you know, they didn’t even consider it. They maybe did not even read the e-mail. They maybe just opened it up and said ‘it’s – I don’t wanna play a game, I’m just gonna throw it away’.</p>
<p>Decided CB If the person has made a “firm decision about the innovation” 1</p>	<p>But. When you – when you kind of say ‘Oh, this is lame, this sucks.’ Well you kind of create a little cul-de-sac. Where everything stops at you, because you think it’s so lame you’re not even gonna talk to your team about it....</p>
<p>Undecided CB If the person has not made a firm decision about the innovation. 1</p>	<p>[Referring to a discussion during an implementer meeting about the program] And so, it was really – it became this question about what the science is....</p>
<p>Confrontational Resistance “Open confrontations” 2</p>	<p>And then there were some people who were saying ‘This is lame’ or. You know, ‘I already, I already turned my lights off’ or ‘I already deal with this, how come I don’t get any credit for having a hybrid car’, you know.</p>
<p>Withdrawal Resistance “Withdrawal and disengagement” 2</p>	<p>But I just assumed because my colleagues did not choose to participate, that when those emails came, and they were labeled pretty clear, that they would simply delete them or not read them.</p>

Table 1: Coping Behavior and Resistance Categories. Definitions confirmed in 1) Lewis & Seibold (1996); and 2) Prasad & Prasad (2000)

Coping Behaviors

Paying attention to what types of coping behaviors were perceived when making resistance interpretations led to findings that while implementers and employees perceived the same types of behaviors to make resistance interpretations, the types of resistance interpretations themselves were different. This suggests that roles are associated with different resistance interpretations of the same types of perceived coping behaviors.

Decided/Undecided Coping Behaviors: While Lewis and Seibold (1996) describe undecided behaviors, these types of behaviors did not appear to be focused on when making resistance interpretations. Instead, it appeared that behaviors identified as ‘decided’ were largely used by implementers to interpret resistance as a form of confrontation, while employees were more likely to see these behaviors as a form of withdrawal. Decided behaviors pertain to having made a ‘firm decision about the innovation’ (Lewis and Seibold, 1996, p. 138). For instance, one employee commented about colleagues who withdrew their participation from the program:

“But – so, it was just – people making choices over what they could spend time on. And some of it had to do with the perception that this would take more time than they should devote to something – that was really considered by them to be a game.”

In this case, the employee saw others having made a decision about the utility of the program, which resulted in program withdrawal. On the other hand, rather than interpreting resistance as a withdrawal from the program, implementers conceived of it as a confrontation when focusing on ‘decided’ coping behaviors:

“I’ve noticed the tendency for people to sort of -- there are just people who just really feel like it’s their responsibility to point out all of the possible negatives of anything ever, and so that happened a lot.”

Here, the implementer seemed to be perceiving the decisions employees had made about not participating in a portion of the program as confrontational. These examples indicate that while the perceived behavior is similar, the roles (employee versus implementer) are associated with different resistance interpretations.

Positive/Negative Coping Behaviors: While Lewis and Seibold (1996) detail positive behaviors, it did not appear these types of behaviors were perceived by either employees or implementers when making resistance interpretations, while negative coping behaviors were. Negative coping behaviors refer to “the negativity of the tactic” (Lewis & Seibold, 1996, p. 136). It appeared that both employees and implementers considered negative coping behavior to be confrontational. However, further analysis suggested that implementers consider negative coping behaviors to be attributable to the social context of the organization writ large, while employees attributed negative coping behaviors to the office, as well as the organization and the team level. Employees seemed to be the only party who considered negative coping behaviors to occur at the interpersonal level. For example, here, an employee discusses the negativity of potential team members’ reactions in the office:

“And based on the information that was shared at that time, it was like, well, you know, I’m – I really feel like I’m going to find value in this. Obviously, from the comments that were shared, my colleagues did not share that. So, at that point, it was – I didn’t feel like it was – that it was – that I felt comfortable discussing it.”

On the other hand, an implementer discusses negative complaints as emerging from the organization’s large social context:

“And also, if we add anything new ever, our staff we have a lot of work and maybe not as many people as we really need to do the work. Everyone is fairly overtaxed. And so there is always with anything, a little bit of rumblings of just ‘This is just one more thing? And I don’t have time for my eight other things, so I’m not going to do this.’”

Here, the resistance appeared to be perceived as a negative feature of the organizational environment (see Ford, Ford & McNamara, 2002). This indicated that implementers see negative coping behavior as a habitual part of the social context that impacts putting their program in place, while employees view it as negative interactions that occur in settings such as their office. In addition, there appeared to be an expectation among both roles that undertaking the innovation should be done in an agreeable fashion. Neither positive nor undecided coping behaviors were perceived by either role when making resistance interpretations.

Other-/Self-Oriented Coping Behaviors: Other-oriented coping behaviors are ones that attempt to influence others, while self-oriented coping behaviors are ones that are focused on the individual's own behaviors (Lewis & Seibold, 1996). It appeared that both employees and implementers who focused on other-oriented behaviors conceived of resistance as confrontational. However, this seemed to change for self-oriented coping behaviors – employees who focused on these behaviors appeared to interpret resistance as withdrawal, while implementers who used it still conceived of resistance as confrontations. Because attempts to influence others in workplaces often involve a verbal component, it makes sense that attempts to influence others would also fall into the traditional conception of what resistance is – a verbal confrontational process. On the other hand, when employees saw self-oriented behaviors, they appeared to identify them as forms of resistance withdrawal, as detailed by this employee.

“And – then I think we had one – maybe one person that just decided not to play at all and so then – it would have made it a very small team....But it just – it just seemed to be that there was not a whole lot of interest either in playing the game at all or playing it – because everybody thought that they were just too busy.”

This passage indicated that the employee saw how being mindful of self-oriented behavior caused colleagues to withdraw from the program requirements. This alternates with implementers who appeared to see self-oriented behavior as an additional kind of confrontation. This suggested that employees perceived self-oriented coping behaviors as a form of withdrawal from the social context, while implementers saw them as a confrontational form of resistance. Importantly, both employees and implementers perceived attempts to influence others as confrontational resistance.

It appears that when focusing on coping behaviors, both implementers and employees used the same ones for resistance interpretations, but these interpretations were different. The paper now turns back to the literature to examine and sharpen these findings.

Discussion

What Coping Behaviors were perceived when making resistance interpretations?

The first research question asked what types of coping behaviors were perceived as resistance during implementations. The behaviors that emerged in this analysis included ones identified by Lewis & Seibold (1996). These categories also add to our understanding of what types of coping behaviors are commonly perceived by both implementers and employees making resistance interpretations, providing a base for exploring if these categories, or new ones, emerge under different conditions.

Roles and Behavioral Focus

The second research question asked whether there were similarities or differences between what coping behaviors implementers and employees focused on as resistance. While implementers and employees appeared to perceive the same types of behaviors, they used these behaviors to conceive of resistance differently. In particular, implementers consistently saw coping behaviors as contributing to a confrontational form of resistance, while employees used some of the same coping behaviors to develop a conception of resistance as withdrawal (See Table 1). The work shows that in this case, implementers consistently perceived coping behaviors as a confrontational type of resistance. Given resistance research's overreliance on implementer's perspectives on resistance (Ford, Ford & D'Amelio, 2008), this begs the question – what conceptions of resistance are resistance researchers taking for granted and prioritizing? Stepping back from prioritizing implementers' perspectives on resistance to see others perspectives as well suggests that more work needs to be done on how implementers' roles guide them to interpret behaviors as confrontation. In particular, we know little about how implementers contribute to the resistance process (Bouckenoughe, 2010; Ford, Ford & D'Amelio, 2008; Oreg, Valcola & Armenakis, 2011). In addition, as Lewis & Russ (2011) note, there has been little work in the implementation communication field on how implementers themselves conceive of and process input from employees.

With regard to the subjective aspect of an implementer role, (King & King, 1990), several authors have identified the self-reported goal of implementers is to disseminate information about the program and accomplish the implementation, rather than obtain input from employees about the change (Ford, Ford & D'Amelio, 2008; Lewis, 2006; Lewis, 1999). This is typically

done through information meetings with staff, and implementers are often aligned with the managerial goals of the innovation (Lewis, 2006). In particular, implementers are often not taught how to accept input, why it is valuable, or how to use it (Ford, Ford & D'Amelio, 2008; Lewis and Russ, 2011).

But these attitudes might be shaped by the structural aspects of the implementer role itself. This means considering the social structures that guide role formation and maintenance (King & King, 1990), such as the composition of social networks (Barley, 1990; Baxter, 1962) within which implementers find themselves. Implementers themselves might best be considered boundary spanners who need to span the social boundaries between differing groups (Bates, 1962; Miles & Perrault, 1976). It appears this structure is associated with perceiving behavior as confrontational. This might be because in straddling social groups, the implementer is not embedded in the groups, which means they do not necessarily have a deep knowledge of roles expectations within the group. By virtue of how they bridge social groups, they might not be even able to see social signals, let alone have the role knowledge to interpret these signals similarly to the group. As one implementer noted about not knowing the reasons for employees' lack of participation: "...we couldn't just walk over to their office and ask why didn't you play, we didn't know if it was a matter of 'I'm insanely busy, I don't have the 40 seconds to spare to sign in' or 'I didn't find this that interesting and I've tried it a couple of times and just don't want to do it again'".

In contrast to conceiving of resistance as a series of confrontations, employees perceived some of the coping behaviors (namely decided and self-directed coping behaviors) as a kind of

withdrawal resistance (see Table 1). In this case, resistance is seen as a form of withdrawal (what does not occur, what is not done) (Watzlawick, Beavin & Jackson, 1967) that is intended by actors but overlooked by those who are not part of the social culture (Hollander & Einwohner, 2004; Prasad & Prasad, 1998). For example, as noted before, implementers are necessarily spanning social groups to put innovations in place. This requires them to move from one social grouping or team to another. (In this case, for instance, this meant moving from an implementation work team to one's regular office environment to announcing the innovation to other work teams). In some cases, being an implementer might have meant intruding into an unknown set of office or team role expectations, which means not knowing what types of behaviors are expected and conversely, unexpected. If an implementer does not know what behaviors *should* happen, it is difficult to ascertain when behaviors do not happen – when they are withdrawn or disengaged from. In this sense, seeing resistance as a kind of withdrawal requires a close, strong understanding of a specific set of roles.

For example, even though negative coping behaviors were seen by employees as a form of confrontational resistance and not withdrawal, the negativity was couched in interactions with office mates or team members. This speaks to knowledge of the relational norms that employees develop and use in their roles when embedded within a role system in an organization (Griffin, Neal and Parker, 2007; Hayton, Carnabucci & Eisenberger, 2012; Kahn et al., 1964; Sluss and Ashforth, 2008). The socially structured web of roles proffers a sense of routine and stability, and it results in role expectations about differing levels of politeness, manners, and emotional labor (what emotional performances are appropriate and inappropriate for differing roles) (Babrow, 2001; Hayton, Carnabucci & Eisenberger, 2012; Zorn, 2002). The relational aspect of

roles often create a sense of social support, which refers to a reciprocal sense of being appreciated, that is manifested in affective, material or positive ways (Wu & Hu, 2009). In essence, role identities contain not only an understanding of the social values of the role but also an understanding of *how* the role should be enacted (Sluss & Ashforth, 2008). Change initiatives have been shown to disrupt these habitual relational interactions (Kellogg, 2009). These relational norms influence both relational messages and relational information processing: the former refers to ‘meanings that define the nature of the relationship’ while the latter refers to efforts to understand relationship status from these messages (Keyton & Beck, 2009; Knobloch 2005).

So what does a ‘negative’ behavior mean in the context of relational roles focused on the office or team, as is the case for employees? One promising approach examines how the perceived negative behavior disrupts the relational expectations between colleagues (also known as relational transgressions, see Metts & Caupach, 1994). This is because negativity might violate relational expectations between regular workplace roles (Sluss, Dick & Thompson, 2007; Van Emmerick, & Bakker, 2007). The stronger the role, perhaps the stronger the relational violation of the role, rather than employees who are psychologically or structurally distant from others, as appears to be the case with implementers.

In addition to directly resulting in negative emotions, these relational transgressions might lead to relational uncertainty. This is a concept developed in the interpersonal communication field, which refers to “the degree of confidence people have in their perceptions of involvement within interpersonal relationships” (Knobloch, 2007). Early evidence suggests that behavioral violations

of relational norms between parties can contribute to relational uncertainty (Knobloch, 2007). In other words, using a role perspective, perhaps new role behaviors demanded by the innovation unexpectedly breach the relational norms between roles. Of note is that relational uncertainty is also negatively valenced and leads to high arousal between parties (Knobloch, 2005). High arousal, as part of an affective process, leads to more intense assessments of others (Mossholder, Settoon, Armenakis & Harris, 2000), which in this case might cause employees to interpret coping behaviors as more negative, and as more tied to resistance than they actually are. In other words, perhaps the relational role transgressions associated with innovation implementations are affected by the strength of the role system – perhaps deeper knowledge of the relational role system in a team or office is associated with a greater propensity to see resistance as a form of negative space – of what is not happening, or occurring. This means that some kinds of resistance might go unseen by different parties’ due to their social positions and role identities in an implementation. This appears to be a promising approach for resistance and implementation scholars who want to better understand how resistance is structured, understood and enacted.

Limitations

Because the role double interact is retrospective, the study design had to examine not the behaviors themselves but perceived behaviors (Kahn et al., 1964). While advantages of an observational behavioral approach include elements like prolonged engagement that can enhance credibility (Lincoln & Guba, 1985), interviews allow for a process of making sense of events (Bryman, 2012). Another limitation pertains to the fact that this case represented one kind of program (optional), a specific kind of implementation (voluntary) within a certain kind of organization (a distributed educational enterprise) (Sonenshein, 2010; Vough, 2012). However,

work that uses this typology with other contextual factors such as different implementation strategies or organizations could be used to investigate the transferability of the findings from this case.

Conclusion

Using an interpretive model of resistance allows researchers the ability to examine different conceptions of resistance. Following this approach, this case study developed a grounded typology of behaviors used to make these interpretations. The results found that both implementers and employees focused on the same behaviors to make resistance interpretations, but they interpreted these behaviors in different ways. This suggests that role structures, which guide behavioral expectations, are used to make resistance interpretations. Therefore, the role positions of parties, and their associated deep or shallow role knowledge of different groups, might lead to divergent resistance interpretations. For example, this study found that implementers consistently perceived coping behaviors as confrontations while employees also saw some of these behaviors as a form of withdrawal. These differences speak to the role knowledge of each type of role, and give us more information about how innovations impact these social systems, and vice versa.

Implications: One implication of this study is in its confirmation of types of coping behaviors in resistance interpretations. Particularly, this study reported on what types of coping behaviors were perceived by others. This focus on noticing behavior between parties answers researchers' calls for a shared, social conception of resistance (Ford, Ford & D'Amelio, 2008). Questions that scholars can begin to engage with using these findings include whether different conditions (such

as implementation communication strategy or organizational context) also focus attention on these, or other behaviors.

Differences between implementers and employees, particularly implementers' propensity to conceive of resistance as confrontational, points to a need to better understand the role of implementers in implementations, how they process input during implementation processes, and how these roles' psychological and structural components relate to resistance (Ford, Ford & D'Amelio, 2008; Lewis & Russ, 2011; Sluss, Dick & Thompson, 2007). These differences also suggest that the objective roles of implementers and employees are associated with structuring resistance interpretations, through deeper or shallower role knowledge. Implementation planners can begin to take this into consideration when planning, enacting and evaluating implementations in organizations. In addition, employees' focus on negativity at the office level suggests more work needs to be done attending to relational role negotiations for this role. This could lead to training opportunities on how to address relational violations for implementers, and emphasizing that 'negative' behaviors are to be expected as part of the implementation process.

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THE FOLLOWING CHAPTER, CHAPTER FOUR, IS INTENDED AS A STANDALONE
JOURNAL ARTICLE

CHAPTER 4

FRAMING RESISTANCE: USING FRAME COMBINATIONS TO GUIDE RESISTANCE INTERPRETATIONS AT WORK

Introduction

Attempts to put change in place in organizations – whether focused on behavior, policy or process – regularly exhibit failure rates of 50-70% (Ijaz & Vitalis, 2011; Klein & Knight, 2005). This introduces a key question – what causes this failure rate, and how can it be reduced? Turning to the implementation process – understudied in relation to other aspects of putting an innovation in place in organizations, and rarely examined empirically– might prove promising (Klein & Knight, 2005; Real & Poole, 2005). In general, there are four stages of putting an innovation in place in an organization – awareness, adoption, implementation and routinization (Real and Poole, 2005). Adoption involves making a decision about whether to engage with the new behavior or policy (Real & Poole, 2005). Implementation, as mentioned above, enacts the innovation within the organization in a contextual fashion, as roles within the regular social setting adapt to the change (Lewis & Seibold, 1996; Real & Poole, 2005). This means implementation requires a research focus on contextually based, interdependent decision making. It also necessitates a focus on communication that occurs during the implementation, as implementations are constructed from, and coordinated by, communication between people who are asked to enact new behavior (Lewis, 2006; Lewis & Seibold, 1996).

One way researchers have addressed implementation failure is by considering resistance to change (Bommer, Rich & Rubin, 2005; DeCelles, Tesluk & Taxana, 2012); there is a large body of literature that has traditionally focused on the psychological traits and processes of non-

compliant employees (Bouckenooghe, 2010; Erwin & Garman, 2010; Oreg, Vakola & Armenakis, 2011). Critics charge the literature has used a one-way communication message model that views non-compliance with the message as resistance (Ford, Ford, D'Amelio, 2008). However, today's organizational communication researchers typically understand communication to be reciprocal (Putnam & Boys, 2006), which suggests the use of a reciprocal communication model called the 'double interact' (Putnam, Philips & Chapman, 1995; Weick, 1979) to be a fruitful approach to resistance. The model consists of a message, a behavioral interpretation of the message, and finally, an interpretation of the interpretation (Putnam Philips & Chapman 1995). An example of this would be an implementer asking employees to undertake energy conservation behaviors, employees interpreting these messages behaviorally, and implementers interpreting these behaviors as resistance or not.

By expanding the communication model from a one-way message to a reciprocal interpretive process between parties, several areas for research emerge. The first is a focus on resistance as an interpretive process rather than as an objective fact of compliance or non-compliance. Resistance interpretations have been theorized to be impacted by interpretive structures that guide interpretations (such as frames, Ford Ford & D'Amelio, 2008). However, there has been little empirical research in this area. In addition, focusing on resistance as an interpretation *between* parties suggests that a) implementers now become part of the resistance process; and b) the difference between resistance and employees' RIs is generative. For instance, a small amount of work has found that employees consider their own reactions to innovation requests differently from implementers, seeing them as forms of engagement rather than resistance (Ford, Ford &

D'Amelio, 2008). This indicates that the interpretive processes of both parties is different and that this is a productive way to investigate resistance within implementations.

In light of these research opportunities, this case study used the Logic of Appropriateness model (March & Olsen, 2006) as inspiration to investigate what combinations of frames (including role frames) guide RIs during organizational change. (Roles are shared conceptions of expected behavior, while frames are cognitive schemas that guide our understanding of issues, relationships and events (Biddle, 1986; Dewulf et al., 2009; Miller & Sardais, 2013)). In particular the study uses semi-structured interviews and survey data to investigate how resistance was interpreted by employees and implementers after a turn-key sustainability program was put in place in a large midwestern educational enterprise. The study provides a grounded typology (Golan & Bamberger, 2015) of the frame combinations used to interpret coping behaviors as resistant and provides a better understanding of the similarities and differences in these frame combinations between implementers and employees. (Grounded typologies are classification systems developed by iterating between empirical observations and theory) (Golan & Bamberger, 2015).

Innovation Implementations

Implementation refers to the process of putting innovations (new behaviors, policies or processes) in place within an organization (Lewis & Seibold, 1996). While empirical implementation research is limited (Klein & Knight, 2005; McHugh & Barlow, 2010), four major approaches have been used to study innovation implementation – they hinge on two factors, the ability to adapt the innovation to the organization or not, as well as focusing on

innovation as an outcome or process (Real & Poole, 2005). For example, innovation implementation studies have focused on people adapting (Balogun & Johnson, 2004) and not adapting (Dariotis, Bumbarger, Duncan & Greenberg, 2008) the innovation under study. Studies also examine implementations as fixed outcomes (Michie, Fixsen, Grimshaw & Eccles, 2009) or as processes (Isabella, 1990; Zorn, Page & Cheney, 2000). Whether adaptive or non-adaptive, outcome or process driven, Real & Poole (2005) argue that implementation studies are usually driven by one of four primary objectives: success factors for implementing a specific innovation; innovative organization indicators; understanding *how* an innovation is implemented; and finally, what factors generally influence implementation success. This study extends the third approach by focusing on how resistance processes occur during innovation implementations.

To do so this study takes a communicative approach to resistance. This is because implementing a change requires coordinated communications between parties (Lewis & Seibold, 1996).

Unfortunately, critics argue a common communication model used by resistance scholars is a one-way message model (Ford, Ford, D'Amelio, 2008); this model does not account for the reciprocal nature of communication most organizational communication scholars now prioritize. A promising model that uses such a reciprocal communication approach is the double interact (Putnam, Philips & Chapman, 1995; Weick, 1979). This model is comprised of a message being sent; the message receiver reacting to the message; and the message sender reacting to the reaction (Putnam, Philips & Chapman, 1995). Viewing this from a RI perspective would see an implementer sending a change message; employees enacting or not enacting the change; and implementers interpreting these behaviors as resistance or not. In effect, when implementers enact change messages, this model argues that both implementers and employees are involved in

the resistance process. (In addition, employees themselves might send change messages to other employees, instigating a second kind of resistance double interact. Finally, employees might just watch and interpret other employees' behaviors in relation to the change message sent by the implementers). Including implementers in the resistance communication model is important as understanding implementers' reactions to feedback is argued to be key to implementation outcomes (Lewis, 2007). So how to better understand implementers' conceptions of employee behavior as resistance? To examine this, we turn to work in the resistance tradition.

Resistance to Change

Despite its long history, there has been a surprising lack of consensus about what resistance represents, and how to best study it (Hollander & Einwohner, 2004). This is not surprising, given that resistance is investigated in fields as diverse as psychology (Boukenougee, 2010; Oreg, Vakola & Armenakis, 2011) sociology (Hollander & Einwohner, 2004; Prasad & Prasad, 1998) organizational studies (Ford, Ford & D'Amelio, 2008; Piderit, 2005) and organizational communication (Garner, 2013; Kassing, 1993; Mumby, 2005; Pal & Buzzanell, 2013; Putnam, Grant, Michelson & Cutcher, 2005). A key contention concerns the definition of resistance itself, ranging from an objective fact (Oreg, Vakola & Armenakis, 2011; Piderit, 2005) to a co-constructed social reality (Ford, Ford and D'Amelio, 2008; Garner, 2013). These diverse conceptions have contributed to researchers' differing approaches to resistance, such as concerns about whether resistance is overt and planned or habitual and hidden (Prasad & Prasad, 1998) or whether resistance is behavioral, emotional or cognitive (Piderit, 2005).

Researchers who address resistance as an objective fact tend to examine it from a psychological perspective, considering individual cognitions like self-efficacy in relation to resistance (Boukenoghee, 2010; Oreg, Vakola & Armenakis, 2011). Communication scholarship within this approach includes researchers who use reactance theory (a theory that details resistance to perceived threats to freedom) (Dillard & Shen, 2005). Research that takes this approach in the change literature also largely considers resistance to be located primarily in change recipients rather than implementers (Boukenoghee, 2010; Ford & D'Amelio, 2008; Garner, 2013).

Challenges to this approach are multiple: first, the nature of communication in organizations and the workplace is often considered by organizational communication scholars to be interactional and reciprocal (Putnam & Boys, 2006); given this interaction, communication is also considered to be at both individual *and* collective levels (Miller et al., 2011); finally, implementing change, and change requests are made by implementers – which leads to questions of how they themselves contribute to resistance to change (Ford, Ford & D'Amelio, 2008). As mentioned, a promising approach to dealing with the reciprocal nature of communication in organizations and particularly in implementations is the double interact. Its interpretive focus fits well with the interpretive paradigm this study uses, that stipulates that reality is co-constructed by parties making interpretations in interaction with each other (Berger & Luckmann, 1966; Garner, 2013; Gioia & Pitrie, 1990). It necessitates an understanding that there is no one set of behaviors that objectively represents resistance – rather any behavior can be interpreted as resistance (Ford, Ford & D'Amelio, 2008; Prasad & Prasad, 1998; Prasad & Prasad 2000). It prioritizes participant's interpretations of phenomena (Lee, 1991; Prasad & Prasad, 1998) by focusing on the structures that guide these interpretations (Gioia & Pitrie, 1990). There has been a limited

amount of resistance research using this approach – the work has been either solely theoretical (Ford, Ford & D’Amelio, 2008; Garner, 2013) or descriptive of the kinds of interpretations or actions that are interpreted, and their effects (Prasad & Prasad, 1998). The double interact model prioritizes RIs by expanding the communication model to examine interpretations of interpretations of the change message.

This third part of the double interact process – interpretations of interpretive behavior – has been understudied relative to the other stages (King & King, 1990; Lewis & Russ, 2011). However, Ford and D’Amelio (2008) have suggested that this third stage, specifically in terms of RIs, can be influenced by a) the types of behavior; b) interpretive structures; and c) the relationship quality between message senders and receivers. This research addresses the second of these factors – the underlying system that drives RIs. A model that served as inspiration for such an approach is the Logic of Appropriateness (LOA) (March & Olsen, 2006).

Contextual Decision Making

A model that acted as an inspiration to begin addressing the interpretive system of resistance is the Logic of Appropriateness (LOA) model (March & Olsen, 2006). This model is a refinement of earlier work that March and colleagues did on ‘attention structures’ in organizations – social structures such as roles and norms that direct interpretive understanding toward particular features of the situation (Lewis, 2000; March & Olsen, 2006). In particular, the LOA argues that when faced with decision opportunities, contextual decision making occurs through application of the following question: “What does a person like me (role identity) do (rules) in a situation

like this (recognition)” (Weber, Kopelman & Messick, 2004). Roles and ways of categorizing the situation and expected behaviors (frames) are blended together to make decisions.

Roles are enduring social structures that guide our identities, expectations and behaviors (Biddle, 1986). They have long been studied by researchers, in sociology, organizational behavior and communication. Most researchers agree that roles are comprised of three main elements – the role identity (seen as a frame in the LOA), the role behaviors, and the role expectations (Biddle, 1986). A role episode is a kind of double interact: it consists of expectations about role behaviors sent from the role set to the role holder; the role holders interpreting these expectations and complying, rejecting or adapting them; and finally the role set interpreting the behaviors enacted by the role holder (Kahn, Wolfe, Quinn & Snoeke, 1964).

In addition to roles, the LOA uses frames to construct its model. Frames have a long history in psychology, sociology and communication studies, however, their meaning has often been muddled. There are two major types of frame definitions: A) frames as cognitive expectations about situations gained through experiences and B) frames as discourses between parties that jointly make sense of cues (Dewulf et al., 2009). For instance, the latter approach might study the cues within a conversation to help interpret how laughter is interpreted as sarcastic or wholehearted (Dewulf et al., 2009). The approach that this study takes, and which the LOA uses, is the former, where frames are cognitive expectations. Importantly, in this tradition, frames can be identified as relating to issues, identities or processes (Dewulf et al., 2009). They drive what we focus our attention on, and also how we interpret incoming information (Miller & Sardais, 2013).

The LOA combines frames together into contextual decision logics. In considering the third stage of the double interact process – RIs – and what guides those interpretations, the LOA served as inspiration for such study. In particular, this project uses different combinations of frames, including role frames, to investigate what combinations are used by implementers and employees to make RIs. The difference between implementers and employees' frames therefore becomes generative.

Co-Orientation

The co-orientation model (Newcomb, 1953) is a promising approach to address frame alignment or divergence. It examines shared agreement between parties, as well as perceived agreement to better understand how meaning is developed and shared between parties (Newcomb, 1953; Scheff, 1967). While this was not a co-orientation study as it did not assess the *perceived* level of agreement about the frame combinations between parties, (called accuracy in co-orientation), examining the results for the degree of agreement or disagreement between frame combinations is informative, as well as promising for future co-orientation studies in this area. Using an approach that conceives of resistance as structured by frame combinations that may differ between parties raises several questions:

RQ1: What combinations of issue, relationship, role and process frames do implementers and employees use when making RIs of coping behaviors?

RQ2: What are the similarities and differences between implementers' and employees' frame combinations?

Method

This project represents an exploratory and explanatory case study focused on creating a grounded typology (Golan & Bamberger, 2015) of the frame combinations implementers and employees use when making RIs (Yin, 2003). In this way the study supports Gioia and Pitrie's (1990) interpretive approach to theorizing by examining the structures that guide interpretations. In particular, it investigates these frames in the context of a large educational enterprise in the Midwest that implemented a turn-key sustainability program in the summer of 2013. The organization had a volunteer 'advisory group' of twelve employees who guided the sustainability initiative's implementation; in all, about half of the organization's employees took part in the conservation campaign.

Setting

The organization that developed the turnkey sustainability program is a non-profit organization, while the organization that implemented the program is a large and storied educational enterprise in the Midwest, with roughly 700 employees. It aims to transfer knowledge generated by the university into community classrooms. The innovation that was implemented in the educational organization encourages sustainability behaviors at home and in the office through team competition. Players were asked to undertake a daily sustainable action from a variety of rotating options. The actions reflected a variety of areas, such as energy or water conservation, or transportation.

The organization that implemented the program did so as a project of its sustainability team. The group first obtained political buy-in for the project from top management and funding via a

technology grant. They then organized a twelve person, volunteer advisory group to adapt the program to the organization and develop a rollout plan. The rollout used multiple communication channels such as conference calls and e-mails, and advisory team members made themselves available to answer questions about the program. The implementation itself saw 333 employees out of 700 undertake at least one sustainability action in the program, as well as the creation of 55 teams.

Sample and Collection

The data for this study comes from two sources: the first from semi-structured qualitative interviews undertaken by the researcher, and the second from post-survey data collected by the non-profit that developed the sustainability program. This latter data was shared by the non-profit so the researcher could triangulate data (Jick, 1979).

Interview Data

This data comes from a sample that consisted of 6 implementers (representing 50% of the implementers' advisory team) and 32 employees who participated in the program. The sample was obtained through a purposive search for participants that utilized self-selection and snowball approaches (Patton, 2002). The participants were recruited through an organizational wide e-mail from upper management, followed by individual e-mails from the researcher. Participants ranged widely on several characteristics, such as team showing (on teams that did well or poorly) to location (remote rural offices to downtown headquarters in a large city).

Qualitative semi-structured interviews occurred from March-April 2014 with these participants, six months after the program ended in the organization. The interviews lasted from 20 minutes to 130 minutes, and most were done in person. Six interviews (representing 16% of the total sample) occurred over the phone due to scheduling conflicts. The interviews occurred in ten locations in all areas (north, south, east and west) of the state that the organization serves. Questions for the interviews ranged from asking about program participation and communication to RIs of others' behaviors.

Survey Data

The post survey data, n=198, was produced by the organization that developed the sustainability program, and was used by them to evaluate the program. It consists of open and closed questions focused on values, attitudes and behaviors pertaining to the program.

Data Analysis

The study used the interviews to develop a grounded typology (Golan & Bamberger, 2015) through the use of frame analysis (Brummans et al., 2008; Creed Langstraat & Scully, 2007; Gray, 2005). Taxonomies usually refer to classification systems developed by empirical inquiry, but grounded typologies provide an approach that merge theory and empirical findings together (Golan & Bamberger, 2015). Their development requires three steps – a) identification of variation during a phenomenon; b) the identification of ‘types’ of categories; and c) detailing how these types are associated with outcomes or patterns (Doty & Glick, 1994; Golan & Bamberger, 2015). Such an approach was deemed necessary due to the paucity of *both* theory

and empirical enquiry into the ‘frame combinations’ that guide RIs (Eisenshardt & Graebner, 2007).

To develop the typology the study used frame analysis of RIs that occurred in a subsample of the interviews. RIs were defined as moments when participants explicitly interpreted others’ behaviors as resistance. To find these instances I used two definitions of resistance and resisting from the Oxford English Dictionary. This meant looking for explicit judgments from participants of others’ behaviors that the participant thought were evidence of resisting, opposing, withstanding, slowing, stopping, hindering, preventing, impeding or opposing the program or a part of it. I also looked for accounts that were considered intentional resistance, again adapting a definition from the Oxford English Dictionary, so that accounts that considered the resistor as actively efforting, trying or endeavoring to resist were also included in analysis.

I then examined these instances for frames. Frames are often operationalized as themes or categories that are used by participants to make sense of information (Brummans et al., 2008; Creed, Langstraat & Scully, 2007). In particular, I used Brummans et al (2008) definition, which was “categories that surfaced regularly in participants’ accounts” (p. 32). To do this I used open and axial coding (Strauss & Corbin, 1990) to generate categories and subcategories of frames and roles that participants were using to make RIs. Major categories involved issue, relationship, process and role frames. To test these initial categories I used a number of tactics, ranging from debriefing to seeking rival explanations to re-examining memos that I had coded as ‘surprising’ (Lincoln & Guba, 1985; Miles & Huberman, 1994). I then consulted the literature to further strengthen the categories. This resulted in the development of a codebook, which I used to code

the interviews with. I then examined relationships among the categories using comparative grids (Miles & Huberman, 1994). These grids allowed me to explore what frames tended to be associated with specific roles and behaviors during RIs. (Analysis of the behaviors used during RIs can be found in Chapter 4).

Triangulation with survey data

Triangulation was used in this case not to ensure consistency across data, but to examine variance and thereby ensure the categories were rich (Patton, 2002). To do this I examined the role categories in another question that was asked during the interviews, and a question in the post-survey data, using the codebook. Almost all of these responses fit one of the three major role types identified in the codebook, and did not necessitate the development of further role categories. Six responses were coded 'other'. Upon examination, these codes all occurred in the survey data, and three responses that were coded 'other' refer directly to aspects or design of the game itself, meaning that role behavior was not mentioned. The other three instances were labeled as such because the responses were ambiguous.

Analysis

There were three key findings from this study relating to the use of frame combinations. First, employees and implementers used the same types of role frames when making RIs. However, these role frames were combined with different issue, process and relationship frames to interpret resistance. Finally, these different combinations led to different conceptions among employees and implementers of what resistance was. To present these findings, I detail first the role frames used by both parties when making RIs, and the key combinations of frames used to make RIs for

both implementers and employees. At the end of each frame combination, I summarize the differences and similarities between employees and implementers.

Role Frame	Implementer Position	Resistance Interpretation	Employee Position	Resistance Interpretation
<i>Adaptivity</i>		Resistance as disagreeableness about the innovation		Resistance as disagreeable people
<i>Initiative</i>		Resistance as conflicting stakes within the organization		Resistance as the habitual office environment
<i>Proficiency</i>		Resistance as a threat to being a good implementer		Resistance as being a good employee

Table 1: Key Resistance Interpretations from Frame Combinations

1. *Role: Adaptive:* All the roles discussed in this study emerged from the data and then had their definitions sharpened by iteratively consulting the literature (see Brummans et al., 2008; Vough, 2012). This role specifically refers to whether someone did or did not "cope with,

respond to, and/or support changes" (Neal, Griffin and Parker, 2007, p. 331). Examples of adaptive role behavior included questions, discussions or encouraging team –mates, while non-adaptive behavior included not participating, complaining, or joking about the program. When triangulating, the adaptive role was often described in terms of being a cheerleader or motivator. Adaptivity was the most mentioned role by both employees and implementers when making RIs.

1.A. Implementers – Resistance as Disagreeableness about the Program: Implementers who used this role when making RIs largely saw resisters as disagreeable because they wanted to change or adapt the program that the implementers were trying to put in place. Resisters were seen as dispositionally negative and intractable about the program. Implementers perceived this disagreeableness as hindering positive attitudes towards the program. In this frame combination, a fixed notion of what the program should be like led to notions of resistance when employees attempted to modify the program. As one implementer stated:

“...which probably sounds like we’re just ignoring people’s concerns, but it’s not that, I think it’s more that we – we’ve just become conditioned to know there will always be some naysayers or complainers and if you want to move a project forward, you kind of just have to be like ‘you know we understand your perspective but too bad’.

For example, implementers perceived elements of the program non-adaptable, such as the behaviors participants were asked to undertake, or rollout processes. In addition, implementers tended to make RIs when using a game evaluation frame. This meant that they viewed the resistance occurring when assessing the program. Negative characterizations of resisters included the use of adjectives and descriptors like ‘uncool’, ‘grumbly’ or judgments like ‘they hold themselves back’. In addition to using the negativity frame, resisters were also framed as

intractable if they refused to participate in the program or make changes to accommodate the program. Finally, implementers who used the adaptive role were most likely to interpret resistance as hindering positive attitudes about the program. This was defined as an expectation that positive attitudes should occur while the program was being put in place (see Lewis & Russ, 2011). For instance, implementers who considered positive attitudes to be impacted by resistance described resisters as ‘Negative Nellies’ or stated “...there are just people who just really feel like it’s their responsibility to point out all of the possible negatives of anything ever, and so that happened a lot.”

1.B Employees - Resistance as Disagreeable People: Rather than focusing on the disagreeability of resisters trying to change the program, employees who used the adaptive role when making RIs saw resisters as inherently disagreeable people. Instead of having a fixed notion of the program, as in the case of the implementers, employees had a fixed notion of the resister, and of their history of negative contributions to the employees’ social environments. They used an issue frame focused on the certainty of the situation. (A certainty frame pertained to whether the situation was predictable or not. This often indicated certainty that the person was going to be disagreeable about the program, as exemplified by this participant detailing why they hadn’t asked another office member to be on their team):

“Well, just knowing him, he wouldn’t have been a good team member anyway. I’m not gonna go after him if I don’t believe he’s gonna do his part.”

In addition to assessing the predictable disagreeability of their colleagues, employees also were more likely to make RIs when considering the situation as optional. For instance, employees

noted that there were no repercussions for not participating in the program. Differently than implementers, employees' used a game participation frame, focused on whether others were or were not taking part in the program . Similarly to the implementers, employees also used dispositional and intractable relationship frames when using the adaptive role frame, and finally, they also focused on resistance as hindering positive attitudes, as well as participation in the program.

1.C Summary: In summary, employees tended to use similar relationship frames, and focused on the same hindrances – such as positive attitudes - when using this role to make RIs. Differently, their categorization of the situation was based on the predictability that the resistor would resist, rather than, as implementers did, focusing on the predictability of the program and labeling attempts to modify the program resistant. This seems to speak to knowledge bases and role structures (Eys & Carron, 2001; Lockett et al., 2014; Lynch, 2007). Implementers are likely to be the ones in the organization with the clearest idea and knowledge of what the program looks like, as they are in charge of putting it in place and therefore are theorized to have a vested interest in knowing about it (Dariotis et al., 2008; Lewis, 2006). On the other hand, employees may not know much about the program, but have a deep knowledge of their social environment and the relationships around them given their history of interactions with other employees in their workspace (Salancik & Pfeffer, 1978). They have a vested interest in making sure they are able to function in that social environment.

2. Role: Initiative: This role referred to initiating change – in other words, leading the change, or portions of the change efforts (Griffin, Neal and Parker, 2007), and was the least mentioned

among both employees and implementers. For implementers, leadership was considered at the organizational level; they were concerned with achieving adequate organizational representation for the program. On the other hand, employees seemed concerned about leading portions of the program, like forming teams, within their regular office environments. Triangulated data that used an initiative role saw people explicitly discussing leadership: for example, as one participant stated: “I was able to be – I guess I was probably the team leader.”

2A. Implementers – Resistance as Conflicting Stakes: Implementers who used this role to make RIs focused on how implementation team coordination was hindered by organizational conflicts. These disputes centered on differing stakeholder definitions of sustainability, and how those definitions should be adapted. When making these types of RIs, implementers were concerned about their ability to inclusively represent all internal stakeholders in the organization, and seemed particularly concerned with ‘alienating’ certain sections of the organization. As one implementer stated about a decision to remove a program action that would reduce meat consumption:

“So we didn’t expect it at all, we shared the list with the group beforehand and this one person in particular came prepared because he was, he was pretty upset about it. And honestly he made a really good argument, I mean I agreed in the end, I said ‘...I really don’t think that’s the purpose of this game however, I can see what you’re thinking and I do think we would alienate people if we kept it’”.

However, it appears that the relationship frames employed with this role indicate the resistance was occurring due to situational relationships – in the consultative process – rather than dispositional ones, and that the actors were seen as open to suggestions. Implementers who made RIs using this role were most likely to focus on the detrimental effects of the resistance on effective coordination among the implementation team members. It seemed that there was an implicit expectation among many who used this role that coordination would not involve conflict. For example, some of the implementers detailed the perceived conflict as ‘pushback’ or a ‘controversy’ or an ‘attack’ that was unexpected.

2B. Employees –Resistance as the Situation: Employees who used the leadership role to make RIs focused on how team formation was hindered because of program withdrawal by office colleagues. In this case, resistance was conceived of as a holistic climate of withdrawal from the program. Employees who used the initiative role to make RIs focused on the social cost and safety of leading the program in office environments. For example, one employee explained her rationale for not making further attempts to form a team after an initial coordination effort:

“I don’t know, I mean I guess I sort of felt like, that, I don’t know. I felt like people maybe were. Busier than I was or maybe they felt like if I was pushing that then maybe (participant’s name) has too much time on her hands.”

In this case, resisters were framed as closed to suggestions about the program. The social costs focused on potentially negative evaluations (that if the person attempted to lead on this issue, that they would be judged on not having enough work to do, or that they were a timewaster) and lack

of social support. Safety is a different but related issue frame – an unsafe environment represents the kind of situation in which social costs are more likely to occur than a safe environment (Kassing, 2011; Morrison, 2011). The situations were largely interpreted through an ‘unsafe’ lens, in that resistance was an accepted social norm, and to initiate change would be to counter this norm with negative effects.

Employees using this role framed relationships as closed to suggestions. For example, participants stated about their colleagues that “nobody responded” or “nobody said anything” in response to their leadership attempts. In essence, the perceptions that the relationships were closed cut off employees’ attempts to engage others in components of the program. Team formation was the action that was considered to be most hindered by resistance among employees using this role. For example, employees detailed a number of impediments to try and form teams, among them non-response to coordination e-mails or refusals to participate if asked to do so.

2C - Summary: Employees and implementers shared few frames when using this role to make RIs. Implementers appeared largely concerned with ensuring adequate organizational representation during the consultative process, and saw resistance as a series of conflicts. Employees, on the other hand, were concerned with the safety of their office climate and the consequences of their actions if they led on the issue. Resistance, for them, was a form of collective withdrawal from the program. Given these differences, it is interesting that both parties shared a similar focus on what they thought was being hindered – collective coordination

processes. For implementers, this meant focusing on implementation team coordination, while for employees, team formation was hindered.

3. Proficiency: This role is one of fulfilling prescribed or predictable role requirements (Griffin, Neal and Parker, 2007). It was often expressed by describing performance concerns with regular job duties. The triangulated data also defined proficiency in terms of regular job duties.

3A. Implementers - Resistance is a threat to being a good implementer: Implementers who made RIs using this role were concerned with issues of adaptability and optionality: their own inability to adapt the program to resistor's needs, and the optional nature of the program. Evidencing adaptability frames, an implementer discussed their inability to change the program: "For that one, you know, if you feel like you don't have enough time to do it, we can't change it. We can't be like, "okay for these 6 weeks, you don't have to do any of your reports." That's not a choice..." Implementers also focused on making RIs during the implementation consultation process, as well as employees' game participation processes. Interestingly, relationships with others were seen as open rather than closed. This meant implementers felt they could talk about, and discuss the program with others, even if they felt they could not modify it. Finally, implementers using the proficiency role were concerned with both positive attitudes and implementation team coordination – they saw both of these eroded with resistance.

3B. Employees – Resistance is Being a Good Employee: Employees who used the proficiency role to make RIs saw resistance as the equivalent of being a good worker, and resistance itself as an acceptable way to be productive and perform well. As one employee noted:

“Yeah, it was job related...But, so – it was just – people making choices over what they could spend their time on. And some of it had to do with the perception that this would take more time than they should devote to something – that was really considered by them to be a game.”

In particular, employees focused on the inability of others to participate in the program, and the optional nature of the program. Game evaluation was the process frame used most often by employees in this frame combination and relationships were seen as largely situational and intractable. Finally, employees considered game play and participation to be the most hindered by resistance to the program.

3C – Summary: These frame combinations exhibited some similarities between implementers and employees, namely in the issue and relationship frames. For issue frames, both parties focused on the optional nature of the program, especially in light of regular habitual job tasks and duties. Focusing on relationship frames, both parties saw resisters as dispositionally negative.

Discussion

The Adaptive Role

The first research question asked what roles and frames were used by participants to make resistance frame combinations. Rather than discussing all of them, this section of the discussion focuses on the adaptive role for several reasons. First, it was the role that participants used the most when making RIs; this was also the most mentioned role when triangulating data. This indicates that this role should be more fully investigated by researchers, in addition to other traditionally examined roles like leadership. This section outlines how adaptivity has been

traditionally understood and investigated, and identifies some reasons why the adaptive role might have been prioritized by participants in this case.

The Adaptive Role: What is it?

The definition of adaptation that this project ultimately used comes from Griffin, Neal and Parker (2007): “cop[ing] with, respond[ing] to and support[ing] change” (p. 350). These researchers argue that adaptation can happen at different levels, ranging from the individual to the organization, and that different factors affect this role at different levels (Griffin, Neal & Parker, 2007). For instance, in one study they showed that proficiency at the individual level was predicted by role clarity, while at the organizational level it was predicted by organizational commitment (Griffin, Neal & Parker, 2007). In this case, the overarching theme that accompanied RIS made using the adaptive role was agreeability. Implementers saw resisters who wanted to adapt the program as disagreeable, while employees focused on resisters as habitually disagreeable people in their natural environments.

Adaptation occurs because of change (Gersick & Hackman, 1990; Monge & Poole, 2008; Ployheart & Bliese, 2006; Real & Poole, 2005), which is inherently what an innovation is. This change can occur in the external environment (Monge & Poole, 2008), the individual (Lynch, 2007) or within collective social structures, like groups (Gersick & Hackman, 1990). Other researchers, such as Dewey blended these foci by arguing that thinking within the self and action in the world lead to knowledge through a transformation of habit (Biesta, 2009). Gersick & Hackman (1990) argued that several key kinds of change necessitate adaptation: novelty; failure; milestones; attention to group norms; and changes to group structure.

There has been little work done on adaptation from an organizational psychology perspective, and more attention paid to the concept in communication and sociological approaches to organizational change (Kahn et al., 1964; Lewis & Russ, 2011; Ployhart & Bliese, 2006). One way adaptivity as a process can be understood is through role change, which can occur either through role negotiation or role transitions. Role negotiations refers to communication interactions between the role set and role holders to modify roles (Kramer, 2013; Miller, Joseph, & Apker, 2000), while role transitions entails shifting from one role to another (Ashforth, Kriemer & Fugate, 2000; Ryet & Wiesenfeld, 2015).

In the case of this study, the adaptive role was used when implementers were focused on the non-adaptability of the program, and employees focused on the non-adaptability of employees who were ‘resistors’ in their regular social environments. In both cases, this appeared to be an interpretation that employees were not complying with expected role behavior. In other words, participants who used this role appeared to consider different forms of adaptiveness as resistance, and that this resistance emerged as conflicts during a role negotiation rather than a role transition.

But this does not explain why the adaptation role was used so much by participants in the study in and of itself. Initially proposed explanations for this centered around the innovation design – the fact that it was focused on adaptive behaviors, such as developing and building team support to cope with new sustainable behaviors. However, another possibility has emerged – that innovations necessarily disrupt roles (Feldman, 2004), which might act as an impetus for role negotiations. As Weick (1993) notes, if a role system collapses among people who have strong

trust, then new, mutual adaptation takes place. Perhaps this is what is occurring here – rather than incurring a focus on adaptation because the sustainability program directed attention to coping and supporting others through team development, maybe it is the disruptive character of the innovation itself, which is disturbing regular roles, and leading to role negotiation, that is prompting participants to focus on the adaptive role. This role seems promising for researchers to examine further, particularly to better understand how roles are negotiated and changed.

Co-orientation

In addition to asking what roles and frames were used to make frame combinations, the second research question asked how the frame combinations were similar and different between implementers and employees. The frame combinations did evidence different degrees of similarity and dissimilarity between parties: the co-orientation model is a promising approach to investigating this further. Of the three major types of frame combinations, both parties used the same roles, and two frame combinations evidenced some similarity (adaptation and proficiency), while the third (leadership) exhibited few if any similarities. This led to six different interpretations of what resistance meant. In particular, the frame combinations based on the adaptive role incurred differences between the issue and process frames that were used by the parties – the relationship frames as well as concern with positive attitudes were shared by implementers and employees making RIs. This suggests that participants saw the relational aspects of resistance similarly when using this role, but did not define the situation (the issue frame) or processes the same way. This suggests that using this role to make RIs focuses both parties on the relationship qualities of their role. On the other hand, the frame combinations guided by proficiency exhibited similar issue frames, in addition to similar relationship frames,

but the process frames were dissimilar. This indicates for interpretations that used this kind of frame combination, the situational and relational definitions were shared, but the processes were not. This makes sense, as different jobs require enacting differing tasks.

In contrast to adaptive or proficiency frame combinations, the leadership frame combinations exhibited few similarities between parties, indicating different understandings of the issues, relationships and processes related to leadership. These differences suggest that leadership frames (and how to lead) in this case is understood differently by both parties – this does not seem to be an area that has been explored at length in the implementation or resistance literatures. In fact, this could be seen as a factor that might contribute to implementation failure – if parties fundamentally understand what leadership means to be two totally different sets of issues, processes and relationships, then it follows that their conceptions of resistance to leadership might be further apart and harder to reconcile (if reconciliation is in fact desired).

Luckily, the co-orientation literature provides guidance on these differences in alignments. In particular it suggests that different combinations of agreement and accuracy lead to differing communication contexts: of consensus, conflict, false consensus and false conflict (Leong, McComas & Decker, 2007). Taking the leadership frame combinations as an example, the lack of agreement between these frames for implementers and employees suggests a communication context of either conflict or false consensus about what should be used to identify resistance when using a leadership role (Leong, McComas & Decker, 2007). Researchers have argued that different tactics with such contexts are needed to obtain consensus between parties. For example, conflict is theorized to be resolved through persuasive communication, while false consensus is

theorized to be resolved through education (Leong, McComas, & Decker, 2007). Without understanding how implementers perceived employees' frames, and vice versa, it is difficult to definitively narrow in on one context or the other. However, these categories do provide an opportunity to speculate more fully about the effects of degrees of agreement and disagreement between frame combinations on resistance and implementation.

For instance, perhaps having frame combinations that are dissimilar (indicating either a dissensus or false consensus context) has a weaker effect on expressions of resistance because there is a lack of cohesion that drives such interpretations. This difference in focus might make the mobilization of shared resistance efforts more difficult, as rather than implicitly sharing an understanding of what contributes to resistance, implementers and employees might have to make clear to the other party what their frames were, as well as negotiate which frames would be prioritized in coming to a shared conception of resistance. This might be made even more difficult if members of these groups were not consciously aware of their frames. If so, eliciting and understanding these frames before working with them would be an additional step that might make aligning frame combinations more difficult.

However, this argument rests on the notion that frame alignment leads to a stronger RI; this might not be the case. For example, some researchers, particularly in the sensemaking tradition, have argued that shared frames or meanings are not necessary for collective action (Maitlis, 2005). This would suggest that using different frames to come to the same meaning does not weaken the meaning itself. In fact, it could be argued that these different frames enhance the shared meaning of resistance as they lead to a more robust and diverse set of frames that

contributes to the shared meaning of resistance. This could lead to a bigger resistance ‘tent’ for parties who would be able to feel ownership of the term. Yet in this case, for example, the dissimilar frames used with the leadership role resulted in two seemingly disparate conceptions of resistance – one as an organizational conflict and the other as an office habitus. Where the frame combinations were more aligned, as in the proficiency and adaptivity combinations, it appears the RIs rested on more of a singular commonality. For example, the RIs made using the adaptivity role rested on conceptions of disagreeability, while the RIs made using the proficiency role rested on conceptions of being a good implementer or employee. Such singularity guiding RIs might make it easier to shift or concretize one’s position. More research in this area is evidently needed.

To undertake such work, in addition to examining similarities and differences between the frame combinations, examining accuracy – the perceived agreement between parties about the frame combinations – needs to occur. This will enhance our understanding of how frames are leveraged into collective meaning, and their co-orientation effects. This is a promising avenue for resistance and implementation communication scholars, as well as practitioners. If the communication contexts that emerge from different frame combination co-orientations can be identified, than implementation planners will be in a better position to decide on implementation strategies and tactics to address these contexts.

Conclusion

In summary, investigating frame combinations that guide RIs allows researchers to better understand the interpretation structures that underlie RIs; in the case of this study, six key frame

combinations were identified. The frame combinations indicate that implementers and employees use different interpretation structures for making RIs, and these RIs are different. This suggests resistance is not a singular interpretation, but that different parties understand and interpret it differently. The study also found that an adaptive frame combination was used the most by both employees and implementers when making RIs. This suggests this role should be examined more thoroughly in the resistance literature.

Implications for Scholarship

This study extends our understanding of implementation communication and resistance in several ways. First, there has been a discernable lack of research into roles and implementations, with the exception of some studies in how technologies alter work systems (Barley, 1995; Edmondson, Bohmer & Piasano, 2013; Schultze & Orlikowski, 2004). This may be due, according to Barley (2015) to practical and epistemic difficulties in examining how roles are enacted, over time, in routine behaviors. Rather than assuming what roles are important, this requires more thorough study to better understand the roles implementation parties themselves focus on during implementations. Within this case participants were most concerned with the adaptive, rather than the leadership role: a promising way to explore adaptation is through everyday role negotiation, which has also been understudied (Kramer, 2013). Future work in this area should be explored.

In addition to better exploring the adaptation role, this study points researchers to examining the interpretive structures that guide RIs. In particular, the study identified six key sets of frames that were used when making RIs. Additional questions for researchers include whether or not there

are there other frame combinations that guide RIs, and if so, how they are associated with different contexts. The grounded typology of frame combinations detailed in this study provides a foundation to further examine what frame combinations participants in other settings consider to be most important, and which ones are actually *used* when making implementation decisions.

Because this work used an interactive communication model, a focus on the interpretive structures *between* parties also became part of the analysis. Analysis showed that a) role frames of adaptivity, leadership and proficiency remained the same regardless of whether the participant was an implementer or employee; and b) that the frame combinations evinced different degrees of frame similarity and dissimilarity. In particular, the adaptive and proficiency frame combinations evidenced some similarity between parties' frames, while the leadership frame combinations did not. In a co-orientation model, such a high level of disagreement about the leadership frames indicates a dissensus or false consensus context (Leong, McComas & Decker, 2007). More research is needed to understand the effects of these contexts on RIs, resistance effects, and implementation success or failure.

Implications for Practice

In addition to empirically suggesting areas for theoretical development, this work also has practical applications for those who plan and put changes in place in organizations. First, it shows that implementers contribute to resistance, moving beyond an assumption that resistance is solely located in employees (Ford, Ford & D'Amelio, 2008). By showing that implementers also contribute to the phenomenon, implementation planners themselves can consider how their own behaviors, strategies and interpretations contribute to resistance to change.

The second application of this work concerns the strong focus on the adaptation role by both implementers and employees: communication strategies in implementations often focus on information provision (Lewis, 2006). Yet what about communication strategies to facilitate the adaptation of the innovation to employees' daily lives and roles? What kinds of social supports and communicative approaches can assist employees to adapt, rather than merely learn about the innovation? Initial work, for instance, has shown the creation of separate communication channels for those interested in promoting changes to be effective in innovation implementations (Kellogg, 2009) – are there other ways that communicators can foster the adaptive role during implementations? Considering this, as well as how they themselves contribute to resistance efforts, might lead implementers to improve implementation outcomes.

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CHAPTER 5

ENERGIZING ORGANIZATIONAL RESEARCH: ADVANCING THE ENERGY FIELD WITH GROUP CONCEPTS AND THEORIES

Abstract: While energy research has examined behaviors and decision-making in residential settings, it has largely failed to study these behaviors within the commercial sector. It has also neglected investigating these dimensions from a group level of analysis. Yet groups influence behaviors like energy consumption in addition to individuals, and forms of such influence – like collective outcome efficacy or team cohesion – requires research at the group level. This review offers an overview of the area and tools to start this work, first by examining how three levers of behavior change in energy studies – cognitions, social structures and technologies – have mainly been studied from an individual level of analysis. Second, it reviews energy research in commercial environments and finds that only a small number of studies since 1980 have been undertaken with a group level focus. Given this gap, a typology of key group constructs and levels of analysis was developed and measures were reviewed that fit into this typology. This led to the identification of types of questions that can be asked in each of the technological, structural and cognitive energy areas with a group focus.

Keywords: group measures; energy studies; organizations; commercial sector.

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1. Introduction

Research on energy behaviors has largely focused on the residential sector from an individual psychological perspective (Abrahamse, Steg, Vlek & Rogthengatter, 2005; Osbaldiston & Schott, 2011; Wilson & Dowlatabdi, 2008). This approach neglects organizational settings and their collective socio-cultural influences (Biggart & Lutzenhiser, 2007; Moezzi & Janda, 2014; Payne, 2006) like group culture or social roles. Yet these sites, such as schools, businesses and institutions, are important to study because they use a large portion of America's energy, generate rising amounts of greenhouse gas emissions (GHG), and represent one of the largest opportunities to decrease such discharges by 2020 (CFSS, 2011; Levine et al., 2007; Lucon et al., 2014; US EIA, 2011). In addition, research findings from the residential area may lack transferability to workplaces because employees are constrained, either through building design or social arrangements, from undertaking energy behaviors like turning down the heat. Economic factors that coordinate behavior also vary, as employees typically don't receive energy bills for their energy use at work (Carrico & Reimer, 2011; Komor & Katzev, 1988; Lo, Peters & Kok, 2012). These differences – structural, social and economic – mean that the specific ways the commercial sector informs energy behaviors needs to be considered in research designs.

Key to such investigations is a consideration of how energy behavior is influenced by groups. Groups are increasingly used in organizations to structure work (Chen et al., 2007; Kozlowski & Ilgen, 2006; Tasa, Taggar & Seijts, 2007), and influence behaviors in ways that individuals cannot, such as through team cohesion or team mental models (Marks, Mathieu & Zaccaro, 2001; Mohammed, Ferzandi & Hamilton, 2010). Despite the unique nature of their contributions to behavioral influence and decision making, they have not been accounted for in energy studies as researchers have instead focused on individual or organizational levels of analysis (Biggart & Lutzenhiser, 2007; Janda, 2013; Lutzenhiser, 1992; Payne, 2006). This hinders both research efforts to better understand how energy behavior is socially constructed and enacted, and policy approaches to influence and shape behavior in organizations.

In particular, groups are important to study because the constructs they represent simply do not exist at the individual level (such as team cohesion or collective outcome expectancies) (McGrath, Arrow & Berdahl, 2000; Koletsu & Mancy 2011). Attempts to research these areas using individual levels of analysis are referred to as Atomistic Fallacy (Klein & Kozlowski, 2000). This is because even if individuals change, the collective might stay the same (Morgeson & Hofman, 1999). For instance, new individuals might join a workteam but team cohesion would stay at the same level as before the individual shift. (Ecological fallacy is the reverse, when researchers assume that a change at the collective level means a change at the individual level) (Klein & Kozlowski, 2000). In other words, a construct at an individual level can't be assumed to be the same at the collective level (Klein & Kozlowski, 2000). To better understand factors that influence behavior, research at both the individual level (such as individual values) as well as at the collective level (such as team cohesion) is warranted.

In addition, the very nature of energy consumption is a social resource dilemma that necessitates a group focus. Individual energy actions undertaken without consideration of group impacts, like the use of space heaters for personal comfort at work, can lead to long-term negative consequences for collectives (Biel & Thogerson, 2007; Koletsu & Mancy, 2011; Heiskanen et al., 2010). This could take the form of increased energy bills or GHG emissions for workteams or departments. Because individual energy actions have collective repercussions, an approach is needed to investigate these dilemmas that takes into account not only individual choices but also collective level influences on individuals, such as social norms or social roles. (Heiskanen et al. 2010; Weber Kopelman & Messick, 2004). This necessarily means a focus on how interdependence – how actions or values are shared – organizes behaviors (Bonito, 2002). One of the defining characteristics of group research is its focus on how tasks, processes or outcomes are shared and structured (Griffin, Neal & Parker, 2007; Hackman, 2012). Therefore considering group-level research when investigating energy behaviors seems like a promising approach.

The gap into group-level influence on energy behaviors has hindered not only research efforts but also subsequent policy development (Brewer & Stern, 2005; Erhardt-Martinez, 2008; Lutzenhiser, 1993; Reid, Sutton & Hunter, 2010). While the policy process itself is enacted in ways that include both individual and collective components (see Shwom, 2009; Simmons, 2007; Swim et al., 2011), the tools that are used for policy purposes are not neutral and focus our attention on specific kinds of problems and solutions (Brewer & Stern, 2005), in this case, largely individual issues. This limits our understanding of energy behaviors, as researchers have noted that different scales lead to different insights (Chatterton & Wilson, 2014; Hornik, 1991;

Reid, Sutton & Hunter, 2010; Sovacool, 2014; Stern, 2014; Wilson & Chatterton, 2011). For example, a focus on individual factors directs approaches that examine whether individual income or attitudes affect behaviors, such as energy efficiency uptake (Hornik, 1991). On the other hand, a focus on collective factors would lead to research and policy designs investigating whether social or group regulations affects such uptake (Hornik, 1991). Most organizational researchers today acknowledge that organizational phenomena occurs at multiple levels and that both kinds of approaches – individual and collective - are needed to robustly address and advance challenges that energy behaviors present from a theoretical and policy perspective (Hackman, 2003; Kozlowski et al., 2013; Mathieu & Taylor, 2007).

In particular, energy researchers have identified a number of topic areas ranging from geography to social psychology that could benefit from a group approach (see Sovacool, 2014). For example, one key question emanating from the social psychology field concerns decision-making – how do people make tradeoff decisions about energy? (Sovacool, 2014). Conceiving of ‘people’ at a group level opens this question up to group research traditions such as groupthink (Janis, 1982); group mental models (Mohammed, Ferzandi & Hamilton, 2010); and collective identity (Ashmore, Deaux & McLaughlin Volpe, 2004). Other questions deemed salient and important by researchers attend specifically to group concepts within energy anthropology or sociology, such as “What different social groups are involved in the production of...a particular energy system...[or] excluded from energy decisions” or “What impacts do breakdowns of families...have on patterns of energy consumption?”, where families are a specific type of group (Sovacool, 2014, pp. 25, 19) In addition to specific questions, subfields in the energy area can find strong synergies with group traditions. For instance, researchers addressing socio-ecological

or socio-technical energy systems (Hodbod & Adger, 2014) might find it useful to incorporate research on groups as social systems into their work (Arrow, McGrath & Beardahl, 2000), while researchers addressing social potential (Moezzi & Janda, 2014) might be interested in process-oriented group research (Hackman & Katz, 2010).

To address these issues, rather than concentrating on breadth via broad syntheses (Axsen, 2012; Wilson & Dowlatabdi, 2007), this review focuses instead on an in-depth group level research approach to attend to the research and policy gap in collective commercial energy behavior. To do this it offers four contributions. First, it details research on cognitive, regulatory and technological approaches to energy and discusses how a collective level of analysis could inform these areas. Second, it identifies the depth of the collective-level gap by presenting a literature review undertaken to examine how workers in organizations have traditionally been researched. Third, it undertakes an integrative approach to energy research (Stern, 2014) by using research from the group area to create a typology of potential research questions for the energy field. It does this by addressing group level issues in each of the structural, cognitive and technological approaches to energy. Finally, it uses this typology to investigate group level research tools that can be used to address these research questions.

2. Traditional Levels Approaches in Energy Behavior Research

Researchers typically identify three customary approaches to behavior: technological, cognitive and structural (Abraham & Michie, 2008; Carrico et al., 2013; Gardner and Stern, 1996; Heberlein 1973, 2012; Koepfel, Urge-Vorsatz & Mirasgedis, 2007; Owens & Driffil, 2008). This section examines how each of them has traditionally been conceived and researched from

an individual perspective within the energy field, and briefly considers how expanding the scope of analysis from an individual to collective level could inform research in each area.

2.1 Technology – Individual Level

The first lever of change, technology, is traditionally examined within the energy field from three perspectives: adoption, use and the built environment (Levine et al., 2007; Stephenson et al., 2010; Wilhite, Shove, Lutzenhiser & Kempton, 2000). This means research has focused on how people adopt energy efficient technologies (Hoicka & Parker, 2011; Weenig & Midden, 1991), how they use energy technologies (Hargreaves Nye & Burgess, 2010; Palm & Ellegard, 2011; Wilhite, 2008) and how the building envelope structures behavior (Biggart & Lutzenhiser, 2007; Levine et al., 2007). None of these perspectives have seemingly used group levels of measurement to investigate these areas. For instance, within the field of technical acquisition, largely associated with the diffusion of innovation literature, energy researchers attempt to explain the various decision points behind the adoption of new, more efficient technologies focused on individual adopters' decision making (Wilson & Dowlatabdi, 2007). The energy field has largely ignored investigations into group level diffusion of innovation (Wejnert, 2002), with some notable exceptions (see for example Weenig & Midden, 1991). Turning to the habitual use of energy, the sociology of consumption literature has accepted a socio-cultural level of analysis that examines lifestyles of consumption, their reification and enactment (Wilhite, Shove, Lutzenhiser & Kempton, 2000). There has seemingly been little in the way of interest in measuring groups within this body of work. Finally, there has been only a modest amount of research on the social effects of the building envelope on energy choices (Biggart & Lutzenhiser, 2007), and again, none of these approaches seem to have measured groups within organizations.

2.2 Technology – Collective Level

But technologies are not merely objects to be adopted or used, like computers or lights – technology is comprised of both objects *as well as* the knowledge systems that guide the use of these objects (Wilhite, 2008; Franklin, 1999). For instance, the lighting system in an office is comprised not only of light switches themselves but also the shared knowledge system of when it is appropriate or not appropriate to use the lights or turn them off (McComas, Dixon & Deline, 2012). This perspective necessarily orients us to consider collective levels of analysis when examining such knowledge systems. A useful construct for investigating this conception of technology, and its knowledge systems in particular, is the team mental model (TMM). These are collective knowledge structures that allow team members to work in concert through similar information interpretation schemas and expectations (Mohammed, Ferzandi & Hamilton, 2010). (For example, knowing when it is or is not appropriate to turn off the lights). Considering TMMs as knowledge systems when investigating organizational EE technological adoption would allow a better understanding of how these collective level constructs are part of technological change.

2.3 Cognitive – Individual Level

Turning from technology to cognition, cognitive research in the energy field presupposes a direct linear relationship between information, attitudes and behavior (Heberlein, 2012). The key assumption underlying such research is that attitudes influence intentions, which subsequently influence behavior (Ajzen, 1991; Heberlein, 2012). An approach that traditionally employs this perspective is energy feedback studies that seek to change behavior through the provision of contextual information (Abrahamse et al., 2007; Fisher, 2008). Notably, most of this information

is designed for individuals (Davidoff, Lee, Zimmerman & Dey, 2006). For instance, a simple task like doing the laundry might take multiple steps and participants yet the feedback is designed for one person rather than many (Davidoff et al., 2006). Hargreaves, Nye & Burgess (2010) found that this individual level feedback resulted in household conflicts, as it illuminated individual practices and motivations within the collective that were subsequently contested. Turning to the workplace, there is a dearth of empirical investigation into the social practices that consume energy in this setting and the motivations (whether individual or collective) behind them. Yet some studies have emerged in recent years, which show, for instance, that lights are left on as social signals of productivity among workers (Lo, Peters & Kok, 2011). Particularly interesting is that energy conservation is seen by workers as a collective enterprise to meet organizational cost efficiency needs but that this is incompatible with individual productivity and comfort motivations (Lo, Peters & Kok, 2011). This suggests that certain practices have both collective and individual motivations whose importance might differ.

2.4 Cognitive – Collective Level

How could a collective conception of learning inform feedback studies? One approach could examine how collective versus individual outcome expectancies influence feedback related decisions. Collective outcome expectancies are defined as the collective expectations of consequences (Koletsu & Mancy, 2011). For instance, I might think that I will personally accept an office temperature reduction in the winter but also think that my workteam won't accept such a reduction. The former is an individual outcome expectancy (IOE) while the latter is a collective outcome expectancy (COE). Comparative feedback studies often implicitly use COEs, as they compare individual actions to groups, imposing a collective expectation (Abrahamse et al.,

2007). For example, social norm feedback research by Schultz et al (2007) communicated to participants about neighborhood levels of consumption, and perceived approval/disapproval levels. This effectively created a COE at the neighborhood level that was contained in the feedback messaging. Rather than examining the effects of COE messaging, another approach could consider COE as part of the context within which feedback interacts, as when feedback illuminated individual practices at odds with household goals (Hargreaves, Nye & Burgess, 2010). There appears to have been more message effect research, yet understanding how collective expectations shape feedback acceptance would also be an important step forward for researchers.

2.5 Structural – Individual Level

Finally, structural approaches address the social arrangements that provide opportunities and constraints for behaviors. One traditional way of employing this perspective in energy studies is by focusing on regulations, especially targeting those who have the power to alter regulations that guide outcomes (Heberlein, 1973). For instance, rather than entreating employees to stop using space heaters, the structural approach would see lobbying of decision-makers within the organization to regulate the use of space heaters at the office via appropriate sanctions (Heberlein, 2012). There are two major strengths of this approach writ large. The first is that it targets those with power to change structures and implicitly creates change ‘leaders’. For example, research has shown how both direct and indirect leadership within organizations positively effects pro-environmental behavior (PEB) (Damen, Staats, Wilke & Engelen, 2001; Robertson & Barling, 2013; Schelly et al., 2011). The second strength is also this approaches’ focus on role –targeting those who have the capacity to enact change (Heberlein 2012).

However, regulatory approaches have been criticized for their intricacy, expense and top-down nature (Brewer & Stern, 2005). They seem particularly unsuited for situations where the source and effect are physically or temporally separated (Brewer & Stern, 2005). In addition concerns have been raised about their efficacy in unenforced situations (Koeppel, Urge-Vorsatz & Mirasgedis, 2008). Perhaps most importantly, however, the traditional approach to regulatory change ignores level issues by focusing on whom to target to the detriment of examining how rules develop, are created and maintained within collective environments (see Dacin & Dacin, 2008). In this way such an approach focuses on ‘individuals with power’ rather than the collective social systems and power structures within which they are embedded (Thomas, Sargent & Hardy, 2010).

2.6 Structural – Collective Level

What might considering the collective social structure of rules allow energy researchers to investigate? One promising area concerns peer educators. These are people who inform and motivate their colleagues to undertake behavior change (Carrico & Reimer, 2011). Trust levels, salience and providing normative information have all been considered potential levers for peer education influence in energy conservation initiatives (Carrico & Reimer, 2011). This points us towards social referent theory. Social referents provide social cues about the importance of collective social norms via observable behavior (Paluck & Shepherd, 2012). Research has found that different kinds of social referents have varying impacts on collective normative interpretation (Paluck & Shepherd, 2012). This might be because certain types of social referents are accessed for specific kinds of social knowledge. For instance, Shah (1998) found that role holders in workplaces turned to friends for normative information, while they turned to

equivalent role holders for job related information. Understanding who the social referents are for differing energy behaviors within the organization, and whether they consist of certain role groups might prove useful for organizing and enacting organizational EE initiatives.

In considering both the research that has been undertaken, as well as policy needs, there seems to be a place for research that addresses group level constructs in all three traditional approaches. To do this requires first an understanding of what group level constructs measure.

3. Groups – Levels of Measurement

Groups have an established history of research in fields as diverse as psychology, communication and organizational studies. A review by Arrow, McGrath & Berdahl (2000) covers at least thirteen different schools of group research. Originally, groups were considered to be a distinct unit with clear boundaries (Hackman, 2012). This unit could be put into linear, one-way models to examine input and output effects (McGrath, Arrow & Berdahl, 2000). However, as a result of these differing schools of thought, theoretical definitions and operationalizations now vary widely (McGrath, Arrow & Beardahl, 2000). Areas where authors seem to agree on aspects of the construct include: 1) groups purposefully interact; 2) these interactions are necessarily interdependent; 3) these interactions produce something bigger than their individual components; and 4) group members recognize each other as members (Hackman, 2012; Krackhardt & Handcock, 2007; Poole, Keyton & Frey, 1999). It's been suggested that the original focus by some of the leaders in the field prioritized individual comprehension within collectives, leading to research that has focused on individuals within groups rather than group level constructs themselves (McGrath, Arrow & Beardahl, 2000). This brings up the issue of

units of analysis – as Poole, Keyton & Frey (1999) posit “...Should the focus be on the individual group members?” (p. 93).

Unfortunately, while many fields, organizational behavior among them, have established bodies of work examining behavior in organizational settings, which includes dyads, groups and networks, the level of the theory – what unit of analysis it is attempting to examine – is often unaccounted for (Rousseau, 1985; Schnake & Dumler, 2005). This often means there is lack of clarity at what level to measure. In considering group levels of analysis, Poole, Keyton and Frey (1999) argue there are three main levels of measurement. The first includes individual self-reports, the second includes groups as a unit and the third includes interactions between individuals and groups. Starting with the individual self-report level, individuals can report either on their own perceptions of a group in general, or on a specific group (Poole, Keyton & Frey, 1999). The former approach allows for research about people’s perceptions when they act in collective settings, while the latter is useful for examining how individual interactions within a collective contribute to group outcomes (Poole Keyton & Frey, 1999). The group level of analysis concerns the group itself as a unit (Poole Keyton & Frey, 1999). This makes available research that investigates group behaviors, or if investigating multiple groups, the behavioral patterns between them (Poole Keyton & Frey, 1999; Schnake & Dumler, 2005). The final level, a multi-level perspective, studies interactions between groups and individuals (Poole Keyton & Frey, 1999). Researchers can investigate the effects of groups on individuals in this way (Poole Keyton & Frey, 1999). The next section examines what level of analysis energy research has typically used in organizational settings. A multi-step literature review was undertaken to gain an understanding of the current situation.

4. Levels of Analysis in Organizational Energy Research, 1980-2015

This section examines whether there is a research gap in the commercial-sector energy behavior literature pertaining to group level studies. To do this a multi-step literature review was undertaken (see Lo, Peters & Kok, 2012; Osbaldiston & Schott, 2011 for similar methods). This review consisted of: A) a database search; B) a decandancy procedure (when key review's bibliographies are checked for relevant articles; and, C) non-active search. A small number of articles were found in total using these approaches. The paucity of findings suggests that considering collective constructs within the commercial sector is neglected. This section details the steps of this review, its findings and challenges of the search process.

4.1 Search

The search was comprised of three parts. A database review was run using Web of Science. The search aimed to find studies that focused on collective-level measures related to workers' commercial sector energy behavior. The search was restricted to peer-reviewed journals, and the time period from 1980-present. (This timeframe was chosen because much behavioral energy work began coalescing into a field in the 1980s (Wilhite, Shove, Lutzenhiser & Keyton, 2000). This resulted in 3971 records being identified. The search terms were based, in part, on ones that other authors have used for their reviews (see Lo, Peters & Kok, 2012), and the specific needs of this review (see Figure 1; also Appendix A).

TS=(energy* or electricit* NEAR conserv* or consum*) 1980-present And TS=(organization* or organization* or work* or company* or firm* or corp* or office*) And TS=(measure or index or scale)
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Figure One: Search Terms for Review

In particular, the first set of terms sought to find studies focused on energy or electricity use. The second set of terms were those originally utilized by Lo, Peters & Kok (2012) to identify work in the commercial sector, such as offices or workplaces. The search term ‘corp*’ was added to the terms in this review to include corporations. Finally, the third set of terms related to the construct under investigation (a scale or measure). (Of note, the term ‘group’ was reserved for the exclusion scale to determine if there were articles that used groups but did not indicate this in their indexing keywords, and if this was the case, what keywords were used instead of ‘group’ for these articles. When a Web of Science search was run that included the term ‘group’ it resulted in a small number of articles, of which none fit the study’s exclusion scale (detailed below). It was decided to keep the broader search strategy).

To examine the articles from the Web of Science search, and ensure that they fit into this research’s objectives, exclusion criteria (see Lo, Peters & Kok, 2012; Osbaldiston & Schott, 2011), were developed. In addition to excluding research that was not about people or energy, the criteria (see Appendix B) discarded articles that did not focus exclusively on the commercial sector (for instance, by concentrating on the manufacturing sector). It also, similarly to Lo, Peters and Kok (2012), Osbaldiston and Schott (2011) and Norton et al., (2015) rejected articles that did

not direct attention to workers' actual energy behaviors (for instance, by examining attitudes or intentions) or did not focus on empirical investigation of behaviors (for instance, by undertaking a review or developing a behavioral model). Finally, the criteria also excluded articles if they did not investigate behaviors from a group level, either by asking questions about individuals' perceptions of groups or groups themselves. This resulted in a total of two articles being identified.

An explanation for the exclusion criteria: first, the industrial sector is different than the commercial sector – energy use is directed towards different behaviors, primarily concerned with manufacturing (US EIA, 2012). Keywords such as *corp** or *firm** found articles on the industrial sector as well as the commercial. As the focus of this study is on the commercial sector, articles on the industrial sector were discarded. Second, if the study represented the development of a conceptual model or review without empirical data it was discarded. This is because such reviews and models do not reflect the empirical measurement of actions that is the focus of this review. Third, if the articles did not focus on behaviors within the commercial environment, and instead examined *intentions* to adopt innovations (see for example, Vollink, Meertens & Midden, 2002), they were also discarded. This is because of the attitude-behavior gap; intentions are different than behaviors and this review is focused on the latter rather than the former. Finally, given that a key point of this review is to examine collective-level measures, if articles contained scales or indices focused solely on individuals, they were also discarded.

Due to the paucity of findings after the exclusion criteria was applied, a dependency procedure was also undertaken (see Lo, Peters & Kok, 2012, for an example of this method). This used the

bibliographies of relevant reviews (see Appendix C) to find articles that might also meet the criteria of collective-level measures related to commercial sector energy behavior. The exclusion scale was also used to ensure the results fit this study's needs. Two articles were found. As these new articles also fit the study's parameters, but used different keywords than the ones used in the original Web of Science search, concern was raised that the original keywords used in the initial Web of Science search were insufficient to find articles that fit this review's interests. A second search was run in Web of Science using the keywords that had been used to index these articles (see Appendix D); no new articles were found. This indicates that these new keywords did not capture the construct of interest for this study.

Finally, in the course of this research two articles that fit the study's parameters were also brought to this study's attention (Carrico & Reimer, 2011; Chou, 2014). Given that both articles fit the study's parameters but were not in the final sample of the initial Web of Science database search, concern was again raised that the initial search terms were inadequate. This proved unfounded when it was determined that these articles were being captured with the search terms pertaining to energy and organizations, but excluded when the construct terms 'TS=(measure or index or scale)' were included. There may be other such articles. Unfortunately, the keywords 'measure or scale or index' are crucial to this search, and consequently it is recommended that authors, editors and journals start adopting a process where such keywords are included in their articles.

4.2 Confidence

Because one author undertook this review, it seems prudent to ask whether others using the same exclusion scale would find the same overall trend. To address this concern, two coders with no knowledge of the project (to prevent expectation bias, see Neuendorf, 2002) were trained on a codebook and coded a randomly selected subsample of the database findings using a codebook (see Appendix E). In particular, the training process consisted of reviewing and revising the codebook, answering coder questions about it, and undertaking practice coding on randomly selected articles. The coders then independently coded a randomly selected subsample of N=100 articles (Neuendorf, 2002). When using the codebook with the subsample, the two additional coders achieved agreement on 100% of the articles; that is, similarly to the author, they both found that none of the articles in the subsample should be included in the results.

4.3 Findings

The articles that fit into this study all focus on individual experiences within certain collectives, and all consist of self-reports rather than actual behavioral observation. They seem to fall into two main categories. The first category pertains to the relationship between employees and their supervisors or the organization. For instance, Ramus & Steger (2000) used surveys to investigate the relationships between organizational support for environmental behaviors and employees' environmental initiatives. Andersson, Shivarajan & Blau (2005) on the other hand, examined how supervisors conformed to their organizations' positions on environmental initiatives and passed this worldview to their subordinates. Chou (2014) used hierarchical linear modeling (HLM) to show that organizational climate in groups of hotel employees moderated the relationship between employee norms and eco-initiatives. And Carrico & Reimer's (2012) study on energy feedback and peer educator effects at a university developed a measure that asked

individuals to respond to perceived collective outcome efficacy – the perception that their colleagues could effect change. Energy conservation initiatives comprise the second category. In this area, both incentives (Handgraaf, de Juede & Appelt, 2013) and implementation (Kastner & Matthies, 2014) were studied.

4.4 Challenges

An explanation for the paucity of results needs to be considered, particularly the possibility that inadequate search terms were used. However, as detailed in section 4.1, when articles were found using a decandancy procedure, a second database search was run using these new articles' indexing keywords. Given that no articles were found using these new keywords indicates not that the keywords are insufficient but that there is a lack of articles pertaining to this study's focus. The same concern was raised when articles where found using non-active search. However, these articles were being excluded from the results on the critical keywords 'measure or scale or index'. This indicates that there may be more such articles and including these keywords might not be a practice regularly employed by either authors or journal editors. Another possibility is that researchers in this field are simply not focusing on collective level constructs, due to the real and relevant challenges to studying group behavior.

Some specific challenges to group work include the lack of guidance tying theories to levels of analysis (Schnake & Dumler, 2005); properly defining the degree of interdependence in variables (Bonito, 2002); and methodological challenges developing tools like surveys, where using the term 'we' might activate perceptions of group agreement that do not actually occur (Kozlowski, 2012). The interdependent nature of group research requires clear specification of

project elements and model fit (Southwell, 2005). The shared nature of these constructs also makes measuring them using traditional statistical approaches, which rely on independent distribution, difficult (Bonito, 2002; Kenny, Kashy & Cook, 2006; Poole, Keyton & Frey, 1999; Rossi & Berk, 1985).

Multi-level research, which examines interactions between individual and collective behavior is also demanding. There are many types of multi-level models, ranging broadly from top-down to bottom-up to cross-level models, however, top-down research models are the norm in organizational studies (Kozlowski et al., 2013). This may have to do with the methodological challenges studying bottom up processes like emergence (Kozlowski et al., 2013). Emergence is a phenomenon that constitutes both an outcome and process where individual interactions yield collective level phenomena (Kozlowski et al., 2013), and is studied using composition or compilation models, each of which come with their own challenges. Aggregating individual measures works when a construct is considered part of a composition model. This means conceiving of the variable – whether an attitude, norms or behavior – as having the same function and form across levels (Kozlowski, 2012). For example in a composition model, efficacy is considered to be the same construct, whether at the individual or group level, and measured by asking individuals about it. The group level of efficacy would be compiled by combining individual measures of efficacy (Kozlowski, 2012).

In contrast to composition models, compilation models pertain to constructs that have the same function but different forms across levels (Kozlowski, 2012). In other words, the collective constructs ‘emerge’ in a different form from their individual level components, even though they

represent the same construct. For instance, White's (1998) model of social norms uses a compilation perspective: at the individual level, a norm takes the form of a personal value, while at the group level it takes the form of a shared rule. Both forms, under this model have the same meaning of a social norm but their structure is different, and gathering the different types of data needs to be considered in research designs. (For a more detailed discussion of this topic, see Kozlowski, 2012 and Kozlowski et al., 2013).

This difference between models is one of the reasons that multi-level research is demanding from both a theoretical and methodological point of view. Generally speaking, there are at least nine kinds of models in multi-level research (Chan, 1998; Rousseau, 1985; Klein & Kozlowski, 2000) and their theoretical and methodological challenges warrant a systemic and fulsome review paper of multi-level research for the energy field. Multi-level research on sustainability behaviors in workplaces is still nascent but one top-down model review exists (see Norton, Parker, Zacher & Ashkanasy, 2015). These issues represent a small sample of what researchers face when addressing social collectives. Overall, the literature review findings suggest that the amount of energy research using group levels is low; more research is needed to identify an explanation for this result. This leads to the next topic; a typology that energy researchers can use to begin designing research plans for collective social environments.

5. Typology for Potential Group Level Questions in Energy Behavior Research

5.1 Review Process

All the research found during the literature review for this study consisted of individual perceptions of groups in relation to energy. To attend to this gap, a promising approach is to

identify research questions and tools that can address both the individual and group level in organizational energy research.

This next section does this by developing a typology of research questions, using different group levels and research areas (see Table 1). The typology was constructed by using two main group categories from Poole, Keyton and Frey (1999) (individual perceptions of groups and groups themselves). As other group researchers have noted, these two categories represent some of the basic levels required to undertake empirical group research (Kozlowski, 2012; Meade & Eby, 2007). Other more advanced approaches, such as group-organization studies or partners in group studies build on these two main levels (Kozlowski, 2012) – in order to understand these more advanced models and their challenges, an understanding of the basics is first required. These two group levels were then combined with four areas that researchers have identified as key to undertaking group level research: social categorization, context, processes, and outcomes. Each area is described in more detail below.

	Categorization <i>-Focus: typology</i>		Context <i>-Focus: range</i>		Process <i>-Focus: how events occur</i>		Outcome <i>-Focus: why events occur</i>	
	Ind	Grp	Ind	Grp	Ind	Grp	Ind	Grp
Structural <i>-Focus on power; influence; formal (rules, policies) or informal (norms) regulations</i>	Do different types of my team-mates influence regulatory processes more than others?	What types of groups are involved in decision making?	How does my workteam culture influence social norms around energy behaviors?	Do differing group cultures exist within the organization, and if so, how do they impact regulations about energy use?	What processes in my workgroup lead to efforts to use energy differently?	How do group processes, such as relational norms, guide group energy behaviors?	Do certain norms within my workteam cause changes in energy behaviors?	How do certain group level variables related to structure, like cohesion, influence change in energy behaviors?
Cognitive <i>-Focus on attitudes; values; perceptions</i>	What attitudes towards energy behaviors do different members of my workteam have?	What attitudes do different types of groups have related to energy behaviors at work?	Do certain building structures cause specific types of efficacy attitudes in group members?	How do group climates or cultures moderate attitudes or values related to energy?	What values do members of my workteam use when discussing changes to energy behavior?	How do social values about energy behavior develop in groups?	What attitudes in my workgroup cause intentions to change energy behavior?	What group-level attitudes, such as group efficacy, affect energy related outcomes like conservation or consumption levels?
Technological <i>-Focus on technological use; adoption; built environment</i>	Do certain types of team members use energy technologies differently than other members, and if so, how?	How is technology use structured by group type?	How does the building envelope impact what energy behaviors my team can undertake?	How does group climate and culture moderate technological uptake, or interaction with the built environment?	How is a new energy technology diffused in my workteam?	How are different patterns of group communication related to technological use, uptake or the built environment?	What leadership styles in my workteam cause technology innovation?	What group level variables, like team cohesion, cause technological innovation or lack of innovation?

Table 1 - Types of questions that can be generated

5.2 Social Categorization

Social categorization is the process of placing individuals into group membership through individual cognitions and socially-guided evaluative processes (Tajfel, 1981). While socially

evaluated criteria, such as race or sex can be impossible or difficult for individuals to change, individual cognitions are more malleable and occur at the personal, the collective and the role level (Ashforth, 2008; Tajfel, 1981). Personal self-identity is relatively straightforward to understand, but the other two concepts might best be explained by acknowledging that identities are not solely individual, but are also "...relational and comparative" (Ashforth, 2008; Jenkins, 2000). This means that one's collective or role identity relates to a collective, or role, outside oneself. In addition to the identities we use to define ourselves, there are also identities that others ascribe to us – the interaction and comparison of the personal versus the public identity help form social identities (Jenkins, 2000). Experts in group research consider social categorization to be one of the bases for understanding groups (Dovidio, Gaertner & Saguy, 2009; Tajfel, 1981).

Using social categorization could be promising for energy researchers in a number of ways. For instance, merging categorization and the structural approach could yield questions like how group types affect decision making. This might yield questions such as: 'What types of groups are included or excluded from energy decision making?' Turning to the cognitive approach, researchers could examine how different types of groups hold different attitudes about energy behaviors. Finally, in terms of technological change, researchers could examine how the characteristics groups use to typify themselves and their subgroups direct technological use or adoption in the workplace. For instance, questions such as 'are certain subgroups responsible for different technological tasks, such as turning off lights or ensuring access to photocopiers?' could be asked. Asking questions like these could start building a better understanding of how group categorizations structure energy behaviors.

5.3 Context

Context provides the range within which behavioral action or inaction occurs (Griffin, Neal & Parker, 2007). Group researchers argue that groups are shaped by their context, and therefore that studying context is key to better understanding groups (Hackman, 2012; Putnam, Stohl & Bates, 2012). Organizational research tends to investigate context in three main ways: 1) via description of the context in which the study is situated; 2) via direct observation of contextual effects through moderation, event analysis or configural approaches; and 3) via comparative studies (Rousseau & Fried, 2001).

Addressing the structural approach to energy with a contextual focus could lead researchers to consider how particular groups' organizational climate or culture affects regulations. For instance, researchers could assess within which sorts of organizational cultures new energy regulations are more likely to be enacted. Alternatively, using a cognitive focus researchers could also study how shared attitudes range given group climate or culture. Finally, taking a technical angle could lead to multiple questions predicated on the built environment, which has been under theorized (Biggart & Lutzenhiser, 2007). For example, investigating a number of building envelope types across organizations could lead to findings on how common structural barriers guide group interactions that consume energy. These findings would be helpful, for example, for building management planning purposes (Prindle & Finlonson, 2011).

5.4 Processes

Process refers to how social behavior occurs (Hewes & Poole, 2012). Specifically, processes at the group level refer to what connects group events occurring over time (Hewes & Poole, 2012). The focus is not on the outcomes themselves, but how the event occurs. In the case of organizational energy research, a process study might involve examining the events and the relationships between them that happen when energy conservation initiatives are implemented within a work-unit. Researchers have identified four major theoretical approaches to process-oriented work focused on organizational innovation and change: these involve processes driven by 1) stages of change; 2) goals; 3) conflict; and 4) evolution (Poole, 2004). The first two require individual levels of analysis, while the last two necessarily involve study at the group level (Poole, 2004). Energy researchers understand the importance of process studies, particularly in relation to energy practices (Moezzi & Janda, 2014; Strengers, 2012) and decision making (Breukers et al., 2011; Wilson & Dowlatabi, 2007), and have called for more attention to this sort of research (Fri & Savitz, 2014; Kok, Lo, Peters & Ruiter, 2011).

Group process studies can be used in all spheres of energy research. For example, using the structural perspective with this approach could address decision making processes in energy use (Stern, 2014) by examining how different relational norms are used in groups that adopt new energy behaviors versus those that do not. Turning to the cognitive approach, researchers could examine, for instance, how group members' attitudes about new energy behavior or technologies change over time given different ways of introducing the new behavior or technology to the group. Finally, technological questions could focus on what group processes influence energy efficiency adoption. This would assist researchers eager to find out when key decision moments

occur, and practitioners who want to know when to strategically undertake change efforts with groups.

5.5 Outcomes

Contrasting group processes, group outcome research is focused not on how events unfold over time, but rather the end result of an event; whether it occurs and if so, why (Poole, 2007). At the collective level in organizations this work often refers to the results of teamwork (Mathieu, Maynard, Rapp & Gilson, 2008). Challenges with studying outcomes include the temporal aspect of the construct, necessitating both theory and methods that take this into account, as well as a lack of training in behavioral outcome assessment among researchers (Arrow et al., 2004; Moreland, Fetterman, Flagg & Swanenburg, 2010; Zaheer, Albert & Zaheer, 1999).

Just as group researchers have focused on outcomes, so too have energy researchers (Stern, 2014), particularly in terms of ways to affect change in energy behaviors (Abrahamse, Steg, Vlek & Rothengatter, 2005; Osbaldiston & Schott, 2011). These studies range from feedback outcomes (Fischer, 2008) to the effects of social norms (Schultz et al., 2007) on energy behaviors. Advancing this area by considering groups, and turning to a structural focus might drive researchers to consider, for instance, how different kinds of normative conflicts within groups cause energy behaviors to change. Using the cognitive approach could lead to an investigation on how the effects of a strong sense of collective efficacy influences group members' attitudes towards energy conservation measures. Finally, considering technological approaches, particularly the use of technologies, researchers could investigate whether group leadership styles affect new energy efficiency technology uptake.

Each of these focus areas has been identified by both group and energy researchers as key to better understanding groups and energy phenomena. Integrating them with the three topical energy areas of cognition, structure and technology offers a way to advance an integrative energy research program that will further new questions and findings for the organizational energy field (Lutzenhiser, 2014; Sovacool et al., 2014; Stern, 2014). To assist researchers with developing these questions into studies, a review of group level measures and tools was undertaken. It is hoped that this review will help readers to operationalize the different kinds of research questions, and in so doing, begin to develop a body of energy research that takes group level issues into account.

6. Research Tools for Group Level Analysis

6.1 Review Process

To develop a typology of group level tools, referential measurement appendices were consulted in sociology, psychology, communications and marketing (Bonjean, 1967; Fields, 2002; Mental Measurement Yearbook, Volume 10-19; Rubin et al., 2011; Rubin, Palmgreen & Sypher, 1994). These volumes were examined for categories with energy behavior in the workplace in mind (see Appendix F). In addition to these indices, three key journals in the fields of sociology, communication and organizational behavior were also consulted: *Sociological Methods and Research*, *Organizational Research Methods* and *Communication Methods and Measures*. All of these journals were searched using the query ‘level of analysis and group’. Resultant measures were examined for method of development, appropriate level of analysis and potential fit with

energy behavior research. Other measures found in the course of research for this paper were also considered. While the measures that are reported here have not been used, to this author's knowledge, in energy studies, they have been used in sociology, psychology, communications and organizational studies, and their known challenges and strengths are detailed in the Strengths and Limitations section.

In categorizing these measures, and in tandem with the typology of research questions, measures were identified that addressed individual perceptions of the group or group level issues in each of the four main group research areas – categorization, context, process and outcomes. This provides researchers the opportunity to match a tool to a type of research question and further develop it into a study. In addition, a section called “Topical Links” considers the use of the tool and types of research questions in each of the energy fields’ structural, cognitive and technological areas to propose even more targeted questions for researchers.

The next section uses this typology to examine and categorize measures (see Table 2). It investigates what these measures do, their strengths and limitations, and provides ideas of how such measures could be used in organizational energy fieldwork.

Individual Perception of Group	
Categorization	-Input-Process-Outcome – McGrath, 1984 -Relational Class Analysis – Goldberg, 2011
Context	-Co-orientation - Leong, McComas & Decker, 2007; McLeod & Chaffee, 1973; Newcomb, 1953 -Organizational Culture Inventory - Cooke & Rousseau, 1988
Process	- Fuzzy Consensus - Spillman, Bezdek & Spillman, 1979 - Role Conflict and Role Ambiguity Measure - Rizzo, House & Lirtzman, 1970
Outcome	- Behaviorally Anchored Rating System for Sustainability - Andersson, Shivarajan & Blau, 2005; Ramus & Steger, 2000 - Collective Outcome Efficacy -Arthur, Bell & Edwards, 2007; Carrico & Reimer, 2011; Collins & Parker, 2011; Koletsu & Mancy, 2011; Lubell, Zahran & Vedlitz, 2007
Group	
Categorization	- Group Faultlines - Lau & Murnighan, 1998, 2005
Context	- Group Dynamics Q Sort - Peterson, Owens & Martorana, 1999 - Home Observation Assessment Method - Steinglass, 1979
Process	- Discussion Coding System - Schermuly & Scholl, 2012
Outcome	- Family Routines Inventory - Jensen, James, Boyce & Hartnett, 1983 - Leadership Effects on Pro-Environmental Behavior - Robertson & Barling, 2013

Table 2 – Typology of Collective Measures

6.2 Individual Perceptions of Specific Groups

6.2.1 Social Categorization

How do researchers categorize groups in the workplace or examine how group members classify themselves or others? Two approaches that focus on individual perceptions of the collective, one traditional and one new, are examined.

Input-Process-Output, McGrath, 1984

Groups in organizations have many different purposes, ranging from management to task force to project groups (Devine, 2002). McGrath's (1984) Input-Process-Output model, developed through a taxonomy of variables that guided its development, is still used by researchers today. For example, it details four major types of group inputs: 1) what characteristics group members bring to the groups (such as personalities or attributes); 2) the relationships between group members; 3) the context where the group interacts; and 4) the characteristics of the task(s) the group undertakes (McGrath, 1984). Each of these variables and the others in the process and output streams have been detailed in more depth in the literature. **Strengths and Limitations:** While the strength of this work and others like it are its attempts to classify groups through attention to different variables, unfortunately the wide variety of these variables and lack of standardized labeling means that categories have emerged in this approach which tend to overlap (Devine, 2002). In addition, other researchers argue the model assumes movement through inputs to processes to outputs, without considering feedback loops or interaction effects within the model (Ilgen, Hollenbeck, Johnson & Jundt, 2005). **Topical Links:** Thinking about this work in relation to the energy field, it could be used for many purposes. For instance, using it structurally could yield questions about which types of group members are more likely to undertake energy conservation, while a focus on technology might lead researchers to consider whether different kinds of group members are more likely to adopt new energy efficient technologies. Taking a cognitive approach could see researchers examining whether dissimilar personalities within the group are associated with varying reactions to energy interventions, such as conservation campaigns.

Relational Class Analysis, Goldberg (2012)

Relational class analysis (RCA) is a method developed by Goldberg (2012) that uses ordinal survey data to assign people to groups based on the cultural frames they employ to interpret topics. It does so by identifying relational patterns between answers rather than focusing on the answers themselves (Goldberg, 2011). Cultural frames are defined in this work not on the positions that individual actors take but on the frame itself: the shared, collective attention to attributes used to interpret a situation (Brummans et al., 2008; Dewulf et al., 2009; Donnellon, Gray & Bougon, 1986; Gioia & Petrie, 1990; Goldberg, 2011; McCleod & Chaffee, 1973; Ross, 2013). Work by authors in the cognitive tradition, such as Tversky and Kahneman (1981) or Lakoff (2010) conceive of frames at the individual level and use traditional survey approaches aimed at individual responses to investigate them (Dewulf et al. 2009); differently, RCA conceives of frames as a shared, interdependent phenomenon (Goldberg, 2011). For example, rather than investigating a position on a topic (for instance, agreement or disagreement that conserving energy is a worthy goal) this method allows researchers to examine whether energy conservation is collectively interpreted in the workplace as a natural resource or social service issue (Dewulf et al., 2009; Goldberg, 2011). **Strengths and Limitations:** The major strength of this approach is its focus on the mechanisms that groups use to categorize situations. For example, researchers could examine what groupings at work occur along the frames of understanding energy as a natural resource, a social service or an economic issue, as well as investigating what groupings would look like if energy as an economic issue was removed from the social environment. This could prove important for modeling efforts and research design. Both a strength and limitation of this tool is its a priori nature. Exploratory work should be used

beforehand to understand the group environment and justify the use of the topics and variables employed in the measure. **Topical Links:** Approaching each of the three topical areas with this tool could elicit the shared frames that guide decision-making processes. For example, questions of a technological nature could focus on what type of groups (clustered by frames) were more likely to adopt energy efficient technology, while a cognitive approach could examine whether certain frames were associated with particular energy values. Finally, a structural approach could use this tool to investigate whether specific frames were associated with norms about energy use at work.

6.2.2 Context

Investigating the social context in which groups are embedded provides us an opportunity to examine its influence. These measures investigate individual perceptions of, or contributions to, collective contexts.

Co-orientation: Newcomb (1953); McLeod and Chaffee (1973); Leong, McComas & Decker (2007)

This is both a theoretical model and research approach that investigates the joint construction of meaning between parties via an object or behavior that is the focus of their shared attention (Newcomb, 1953). These perceptions are analyzed based on participants' judgments of the other parties' accuracy and agreement with their position. This yields four types of contexts: consensus, dissensus, false conflict and false consensus (Scheff, 1967). Each co-orientation context calls for different communication approaches (Leong, McComas & Decker, 2007).

Strengths and Limitations: A strength of this approach is its focus on the shared construction of

meaning between parties to address issues such as consensus. This differs from traditional statistical approaches that aggregate individual views on a topic rather than considering the parties' understandings of each other. Limitations of this approach include methodological challenges concerning uneven party sizes, such as a small group of managers in relation to a large public body (Leong, McComas & Decker, 2008). **Topical Links:** This model is particularly applicable to a structural approach that could examine how different communication climates within workteams affect how new regulations or norms about energy might be enacted. For example, if the context was one of consensus, that would lead to certain guidelines for communication efforts such as partnership building; if the context was dissensus, other guidelines would be called for such as mediated negotiation (Leong, McComas, Decker, 2007). Turning to the cognitive approach, the model could be used to examine whether workgroup members accurately understand other members' norms about energy behavior, and identify if there is a mismatch between them or not. Finally, a technical approach could use the model to diagnose the communication contexts for different organizational groups and whether certain types are more likely to foster technological adoption.

Organizational Culture Inventory, Cooke and Rousseau (1988)

Organizational culture refers to shared understandings that guide workplace actions, values, norms and artifacts (Cooke & Rousseau, 1988; Eliasoph & Lichterman, 2003; Martin, Frost & O'Neill, 2006). This inventory comprised of 120 items measures culture through behavioral norms: respondents report what behavioral expectations their organizations hold them to. Cultures that can be recognized with the measure range from an 'approval' culture, where conflicts are avoided, to a competitive culture, where one-up-manship is rewarded (Cooke &

Rousseau, 1988). **Strengths and Limitations:** This measure quantifies culture, which allows for copying the research design and testing it through triangulation across contexts (Cooke & Rousseau, 1988). However, it can post weak results, which the authors argue are often the result of an organization in flux or the appearance of a large number of subcultures (Cooke & Rousseau, 1988). Given this weakness, it would be important to know one's research sites and identify its subcultures before entering the field with this tool. **Topical Links:** A cognitive approach with this tool could examine how different group cultures affect group members' norms about energy behavior, while a technical approach could use the tool to observe whether certain cultural types of groups are more likely to examine new energy technology than other group types. Finally, taking a structural perspective, this tool might be especially useful in examining how different group cultures structure the provision and use of energy services within organizations (see Wilhite et al., 2001).

6.2.3 Process

Process studies refer to how events happen over time and seek to identify the mechanisms that generate the events (Poole, 2007).

Fuzzy Consensus - Spillman, Bezdek & Spillman (1979)

Until the creation of this measure, investigation of group consensus was measured on the binary – was there consensus (yes) or not (no). The application of fuzzy logic to group consensus via this instrument meant that *degrees* of agreement or disagreement with a topic or decision could be accounted for in the consensus making process. The method sees individual group members answer a preference scale on topics under consideration – once this is completed several

equations are made to calculate a group matrix, find the group consensus preference and determine the group's distance from consensus (Spillman, Bezdek & Spillman, 1979). **Strengths and Limitations:** As the researchers note, this method allows for a much finer-grained approach to consensus, identifying coalitions within groups as well as outliers (Spillman, Bezdek & Spillman, 1979). This could be examined over time via repeated measures to study process effects on consensus outcomes pertaining to energy decisions. One of the main weakness of this method is its assumption that decision making is explicit. **Topical Links:** This measure seems well suited to a structural approach, as it could examine to what degree individual group members agree or disagree with norms about energy behaviors at work. Investigating cognitive questions, such as what kinds of attitudes about energy behaviors are associated with more or less consensus, is another avenue for researchers to pursue. And finally, taking a technological approach, investigators could examine how a certain degree of group consensus is needed about a new energy efficient technology before adoption behaviors occur.

Role Conflict and Role Ambiguity Measure, Rizzo, House & Lirtzman, (1970).

Social roles are socially expected behavioral performances (Biddle, 1986; Merton, 1957). When there is lack of information about tasks and processes within a group (role ambiguity) or competing expectations for action (role conflict), group processes might be disrupted (Rizzo, House & Lirtzman, 1970). **Strengths and Limitations:** The measure consists of 30 items, and while it asks about work in general, could be adapted to ask about workteams or work-groups in particular. **Topical Links:** This measure could be used to study the stress that sustainability initiatives put on group expectations and consequent behavioral uptake. For instance, from a structural perspective, this tool could investigate how role conflict disrupts regular group energy

behaviors, while group members' role ambiguity could be used to investigate barriers to energy conservation campaigns from a cognitive perspective. Finally, a technological approach might examine what kinds of energy efficient technologies, when used, are most likely to elicit role conflict among group members (see, for example, Hargreaves, Nye & Burgess, 2010).

6.2.4 Outcomes

These measures allow us to examine how individuals consider or contribute to group outcomes.

Behaviorally Anchored Rating System for Sustainability: Ramus & Steger (2000); Andersson, Shivarajan & Blau (2005)

Support for change initiatives, including sustainability initiatives, have been measured in a variety of ways. One that is notable for its focus on behavior as opposed to values or attitudes concerns BARS – “behaviorally anchored rating systems” (Ramus & Steger, 2000). This system asks participants, in this case employees, to choose which behaviors others (in this case, their supervisor) undertake when supporting environmental initiatives (Ramus & Steger, 2000). In this way employees are considered key informants. **Strengths and Limitations:** The initial measure developed by Ramus & Steger appears to list behaviors from least to most supportive; this might have caused order effects, which could be investigated by randomly assigning the behaviors in the future. **Topical Links:** Although this measure investigates behavior, this does not negate using the tool cognitively – for example, it could be used to examine whether specific types of employee attitudes are associated with supervisor leadership about energy use, or structurally, whether certain kinds of organizational hierarchies are associated with particular supervisory

behaviors. A technical approach could use the tool to examine whether different types of supervisory behavior are more or less likely to result in energy efficient adoption decisions.

Collective Efficacy and Collective Outcome Expectancies – Arthur, Bell & Edwards, (2007); Carrico & Reimer, (2011); Collins & Parker (2011); Koletsu & Mancy (2011); Lubell, Zahran & Vedlitz, (2007)

Measures that involve individual perceptions of groups related to outcomes are team efficacy and team outcome expectancies. Team efficacy is the belief that one's team is able to take required actions in a certain area, while team outcome expectancies are beliefs about the likelihood of consequences undertaken by the whole team (Koletsu & Mancy, 2011). There has been a variety of research appearing in different fields on these constructs in the past several years, ranging from team efficacy measures focused on dyads (Arthur, Bell & Edwards, 2007) to the study of 'collectives' writ large (Ludbell, Zahran & Vedlitz, 2007; Carrico and Reimer, 2011). **Strengths and Limitations:** In considering these measures, it is important to note that a small amount of research shows different effects on survey items for 'I' versus 'we' as the subject (Kozlowski, 2012). The major strength of this series of measures is their insistence on considering the influence of perceptions of group efficacy and group outcomes in undertaking behaviors and how these perceptions impact outcomes. **Topical Links:** Taking a cognitive approach, this measure could result in questions that examine how COE influences group members' attitudes about changes to energy behaviors. On the other hand, a technological approach could take the same kind of investigation into energy efficiency adoption, and finally, a structural focus could investigate which has more of an effect on group energy norms, team efficacy or team outcome expectancy.

6.3 Group Measures

As Poole, Keyton and Frey (1999) note, group measures can do one of two things – they can measure a group in its totality, or be used to compare measurements between groups.

6.3.1 Categorization

Categorization at this level looks not at how individuals contribute to categorizing the whole, but how the whole categorizes itself.

Group Faultlines: Lau & Murnighan (1998 & 2005)

Lau & Murnighan (1998 & 2005) have developed a way to characterize subgroups that often form within groups using ‘faultlines’. According to them, faultlines occur when workgroups use multiple characteristics in combination to perceive subgroups rather than focusing on the independent distributions of such characteristics (Lawrence & Zyphur, 2010). For instance, strong faultline subgroups might consist of Caucasian women and non-Caucasian men (Lau & Murnighan, 2005). **Strengths and Limitations:** Faultline research offers a new way to examine how characteristics are used by group members to define themselves and others by focusing on interdependent organizational demography (Lawrence & Zyphur, 2005). Unfortunately, due to the interdependence inherent in the concept, methods of addressing this topic are still in development (Lawrence & Zyphur, 2010). **Topical Links:** Structurally, this tool could be used to investigate how groups typify members who adapt new regulations and norms about energy behavior, while technologically, it could examine whether certain types of subgroups lead innovation within groups. Cognitively, the attitudes that group members use when constructing

faultlines could be examined, particularly in terms of subgroup formation around certain kinds of energy behaviors or practices.

6.3.2 Context

Context at the group level tends to focus on the effects of collective social structures, like organizational climate, on collectives (Schneider, Ehrhardt & Macey, 2013).

Group Dynamics Q-Sort, Peterson, Owens & Martorana (1999).

The group dynamics q-sort identifies the context in which groups make decisions by asking about interactions, boundaries and contexts (Peterson Owens & Martorana, 1999). It consists of 100 statements that participants place in order of importance to them around topic areas ranging from group Sense of Control/Crisis to Leader Weakness/Strength. Choices high in the upper or lower reaches of the instrument are considered highly characteristic (Peterson, Owens & Martorana, 1999). **Strengths and Limitations:** Q-sorts represent an inversion of traditional survey instruments, where the statements become the participants and the participants become the variables (Sickler et al., 2006). Strengths include its ability to use few participants to deeply assess communication processes, as well as its way of investigating multiple groups within or across different organizations with some modicum of standardization (Peterson, Owens & Martorana, 1999). Challenges involve the identification of factors and generation of statements (for this reason rigorous exploratory research is often needed) (Watts & Stenner, 2005). **Topical Links:** Using this tool could lead to research on group factors associated with certain types of decision outcomes. In particular, from a cognitive perspective, questions could be asked that compare differences among group leadership styles to attitudes about energy behaviors.

Alternatively, taking a technological approach could see questions emerge about what kinds of group decision contexts are more likely to support the adoption of energy efficient technologies. From a structural perspective, this tool could be used to investigate what norms affect leadership styles for reducing energy consumption.

Home Observation Assessment Method (HOAM)– Steinglass, (1979).

Although the HOAM was developed in 1979, it is still discussed today because it assesses structural context in conjunction with behavioral interactions (Christensen, 2013). It does so by measuring family interactions within the family’s space, with a particular emphasis on recording the structural aspects surrounding the behavior (Steinglass, 1979). Developed originally for a ‘traditional nuclear family’ it assigned an observer per spouse to follow the participant around their environment and take notes of interactions every two minutes for up to four hours (Steinglass, 1979). **Strengths and Limitations:** The method notes how context shapes interactions via items such as interactional distance or location. This approach could certainly be adapted to office environments to study energy service behaviors (see Wilhite et al., 2000). However, of concern when adapting this method is its approach that assigns an observer per participant (Steinglass, 1979); doing so with a large organizational team might not be feasible, given limited researcher resources. Instead, an adaptation could take advantage of technology not available at the time of this method’s development, such as a passive electronic mobile sensing device (see Rabbi, Choudhury, Ali & Berke, 2011). This is an electronic device worn on the waist, similar to a pager, that acts as an ‘observer’; location characteristics where interactions occurred could be mapped as well using the device (Rabbi et al, 2011). **Topical Links:** This tool has many potential implications for energy researchers. For example, taking a cognitive approach

and given the oft-repeated refrain about lack of efficacy among employees regarding heating and cooling (Dixon, Deline, McComas, Chambliss & Hoffmann, 2014; Komor & Katzev, 1988; Lo, Peters & Kok, 2012), research using this tool could examine how different kinds of structural settings affect efficacy perceptions.

Technological researchers could use it to identify routines that are amenable to technological innovations, and structurally focused research could investigate what kinds of norms are associated with different types of energy interactions. This would help determine if there are patterns to what norms are used during specific behavioral interactions.

6.3.3 Process

Group process research often occurs with coding schemes that are used to capture how groups process tasks (Marks, Mathieu & Zaccaro, 2001). Understanding these processes at the group level allows us as researchers to better understand how collective level events and interactions effect behavior and outcomes.

Discussion Coding System – Schermuly & Scholl (2012)

According to the authors, their tool codes interpersonal non-verbal communication during group processes in addition to functional, task driven processes (Schermuly & Scholl, 2012). The functional categories contain items such as tasks, proposals and agreements; the interpersonal items contain codes pertaining to affiliation or dominance (Schermully & Scholl, 2012).

Strengths and Limitations: Schermuly & Scholl's (2012) coding measure improves upon several of the issues commonly found with group coding tools: it only takes four hours to code

one hour of interaction, as opposed to the 9 or 30 hours of other methods and it reliably assesses interpersonal communication (Schermyly & School, 2012). Challenges to this method include the fact that the meaning of the interactions might be different for group and researcher(s), (Poole, Keyton & Frey, 1999) so verification practices should be used for rigor. Additionally, because coding often occurs with Bona Fide groups (groups with histories of working together in certain contexts) the groups may reference past events for which the researcher(s) have no knowledge or ability to make meaning of within that history (Poole, Keyton & Frey, 1999). It seems therefore prudent to gain an understanding of the group through initial fieldwork. **Topical Links:** Structural researchers could use this tool to code group meetings that result in successful and unsuccessful regulatory or normative changes, thereby identifying the communication processes relevant to such change. Technological researchers could use it to identify whether certain types of group communications are more likely to result in energy efficiency adoption processes. And finally, cognitive researchers could examine what interpersonal group processes are associated with behavioral intentions to change energy behaviors.

6.3.4 Outcomes

Rather than study how decisions, norms and values about energy behaviors emerge, outcome research is oriented towards understanding the causes of energy behaviors (Abrahamse, Steg, Vlek & Rothengatter, 2005; Osbaldiston & Schott, 2011).

Family Routines Inventory – Jensen, James, Boyce & Hartnett (1983)

These researchers captured behavioral outcomes via the Family Routines Inventory. Routines are considered patterned behavioral structures that act to regulate and maintain groups, and are

under-researched (Gersick & Hackman, 1990; Jensen et al., 1983). This measure was developed from interviews with families as groups (rather than individual family members) and then generalized via questionnaires. It identifies key routines involving more than one person in a family environment. **Strengths and Limitations:** Challenges faced by researchers using such a measure involve the differing compositions and orientations of workgroups that might make generalization of such routines more difficult. **Topical Links:** This approach could easily be adapted to organizational work-teams and used with an energy services approach (see Wilhite et al, 2000) to examine what workplace routines use energy services, and if so, how. In particular, from a technological perspective, researchers could investigate whether there are certain building features that facilitate or restrict certain kinds of energy routines. In addition, research using this tool has indicated that there were key routines that all families highly valued (Jensen et al., 1983). The identification of such routines in the workplace pertaining to energy use could engender a better understanding of the socio-structural barriers to change implementations regarding energy. Cognitively, researchers could assess whether differing attitudes about energy behavior are associated with different types of energy behavior routines at work, particularly collective efficacy or outcome attitudes.

Leadership Effects on Pro-Environmental Behaviors - Robertson & Barling (2013)

These researchers developed measures to explore whether subordinates were impacted by their leaders' pro-environmental behavior (PEB) and whether leaders' PEB was predicted by their recall of descriptive norms (Robertson & Barling, 2013). They found this was the case by developing measures to assess these relationships. The researchers found that leaders' perceptions of the importance of PEB via descriptive norms were related to their PEB behaviors

as an outcome. **Strengths and Limitations:** While the study shows associations between norms, leadership and actual PEB behavior, the authors indicate that these measures have not been tested rigorously for validity and should be for the area to advance (p. 190). This offers an opportunity for energy researchers who want to study leadership's effect on behaviors. **Topical Links:** Narrowing down from PEB to energy behaviors, cognitive researchers could investigate whether certain norms at the leadership level are related to an uptake in energy behaviors or not. Additionally, structural researchers could investigate what type of leadership styles were most likely to result in changes to energy behaviors at work, while technology researchers could examine the same concept in relation to new technology adoption.

Obviously this paper cannot detail all the questions that might emerge from considering these topics in tandem. However, by providing critical groupings of concepts and measures, researchers can begin to see what sorts of questions might emerge from a collective-level focus on energy.

7. Summary and Conclusion

This review recommends attending to a gap in the commercial energy behavior field through group level research. To assist with this effort it has shown this gap empirically, addressed ways that collective level analysis would extend current cognitive, structural or technological research, and advanced typologies and reviews of tools and questions researchers can use to start this work. In particular, it has examined how a number of topical energy areas (cognitive, structural and technological) have focused on individual level research. To investigate whether this impression was empirically accurate, the energy literature was reviewed and only a small number

of articles were found that use a group level approach. Whether this is the result of a lack of indexing or an actual lack of group research is unclear. However, if researchers were to adopt the recommended approach in this article, of using group level keywords, this issue could be clarified. It would also see the beginning of an indexed body of work in this area that researchers could use to advance both energy theory and policy.

The small number of articles found in the review signifies a lack of work in this area, so a typology of research questions from a group level perspective was developed. It combines four key areas from group research with the topical areas of technology, cognition and structure used by energy researchers. Creating this typology responds to calls from a number of researchers to begin developing a body of integrative energy research that brings together previously disparate work (Sovacool, 2014; Stern, 2014). These questions also address calls for investigations into how energy is conceived of and used within organizations (Lutzenhiser, 2014). Given the questions generated by the typology, it seemed promising to address how energy researchers could best begin undertaking research in these areas. To this end, indices and key journals were searched for group level measures that researchers can use to address these questions. In sum, this review has empirically shown a group level research gap in the energy field, addressed ways that collective level analysis would extend current cognitive, structural or technological research, and organized questions and tools researchers can use to start this work.

Future research in this area represents three main opportunities. First, researchers using these questions and tools will advance research in the energy behavior field by expanding behavioral understanding from the individual to the group level. This provides opportunities for adventurous

energy researchers who want to start work in the field from a new angle. In addition to new ways of approaching these topical areas, group-level measures could also be used to develop or extend theories through a focus on the elements of the study, such as group process, outcome or context. For example, process studies of conflict or evolution require collective level measures (Poole, 2004). To start advancing our understanding of evolutionary influence on routine energy behaviors, collective level measures need to be used. Using a group analysis will advance both topical (cognitive, structural, technological) and elemental (categorization, context, process, outcome) aspects of commercial energy behavior research.

Second, for established group researchers, the energy field provides an applied context to advance behavioral work. The way that work groups or teams structure energy behaviors, and the fact that these behaviors can be both routine (the day to day use of energy services like lighting or heating) or innovative (energy conservation campaigns) in commercial settings provides a rich area for research. This will assist with studies that seek to understand, for instance, what situational variables affect group behaviors, or how different types of groups vary in their behaviors, providing possible contributions to minority and intergroup work or the leadership literature. In particular, as Moreland, et al (2010) note, one major difficulty in group research is naïve explanations from participants for collective behaviors. For this reason, they advocate for group research to examine behavioral phenomena (Moreland et al., 2010). Commercial sector energy behaviors offers a way to do this, by providing naturally occurring bona fida groups who regularly engage with energy behaviors for research efforts.

Finally, this approach will produce a body of work that policy makers can start using to both measure and consider social influence in energy models. This last point is important; as Meadows (1998) writes: “Indicators are partial reflections of reality based on uncertain and imperfect models” (p. viii). In essence, they are shorthand that indicate what is going on within a system – they are focal points to determine potential danger, whether the current environment we live in is suitable, and how near or far we are from any goals (Meadows, 1998). Given the reliance in fields such as engineering and economics on modeling systems, ensuring indicators used to build these models are fulsome is important for predicting behavior and anticipating outcomes. This is especially true when considering how different policy tools have additive, emergent effects when used together to affect behavior (see Dietz et al., 2009). Many indicators tend to aggregate individual factors, and do not measure collective outcomes (Spangenberg & Lorek, 2002). Adding research that can be used to develop indicators and policy models that take collective level social influence into consideration will not necessarily make these models more certain or perfect, but will provide a more robust and fulsome picture upon which to base energy policy decisions.

Appendix A

TS=(energy* or electricit* NEAR conserv* or consum*) 1980-present

And

TS=(organization* or organization* or work* or company* or firm* or corp* or office*)

And

TS=(measure or index or scale)

Timeframe: 1980 to present

Refined by: peer-reviewed articles, in English.

Refined by categories: environmental studies, environmental sciences, business, management

Appendix B

Exclusion scale:

- 1) Does the measure capture the collective-level either by asking: 1) individuals to report on groups in general or specific groups; or 2) study group behavior.
- 2) Is the study focused on actual empirical behavior?
- 3) Is the study set solely in the commercial sector?
- 4) Is the study focused on behaviors rather than, for example, intentions to behave?

Appendix C

Key Review Pieces used for dependency search:

Axsen & Kurani, 2012;

Lo, Peters & Kok, 2012;

Lutzenhiser, 1993;

Obaldiston & Schott, 2011;

Steg & Vlek, 2009;

Wilson & Dowlatabadi, 2007.

Appendix D

Other words that were searched for and yielded no articles:

- 1) Ecological ethics
- 2) Multinational corporation
- 3) Supervisory support
- 4) Sustainability
- 5) Value-belief-norm theory

Appendix E

Codebook:

- 1) Enter the number of the article, sequentially, starting with 1. Ex: 1, 2, 3.
- 2) Enter the title of the article.
- 3) Enter the first author of the article.
- 4) Is the article about people, as opposed to something non-human, like micro-organisms? If yes, please put a 1 and proceed with the rest of the categories. If not, please put a 0 in this column, zeros in the rest of the columns and do not proceed with the rest of this coding procedure.
- 5) Is the article about energy consumption or behavior, as opposed to topics like ringtones or credit cards? If yes, please put a 1 and proceed with the rest of the categories. If not,

please put a 0 in this column, zeros in the rest of the columns and do not proceed with the rest of this coding procedure.

- 6) For each article, read the title with the columns A-D in mind. If you can't answer each of the four questions using the title alone, move to the abstract. If the abstract won't answer the four questions, please move to the article.
 - a. Does the study address collective level issues either by asking: 1) individuals to report on groups in general or specific groups; or 2) study group behavior. If so, code with a 1. If not, code with a 0 and move to the next item.
 - b. Is the study focused on actual empirical behavior? For instance, if it refers to behavior but is a theoretical model or review of behavior studies, it is not a study focused on empirical behavior. If it is focused on empirical behavior, code with a 1. If not, code with a 0 and move to the next item.
 - c. Is the study set solely in the commercial sector? The commercial sector pertains to "... buildings greater than 1,000 square feet that devote more than half of their floorspace to activity that is neither residential, manufacturing, industrial, nor agricultural." (US EIA, 2012). It includes the following building activities: "office, warehouse and storage, service, mercantile, religious worship, education, food service, public assembly, vacant, food sales, lodging, health care, and public order and safety" (US EIA, 2012).
 - d. Is the study focused on behaviors rather than, for example, intentions to behave, or attitudes about behavior? If it is focused on actual behavior, code with a 1. If not, code with a 0.
- 7) Examine the codes from questions 4-7. If an article has received ones in **every** category, it should be included in the study; please put a 1 in this column to indicate this. If not (if it receives less than four 1s) it should not be included in the study; please put a 0 in the column to indicate this.

Appendix F

Review of research tools:

In the Mental Measurement Yearbook the search involved reviewing sections labeled behavior and miscellaneous categories. Under Bonjean the group, role, norm and collective measure categories were reviewed. The Communication Research Measures I and II were read through with specific attention to the organizational communication sections, while the Handbook of Marketing Measures was examined for its job roles, workplace behaviors and values sections.

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CHAPTER 6

CONCLUSION

Attempts to make changes in organizations – ranging in areas as diverse as sustainability, health or diversity – means enacting innovations. But innovating invites resistance. This project has furthered the concept of resistance as an interpretive process during implementations in organizations and indicated several generative areas for future research. These findings also lead to further questions that will help to extend and enrich implementation communication and resistance theory. This rest of this chapter is split into five parts: 1) key findings; 2) limitations; 3) theoretical contributions; 4) broader societal contributions; and 5) next steps in this program of research.

Key Findings

The bulk of this dissertation is comprised of analysis of a case study that aimed to better understand what behaviors, roles and frames were involved in resistance interpretations during the implementation of a sustainability program in a large, distributed Midwestern organization. Chapter Three was developed to focus on the coping behaviors perceived when making RIs, while Chapter Four built on that work by typifying the frames used when interpreting those behaviors as resistance. Chapter Five acted as a baseline review for collective levels of analysis, that was undertaken to inform the work in Chapters Three and Four due to the project's use of role theory.

Coping Behaviors: In Chapter Three, a grounded typology of coping behaviors used in resistance

interpretations was generated via frame analysis and analyzed. In terms of these coping behaviors, this research found that certain coping behaviors were focused on by both implementers and employees. These behaviors included negative behaviors, other- and self-directed behaviors, and decided behaviors. Interestingly, neither positive nor undecided behaviors were focused on when making resistance interpretations. Implementers saw these behaviors largely as a confrontational form of resistance, while employees saw some of them (namely decided and self-oriented behaviors) as forms of withdrawal and disengagement. This finding suggests that roles guide different resistance interpretations from the same kinds of coping behaviors, and it begins to help map an understanding of who is more likely to perceive certain types of resistance.

Frames: Chapter Four used frame analysis to identify six major frame combinations that implementers and employees use to make resistance interpretations. The role frames in these combinations that implementers and employees use stayed the same; these were comprised of adaptive, initiative, and proficiency roles. Participants seemed to use the adaptive role most often when making resistance interpretations and the leadership role the least. In addition to examining the types of frames, this study also examined the degree of similarity and difference between implementers' and employees' frame combinations. The research showed that the adaptive and proficiency frame combinations exhibited some similarities, while the frame combinations based on the leadership role did not. These indicate that there are different degrees of convergence in implementers and employees' frame combinations.

Collective Levels of Analysis: Chapter Five consisted of a review of empirical behavioral research in organizations pertaining to the energy field from a group level of analysis. Unfortunately this resulted in a paucity of articles ranging from 1980-2015. Given this small number, it was decided that this was a generative area for both small group and energy researchers. A number of measurement indices were reviewed to develop a typology of measures and questions that addressed group-level research in the areas of categorization; context, process; and outcomes. These questions can be used by researchers to advance more fulsome research that reflects the social composition of most organizations today, which contain different kinds of groups.

Limitations

There are many limitations to this study which are associated with its design – several of them are documented in Chapter Two, Methodology, and in the Limitations section of each of Chapters Three, Four and Five. I additionally present two limitations here, and what I learned from them.

A) Context:

- a. Distribution: the distributed nature of the organization I was studying impacted the study in two major ways. First, what ostensibly was a study into a sustainability program required much driving across the state my site was situated in – the irony was not lost on either myself, as an interviewer, or participants, who commented on it. I learned after the first several days to work this into the introductory portion of the interview itself as a joke, which appeared to relax

participants. The second aspect of this distribution might have actually strengthened the study – I had assumed at the beginning of the study that each office would evidence one overarching, shared, organizational culture, but once I began the fieldwork it began to appear that each office I visited had a different cultural understanding of the organization. I adapted my questions to take this into account, and think that examining the resistance interpretations in light of analysis with these different office cultures might be generative in the future.

- b. **Optional Program:** the optional nature of the sustainability program meant that employees were not required to undertake innovation. While this is representative of many sustainability programs (Norton, Parker, Zacher & Ashkanasy, 2015), it does not investigate required organizational innovations. Such a context might have yielded other types of behaviors or frame combinations. Given that required organizational innovations often represent a social fact for those who work in organizations (Klein & Sorra, 1996; Norton, Parker, Zacher & Ashkanasy, 2015; Nutt, 1986), examining implementations and resistance in that context would be fruitful for researchers. This is something I aspire to do in the future in my research program.

Theoretical Implications

Coping Behaviors: In determining the types of coping behaviors that implementers and employees focused on to make resistance interpretations, implementers consistently perceived the behaviors as a form of confrontational resistance, while employees saw some of these

behaviors as a form of withdrawal resistance. To see withdrawal requires knowledge of the system one is withdrawing from. This suggests that employees are focusing on their deeper role knowledge of their office to conceive of resistance. Perhaps implementers are also using their role knowledge to conceive of resistance – except their role knowledge, by virtue of their structural role, appears to be *a lack* of role knowledge. One interpretation is that the implementation role can be considered a boundary spanner – implementers need to bridge social boundaries between different groups and teams (Bates, 1962; Lewis, 2007; Miles & Perreault, 1976). This bridging activity might be more ‘shallow’ than someone enmeshed within the habitual, tightly woven network of roles and role expectations that comes with working with the same colleagues year after year. For example, employees appear to use a deeper role system knowledge in relation to resistance interpretations even when making confrontational resistance interpretations of negative coping behaviors. They seem to focus on negative interactions with fellow employees in their office or team environments, compared to implementers who focus on negativity at the organizational level. This might also speak to relational transgressions – the disruption of behavioral expectations – between colleagues during implementations (Metts & Caupach, 1994). This raises the question of whether there are certain types of relational role transgressions that occur during implementations and if perceiving these is related to objective roles and associated role knowledge.

Given critics’ charges that resistance studies have prioritized implementers’ perspectives (Ford, Ford & D’Amelio, 2008), and in this case, implementers have consistently perceived behavior as evidence of confrontation, what conceptions of resistance are we as resistance researchers prioritizing? This research suggests a more fulsome approach will be to investigate how role

knowledge structures resistance interpretations. To better understand how roles are associated with resistance interpretations, promising avenues for research include: 1) an examination of whether implementers in other settings and types of implementations conceive of behavior as confrontational resistance as well; and 2) what effect shallow and deep role knowledge has on how resistance is conceptualized and understood.

Frames: This case study found that participants (both implementers and employees) were most concerned with the adaptive role. This might be because innovations necessarily disrupt roles (Adolfsson et al., 2004; Feldman, 2004) and adaptivity might be suggestive of the role negotiation process inherent in this disruption itself.

The second area to emerge from the case study in relation to the frame combinations is the degree of similarity in these combinations differs between implementers and employees. This variation can be considered generative. The co-orientation perspective may prove useful here in thinking about this variation. Co-orientation is concerned with how meaning is shared between parties, and the framework examines this through a focus on agreement as well as perceived agreement (called accuracy) (Newcomb, 1953). Different combinations of these factors establish four communication contexts: consensus, dissensus, false consensus and false dissensus (Leong, McComas & Decker, 2007). Dissensus means a context where parties disagree and know that they disagree; false consensus means a context where parties disagree and do not know that they disagree (Leong, McComas & Decker, 2007). For instance, in the current case study, the leadership frame combinations exhibited either a dissensus or false consensus context. These two contexts might have different effects on resistance interpretations and subsequent mobilization,

as dissensus speaks to frame differences, while false consensus speaks to a misunderstanding of frame differences. To work with a misunderstanding means first calling attention to it. Because this might be difficult to do, it might be more onerous to shift a context of false consensus between frames. Adding accuracy perceptions to these studies could help researchers better understand what communication context these frame combination alignments are creating. Theoretically, this calls for more attention to what effects these types of frame combination variations have on: a) the co-orientation context; b) resistance interpretations; and c) resistance mobilization.

Collective Levels of Analysis: The typology generated in Chapter Five could extend work in the energy field by introducing research that addresses a social influence – groups – on energy behaviors. This would assist a) group researchers who are searching for a generative context for behavioral group research; and b) energy researchers who are looking to better understand behavioral influences and effects on energy behaviors in a more fulsome way.

Broader Societal Implications

Coping Behaviors: This research found that implementers consistently see resistance as a confrontation when interpreting coping behaviors while employees see some of these same behaviors instead as withdrawal. This finding speaks to how roles in implementations structure attention to deeper or weaker forms of role knowledge. Specifically, this work suggests that employees attend to their regular workplace relationships when making resistance interpretations, while implementers are forced to make resistance interpretations with shallow knowledge of various groups and teams by virtue of their task orientation. This may lead to a

propensity to conceive of resistance as confrontational. This work can therefore help implementation planners to better understand what different kinds of resistance different parties in the implementation process might expect and develop specific messaging and tactics to address it.

For example, in this case, it appeared implementers did not consider how many people would adopt the program. Further, they had not thought about employees trying to implement this program in the face of withdrawal. Knowing that some of this kind of perceived resistance might occur, implementation planners could develop tactics like linking employees who want to lead on the issue into an employee leadership network. This would leverage employee's interests and give them an environment in which to function that is independent of their regular one of 'resistance'. Understanding resistance interpretations as grounded in role knowledge should focus implementers' attentions not only on knowing their audiences for the implementation, but also to consider how much their stakeholders and partners in the implementation know their audiences. This could lead to more customized approaches to resistance and implementation.

An additional area of practical implications concerns whether and how relational role transgressions are considered resistance, and whether or not these are associated with differing implementation communication strategies, such as 'quid pro quo' or 'equal participation' models (Lewis, Hamel & Richardson, 2001). Mapping the types of perceived relational transgressions that occur during implementations and matching them to implementation communication strategies could provide researchers and practitioners with a map of what strategies are

associated with certain perceptions of such transgressions. It also could be used to further implement communication and role negotiation research and practice.

Framing: In addition to considering the relational aspect of implementation, examining the degree of difference or similarity between parties' frame combinations offers opportunities to investigate how resistance itself is contested and enacted, along with subsequent effects on resistance mobilization and implementation success or failure. For instance, if there is consensus between parties' resistance frames, is this likely to lead to a more cohesive interpretation of resistance, which might lead to stronger resistance effects? Answering a question of this sort could allow implementers to foster a weakened interpretation of resistance by encouraging variation, rather than similarity in resistance frames. For implementation planners, understanding how alignment in these frame combinations effects conceptions of resistance might lead to different communication strategies and tactics on how to address (or use) resistance frame co-orientation.

Collective Levels of Analysis: The models that have been used for predicting behavioral influence on energy have largely been individual ones. This implicitly prioritizes one understanding of social structure and influence, one that is not currently found in organizations. If energy researchers are to develop more accurate models and understandings of organizational behavior in relation to energy, they need to begin to include a social fact of life in organizations: the group. Doing so might improve modeling efforts and subsequent policy decisions. This review provides a way for researchers to begin to address this gap, and for policy makers to begin to demand this research.

Next Steps

To further explore the findings from the case study project and start answering some of the questions outlined above, further research is necessary. One path forward is to identify if the frame combinations identified in this case are associated with resistance interpretations in other conditions, such as different types of organizations or implementations. Investigating this requires two projects. The first will examine which aspects of the frame combination typology are considered most important by employees and implementers via Q-sorts. Then I plan on exploring the predictive effects of the typology via a quasi-experimental survey to identify which frame combinations are most likely to be used when making resistance interpretations. The findings from these studies will support a program of research testing strategies and messaging to improve eco-innovation implementation efforts across different corporate settings and types of innovations.

Q-Sort Project: RQ1: What frame combinations do employees and implementers consider the most important when making resistance interpretations? To examine which frame combinations are considered important in resistance interpretations, I plan to undertake a Q-sort project. Q-sorts represent an inversion of traditional survey instruments (Sickler et al., 2006), and are primarily used to identify combinations of factors that participants favor when making social judgments (Watts & Stenner, 2005). Importantly, the methodology, an exploratory technique, is not generalizable to the participants, but rather to the universe of statements (in this case, the frames and social roles used to think about an issue). (O’Leary, Wobbruck & Risken, 2013;

Watts & Stenner, 2007). This kind of study requires four steps: 1) the generation of a series of statements; 2) the ranking of the statements in relation to each other in order of importance to the issue or question at hand; 3) inverted factor analysis; and 4) factor interpretation (Sickler et al., 2006; Watts & Stenner, 2005). The results will include the evaluation of key frame combinations used to make resistance interpretations.

Survey Project: RQ2: What logics are used by employees and implementers to make resistance interpretations?

I will use the frame combinations identified as most important to resistance interpretations from the Q-sort to develop a three-part quasi-experimental survey to explore which combinations are most often *used* when making resistance interpretations in real time. The first part of the survey will undertake a relational class analysis (RCA) of cultural frames participants hold (Goldberg, 2011); the second part will investigate whether different role identities impact resistance interpretations; the third part will use tested scales to control for interpersonal and organizational influence on role identities. The survey will take no more than ten minutes to complete.

Relational class analysis, the first part of the survey, is a method developed by Goldberg (2011) that uses ordinal survey data to cluster people into groups based on the cultural frames they use to interpret topics. It does so by identifying the relational patterns between answers rather than focusing on the answers themselves (Goldberg, 2011). The frames identified in the dissertation will be used to inform the ordinal questions in this part of the survey instrument. (Because this is a new technique, a pre-test of this portion of the survey has been done and initial results can be found in Appendix A). The second portion of the survey will explore which social roles are more

likely to predict resistance interpretations by asking participants to imagine that they are working at an organization running an energy conservation campaign that asks employees to turn off lights and office equipment while not in use. Participants will be randomly assigned to one of the three social roles identified in this dissertation, and asked to imagine that they are interpreting employee's coping behaviors as resistance or not in relation to the hypothetical campaign via likert scales. (The coping behaviors will be the ones also identified in this project). The third section will include questions from the organizational dissent scale (Kassing, 2000) as well as the small group relational satisfaction scale (Anderson, Martin & Riddle, 2001) to control for potential influence on role identities (Kramer, 2009). Standard demographic questions (i.e.: age, gender, etc) will be answered at the end. To assess content validity I will have experts in the identified themes review the items (Worthington & Whittaker, 2006). I will then administer a pretest of the survey to a small sample, getting their feedback on relevant issues regarding comprehension, wording, and survey design (Rothgeb, 2008). The results will identify which roles and frames are used to make resistance interpretations.

Conclusion

There is much work to do in this generative area. I am excited to begin these efforts; the results will advance research and theory in implementation communication, resistance and role negotiation. Additionally, findings in this area will contribute to efforts to improve implementation strategizing and planning for implementation professionals, and the employees who are subject to these efforts.

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APPENDIX

As mentioned in Chapter 6 (the Conclusion) next steps for this research program involve testing what combinations of roles and frames are actually used when making resistance interpretations. Specifically, *RQ2: What logics are used by employees and implementers to make resistance interpretations?*

To begin this work, relational class analysis (RCA), was identified as a prospective method for the first part of the quasi-experimental study detailed in Chapter 6. Specifically, the first part of the survey would use RCA, a method developed by Goldberg (2011) that uses ordinal survey data to cluster people into groups based on the cultural frames they use to interpret topics. It does so by identifying the relational patterns between answers rather than focusing on the answers themselves (Goldberg, 2011). Because this is a new technique that relies on an inductive approach, it was decided to pre-test this approach.

Sample

The sample was a convenience sample of Cornell undergraduates, over the age of 18, who were taking my Research Methods class, as well as other students seeking extra credit on the SONA system. In total, I received N=96 responses that students had consented to me using for research purposes. When cleaned of missing data, this led to N=86 responses. From anecdotal reports from my class, it appears that some students may have repeated the survey, due to e-mails from SONA – because of the survey design with the IRB, there is no way to know if, or if so, which responses were replicated. Students were disqualified from the survey if they weren't over the age of 18, had not worked as an employee for an organization for pay, had not worked for an

organization that had undertaken an innovation, and had not used adaptive, initiative and proficiency roles in the past at work.

Survey Design

Participants were randomly primed with one of the adaptive, initiative and proficiency roles, and then asked to answer a series of questions that detailed how much they thought different frames contributed to resistance to change in a hypothetical sustainability program scenario. For example, participants were asked to identify what was most important to resistance by indicating an answer to this question: “I think resistance to putting a sustainability program in place in my former or current workplace, like the program described above, is explained by:”

A. People who are negative about the program; This contributes to resistance a tiny amount; a moderate amount, a medium amount, a large amount, this is the main cause of resistance

These questions involved an operationalization of each of the frames identified in Chapter five as pertinent to resistance interpretations. This was followed with some questions about the innovation the participant had been a part of, as well as standard demographic questions.

Data

The data for this analysis consisted of the questions pertaining to frames and resistance detailed above. This was divided into responses for those participants who had self-identified as having implemented an innovation in the past (implementers, N=56) and those who had not (employees, N=30). An attempt was made to also divide responses into role categories (employees/adaptive

Analysis

Clustering tree and correlation matrix analyses were run on this data in R, using the *igraph*, *sna* and *RCA* R libraries. Wang Liao developed a custom code for me in R in order to run the correlation matrices and significance tests.

Results

It appears that RCA cannot provide clustering solutions for either implementers or employees at a significant level, and that more observations would be needed to generate a cluster solution. Unfortunately, because this is an inductive method, it is not clear how many observations would be needed. It should be noted that Goldberg's (2011) analysis used GSS cultural module data, for a sample size of $N=1532$, to run his analysis. This suggests that such a large sample would also be needed for a cluster solution in this case.

Conclusion

These results function as a pre-test for the proposed survey detailed in Chapter 6. Unfortunately it appears that a much larger sample size is required for a significant cluster model, and as such, the method will need to be reconsidered for use in the proposed survey.

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Goldberg, A. (2011). Mapping shared understandings using relational class analysis: the case of the cultural omnivore reexamined. *American Journal of Sociology*, 116, 1397-1436.