

Revisiting Relational Coordination: A Systematic Review

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Abstract

Work is increasingly complex, specialized, and interdependent, requiring coordination across roles, disciplines, organizations, and sectors to achieve desired outcomes. Relational coordination theory proposes that relationships of shared goals, shared knowledge, and mutual respect help to support frequent, timely, accurate, problem-solving communication, and vice versa, enabling stakeholders to effectively coordinate their work across boundaries. While the theory contends that cross-cutting structures can strengthen relational coordination, and that relational coordination promotes desired outcomes for multiple stakeholders, the empirical evidence supporting the theory has not previously been synthesized. In this article, we systematically review all empirical studies assessing the predictors and outcomes of relational coordination published from 1991 to 2019. We find evidence supporting the existing theory and discuss how that evidence supports expanding the theory from a linear structure–process–outcomes model to a dynamic model of change. An agenda for researchers and practitioners is proposed.

Keywords

communication, structure, design and boundaries, organizational change, groups/group processes/dynamics

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Work is becoming increasingly complex, specialized, and interdependent, requiring coordination across roles, disciplines, organizations, and sectors to achieve desired performance outcomes. In manufacturing, pressures for just-in-time production call for coordination across widely distributed supply chains (Holweg & Pil, 2008). In the service sector, virtual interfaces require new forms of coordination among service providers and with their customers (Sklyar et al., 2019). In health and social care, the movement toward value-based care and the push to address social determinants of health require workers from multiple disciplines to coordinate care delivery across disciplinary and organizational boundaries, beyond the coordination already required to achieve desired health outcomes in surgical and inpatient settings (Aristidou & Barrett, 2018). In education, personalized learning models require greater coordination among educators, school staff, and social service personnel to address individual student needs (Osher et al., 2020). The increasingly universal need for well-coordinated work requires an evidence-based theory that can provide us with practical guidance.

Developed in the early 1990s from an in-depth field study of flight departures in the airline industry, relational coordination theory proposes that relationships characterized by shared goals, shared knowledge, and mutual respect tend to support frequent, timely, accurate, problem-solving communication and vice versa, enabling stakeholders to effectively coordinate their work. Expanding on Follett's (1924, 1949) seminal work on coordination, the theory contends that cross-cutting structures can strengthen relational coordination by reducing siloed thinking and increasing stakeholder attention to the whole. The theory further contends that strong networks of relational coordination facilitate the achievement of desired outcomes, especially when work is highly interdependent, uncertain, or time sensitive.

Yet nearly 30 years after the establishment of this theory, the empirical evidence supporting its use has not yet been synthesized, despite frequently being cited in the literature. A systematic review of the empirical evidence for relational coordination theory will provide guidance to organizations seeking to improve relational coordination and to optimize the outcomes associated with it. More specifically, this review will provide insight into how stakeholders can progress from struggling to coordinate their work through fragmented dysfunctional relationships to more easily coordinate their work through strong cohesive relationships supported by cross-cutting structures.

In this article, we explore the evidence base for the theory by systematically reviewing all empirical literature assessing the predictors and outcomes of relational coordination. We then discuss how the evidence expands our understanding of relational coordination theory from a linear structure–process–outcomes model to a dynamic model of change. We highlight insights such as how change agents can (1) effectively intervene to help stakeholders progress from fragmented dysfunctional relationships to strong cohesive relationships supported by cross-cutting structures, (2) build relational coordination across diverse social identities, (3) build relational coordination through micro processes such as psychological safety, and (4) use relational coordination to achieve more equitable outcomes between high and low power roles.

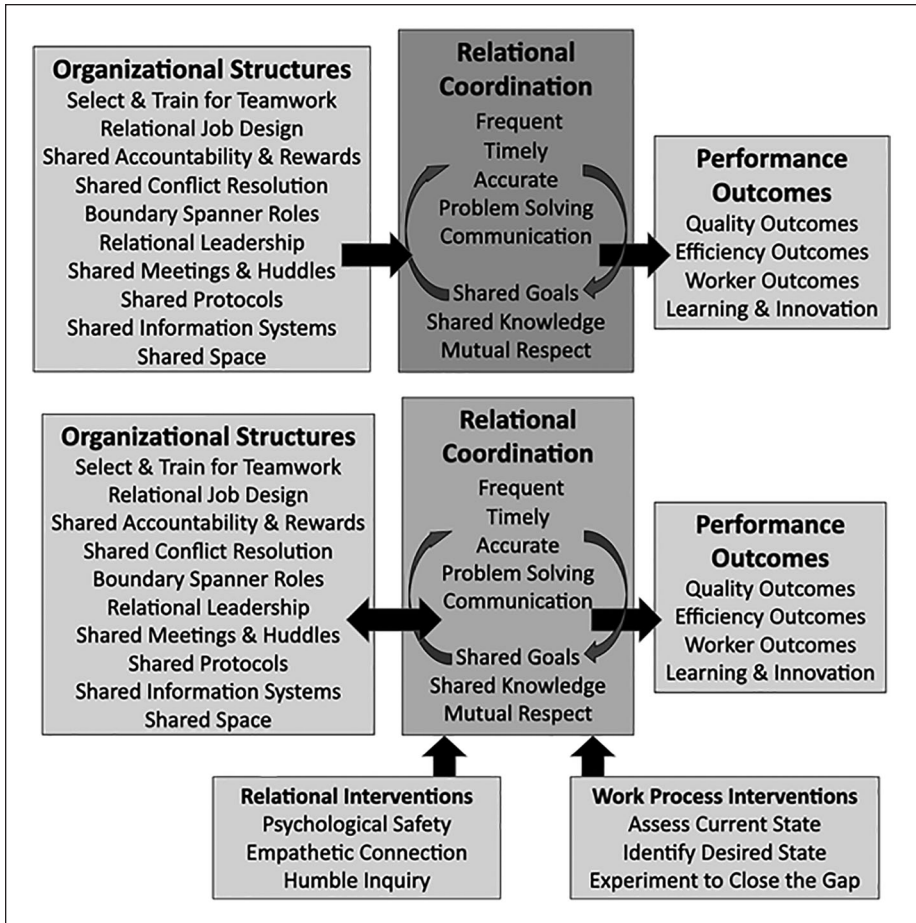


Figure 1. From a linear to dynamic theory of relational coordination.

Relational Coordination Theory

Relational coordination theory as originally conceptualized (Figure 1, upper panel) includes three main components: relational coordination as a mutually reinforcing process for coordinating work, the cross-cutting structures theorized to strengthen it, and the outcomes theorized to result from it. Below we describe these core components and offer two key propositions that we expect the empirical literature to support.

Relational Coordination

Relational coordination, the core construct in the theory, is defined as a mutually reinforcing process of communicating and relating for the purpose of task

integration (Gittell, 2002a: 300). Developed inductively from field data (Gittell, 2006), relational coordination has commonalities with other relational approaches to coordination (Aristidou & Barrett, 2018; Bechky, 2006; Faraj & Xiao, 2006; Follett, 1949; Stephens, 2020; Weick & Roberts, 1993). As a construct, relational coordination includes specific dimensions through which stakeholders coordinate their work. Shared goals motivate stakeholders to move beyond subgoal optimization to act with greater regard for the whole (March & Simon, 1958). Shared knowledge enables systems thinking by informing stakeholders about how their tasks and the tasks of others contribute to the whole (Weick & Roberts, 1993). Respect for the work of others encourages stakeholders to value the contributions of others and to consider the impact of their actions on others, reinforcing the inclination to act with regard for the whole (Van Maanen & Barley, 1984). This web of interdependent relationships reinforces, and is reinforced by, frequent, timely, accurate, problem-solving communication, enabling stakeholders to more effectively coordinate their work. Low-quality relationships are expected to have the opposite effect, undermining the quality of communication and hindering stakeholders' ability to effectively coordinate their work.

This mutually reinforcing process of communicating and relating, shown in Figure 1, is conceptualized as a network of ties between roles and measured from the perspective of each role using the validated Relational Coordination Survey (Gittell et al., 2000; Valentine et al., 2015), as well as other quantitative and qualitative adaptations of it.

Structures That Support Relational Coordination

The second component of relational coordination theory involves the cross-cutting structures that are theorized to support relational coordination, as shown in Figure 1. According to the theory, the strength of relational coordination depends on the design of organizational structures (Gittell, 2000; Gittell & Douglass, 2012). Consistent with Follett's (1949) observation that coordination between departments often depends on personal connections, relational coordination is anticipated to be far more reliable when opportunities for coordination are built into structures such as human resource practices and coordinating mechanisms. Traditionally designed human resource practices tend to divide stakeholders who carry out different functions, therefore failing to support the development of relational coordination (Evans & Davis, 2005). Human resource practices such as selection, training, accountability, and rewards can be designed instead to connect across roles, thus increasing attention to the whole and helping stakeholders to better manage their interdependence (Gittell et al., 2010). Coordinating mechanisms, both programmed (e.g., shared information systems and shared protocols) and nonprogrammed (e.g., boundary spanner roles and shared interdisciplinary meetings), are also theorized to strengthen relational coordination to the extent that they are designed to connect across all roles whose work is in need of coordination, helping stakeholders within and across organizations to more easily see the whole and thus better manage their interdependence (e.g., Argote, 1982; Faraj & Xiao, 2006; Gittell, 2002b; Gittell & Weiss, 2004).

Proposition 1: Relational coordination is strengthened by the presence of cross-cutting structures, such as hiring and training for teamwork, shared accountability and reward structures, shared standardized work protocols, shared information systems, and regular team meetings and huddles.

Outcomes of Relational Coordination

The third component of relational coordination theory involves specific outcomes that are theorized to result from strong relational coordination (Figure 1). Any production process can be understood in terms of a production possibilities frontier, representing the optimal outcomes that can be achieved at different levels of quality and efficiency. On a given production possibilities frontier, quality and efficiency are in opposition to each other such that one must be “traded off” in order to improve the other (Lapr  & Scudder, 2004; Schmenner & Swink, 1998). Relational coordination is an example of a fundamental process improvement that enables stakeholders in a specific role, department, or organization to shift out their production possibilities frontier to a more favorable position, enabling them to achieve multiple outcomes that are in tension with one another (Caldwell et al., 2017; Pagell et al., 2015).

By strengthening relational coordination among those who perform different functions in a process, task interdependencies are managed in a more seamless way, with fewer redundancies, lapses, errors, and delays, thus increasing quality (Deming, 1986). Relational coordination is expected to further increase quality by engaging clients as coproducers rather than passive recipients of outcomes (Aristidou & Barrett, 2018; Gittell & Douglass, 2012). By increasing the accuracy and consistency of the information clients receive, relational coordination among providers is expected to increase client trust and confidence, enhancing client willingness and ability to engage with providers, and ultimately improving client satisfaction and other outcomes (Weinberg et al., 2007).

At the same time, relational coordination enables organizations to increase efficiency by helping stakeholders to manage interdependence among their tasks, thus reducing waste and increasing the volume of outputs from a given set of inputs. Additionally, relational coordination produces positive outcomes for workers who experience it from their colleagues. Workers with high-quality relationships are able to access the resources they need to successfully complete their work (Adler & Kwon, 2002), while boosting their well-being through the intrinsic benefits of high-quality relationships at work (Dutton & Heaphy, 2003; Gittell et al., 2008). Finally, relational coordination is theorized to support learning and innovation (No l et al., 2013). Many innovations cut across organizational boundaries such that when stakeholders become aware of what other parts of the organization do and understand the interdependencies between these parts, they can more easily see opportunities for innovation (Dougherty, 1992). When stakeholders are engaged in timely, problem-solving communication across organizational boundaries, they can more easily implement the opportunities they identify. Moreover, the high-quality relationships found in relational coordination are expected to boost psychological safety (Carmeli & Gittell, 2009) thus reducing

identity threat and loss of face when learning new skills or new role relationships, further increasing the potential for learning and innovation (Edmondson, 2004).

Proposition 2: Relational coordination drives outcomes such as improved quality, increased efficiency, improved worker well-being, and increased learning and innovation.

Method

To provide insight into how stakeholders can progress from struggling to coordinate their work through fragmented dysfunctional relationships, to coordinating their work through strong cohesive relationships supported by cross-cutting structures, this article will review the empirical research supporting relational coordination theory to date. We conducted a systematic review following preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines. We began with a broad search of the term *relational coordination* in Google Scholar for articles in the peer-reviewed literature, published dissertations, and publicly available conference proceedings between 1991 and 2019. We selected Google Scholar as our primary search engine due to the breadth of relational coordination literature across industries and contexts and a desire to capture the gray literature, including null and unanticipated findings, which would not be included in publication indexes alone. The initial search produced 3,484 unique results. We then removed 81 duplicate citations. Two authors (Bolton and Logan) screened the abstracts of the 3,403 remaining citations and eliminated 2,487 works that did not include our inclusion criteria: available in English, empirically measuring relational coordination and empirically testing the relationship between relational coordination and outcomes and/or predictors of relational coordination. Both authors reviewed each abstract and met to reconcile any discrepancies in judgement. Last, both authors reviewed the full text of the remaining 880 studies and applied additional more rigorous criteria for inclusion: adequate measurement of both relational coordination and the included outcomes and/or predictors. Relational coordination can be measured either quantitatively or qualitatively through interviews or focus groups if domains of relational coordination are clearly articulated and if study authors clearly articulated how the theory informed the development of the data collection protocols. Quantitative measurement was most commonly done using the validated Relational Coordination Survey (Gittell et al., 2000; Valentine et al., 2015) but other studies used modified versions of the survey. Again, both Bolton and Logan reviewed all full text articles and met to reconcile any identified differences. Ultimately, we identified 233 studies that met our inclusion criteria.

Descriptive Findings

Studies of relational coordination that qualified for inclusion in this review were carried out in 36 countries and 73 industry contexts, including the commercial, education, health care, and human service sectors (see Table 1). Because many of

Table 1. Industry and Country Contexts for Studies of Relational Coordination.

Industry contexts (<i>n</i> = 73)		Country contexts (<i>n</i> = 36)
Commercial Sector	Education Sector	North America
• Accounting	• Early child education	• Canada
• Airlines	• E-learning	• United States
• Asset management	• Elementary education	South America
• Auditing	• Higher education	• Argentina
• Banking	• Medical school	• Ecuador
• Consulting	• Nursing school	Europe
• Construction	• Primary education	• Austria
• Electronics	• Secondary education	• Belgium
• Engineering	• Translational research	• Denmark
• Finance	Health Care Sector	• England
• Fishing	• Cardiology	• France
• Information technology	• Care continuum	• Germany
• Machine suppliers	• Chronic care	• Iceland
• Manufacturing	• Community based care	• Ireland
• Multinationals	• Diagnostics	• Italy
• Pharmacy	• Elder care	• Netherlands
• Pharmaceuticals	• Emergency care	• Norway
• Private equity	• Gynecological care	• Portugal
• Renewable energy	• Hepatology	• Scotland
• Road infrastructure	• Health systems	• Spain
• Software	• Home care	• Sweden
• Telecommunications	• Intensive care	• Switzerland
• Venture investing	• Long term care	Africa
Human Services Sector	• Medical care	• Egypt
• Autism care	• Mental health care	• Nigeria
• Child services	• Neonatal intensive care	• South Africa
• Community collaboration	• Obstetric care	Middle East
• Criminal justice	• Oncology	• Israel
• Disability care	• Palliative care	• Lebanon
• Early child intervention	• Perioperative care	• Saudi Arabia
• Intellectual disability care	• Primary care	Asia
• Social movements	• Psychiatric care	• China
• Sports	• Public health	• India
• Substance use treatment	• Rehabilitation care	• Japan
• Youth services	• Specialty care	• Malaysia
	• Surgical care	• Pakistan
	• Telehealth	• Singapore
	• Transplant care	• South Korea
	• Trauma care	• Australia
	• Veterinary care	• New Zealand

the 233 studies we identified tested multiple hypotheses, we decided to report results at the level of findings rather than studies. Our search uncovered a total of 518 unique findings that fell within the scope of the review. Of these findings, 181

Table 2. Findings About Outcomes and Predictors of Relational Coordination.

Predictors of relational coordination	Total findings about predictors	Percentage of findings consistent with the theory
Organizational structures		
Select and train for teamwork	18	72
Relational job design	18	89
Shared accountability and rewards	22	95
Shared conflict resolution	5	100
Relational leadership roles	22	81
Boundary spanner roles	14	71
Shared meetings and huddles	25	92
Shared space	9	89
Shared protocols and routines	22	82
Shared information systems	18	89
Relational or work process interventions	10	80
Total findings about predictors	183	85
Outcomes of relational coordination	Total findings about outcomes	Percentage of findings consistent with the theory
Quality outcomes	222	80
Efficiency outcomes	31	68
Worker outcomes	63	87
Learning and innovation	21	90
Total findings about outcomes	337	81

were related to cross-cutting structures predicted to support relational coordination, and 337 were related to the predicted outcomes of relational coordination. All findings identified by the review are available in a searchable database and summarized in Table 2.

The majority of findings (58%) measured relational coordination via the validated Relational Coordination Survey, while 21% were based on alternative survey measures of relational coordination, including the original six-item Relational Coordination Survey, and another 21% of findings were based on qualitative assessments of relational coordination. While relational coordination was often measured between stakeholders within the same organization, 14% of findings were based on relational coordination between providers and their clients, and 36% of findings were based on relational coordination between stakeholders in different organizations.

Findings About Cross-Cutting Structures That Support Relational Coordination

How do organizations support relational coordination? According to relational coordination theory, organizations support relational coordination by implementing

cross-cutting structures such as selection and training for teamwork, relational job design, relational leadership roles, boundary spanner roles, shared accountability and rewards, conflict resolution, shared meetings, shared space, shared protocols, and shared information systems (see Table 2).

Selection and Training for Teamwork

Selection and training for teamwork are expected to set the stage for relational coordination by helping to create shared knowledge of the situation among stakeholders who play different roles. Selection for teamwork has been studied only twice thus far and was positively associated with relational coordination in both the airline industry (Gittell, 2000) and the health care sector (Gittell et al., 2010). Training for teamwork has been studied multiple times, in the form of interprofessional team training in health care (Abu-Rish Blakeney et al., 2019; Baik & Zierler, 2019; Brazil et al., 2019; Ross, 2015; Valenziano et al., 2018) and in medical education (Warde et al., 2014). While the above studies reported positive results of team training, a few reported null results (e.g., Raghav, 2018; Trojan et al., 2009). Beyond health care, studies in banking (Siddique et al., 2019) and pharmaceuticals (Koulikoff-Souvion & Harrison, 2010) found positive effects of team training on relational coordination, while a study of team training in the youth service sector found no effect (Jankowski et al., 2019).

Relational Job Design

Relational job design, defined as clear roles with flexible boundaries, is expected to strengthen relational coordination by creating role clarity with expectations of cross-role coordination. While clear roles and fluidity across role boundaries could be seen as opposing qualities of job design, both are characteristics of relational job design and both are expected to be positively associated with relational coordination. In the airline industry, flexible boundaries between well-defined jobs were positively associated with relational coordination (Gittell, 2000). This hypothesis was further supported by two qualitative studies that found flexible responsibility supported relational coordination between health professionals (Manski-Nankervis et al., 2014; Solberg et al., 2014). In banks, role clarity was positively associated with relational coordination (Siddique et al., 2019) and in primary care, explicit standardized job roles were positively associated with relational coordination (Crompton et al., 2015).

Other findings suggest that a baseline level of relational coordination may be needed to effectively implement relational job designs. For example, one study found that relational coordination between workers and supervisors enabled a collaborative redesign of jobs (Kossek & Ollier-Malaterre, 2020), while another found that low levels of relational coordination were associated with the inability to change role boundaries (Bergman et al., 2016). Taken together, these findings are consistent with a more dynamic, iterative theory of relational coordination in which job redesign promotes relational coordination, while relational coordination promotes job redesign (Gittell, 2016).

Relational Leadership Roles

Relational leadership is a way of leading that is attentive to building high-quality relationships among colleagues and with supervisees. One indicator of relational leadership is supervisory spans, with smaller supervisory spans being theorized to enable a more relational approach to leadership. Findings have supported this aspect of the theory in airlines, in early intervention agencies and in health care (Bright, 2012; Derrington, 2012; Gittell, 2001). More broadly, relational approaches to leadership were positively associated with relational coordination in child care (Douglass & Gittell, 2012), elder care (Jakobsen et al., 2018), education (Van Rooyen, 2018), and construction (Hellenes & Thrap-Meyer, 2017). In addition, nurse representation in top leadership roles was positively associated with relational coordination across health care professions (Mark et al., 2007). In a dynamic context, leadership facilitation of change through rewarding creativity, soliciting input and providing a supportive context was positively associated with relational coordination (Huber et al., 2020).

Boundary Spanner Roles

Boundary spanners or cross-functional liaisons are people whose role is to coordinate the work of others (Galbraith, 1974). Boundary spanners can be found in any industry and are theorized to support relational coordination in any context. In the airline industry, boundary spanners in the form of operations agents were associated with higher levels of relational coordination across roles (Gittell, 2000), a finding that was replicated in health care (Gittell, 2002b) and in education (Parsons, 2012; Skakon, 2014). Parsons (2012) carried out a qualitative study of elementary schools and found that a well-defined boundary spanner role was positively associated with relational coordination between school staff and external mental health providers. In a community collaborative to reduce youth violence, strengthening the cross-organizational boundary spanner role was associated with a sustained increase in relational coordination across organizations (Gebo & Bond, 2020).

Several other findings have not supported the theory regarding the impact of boundary spanners on relational coordination. For example, the presence of a boundary spanner role was not associated with relational coordination between hospital employees and early intervention agencies in the care of drug-addicted newborns (Derrington, 2012), and in primary care clinics the presence of a care coordinator role was negatively associated with relational coordination among staff (Flieger, 2013). Another study found that a newly implemented boundary spanner role did not predict higher relational coordination overall, though it did predict higher relational coordination as experienced by physicians (Di Capua et al., 2017). A qualitative study found boundary spanners were more effective when other organizational practices such as clearly defined relational workspaces and opportunities for interaction with coparticipants were in place (McEvoy et al., 2011), while another found that boundary spanner roles were more effective in achieving desired

outcomes when implemented in settings that already had relatively high levels of relational coordination (C. T. Lee, 2013). These mixed findings may suggest a more dynamic model in which low levels of relational coordination reduce readiness to implement cross-cutting structures (Gittell, 2016). In other words, relational coordination may need to be strengthened in order to successfully introduce cross-cutting structures to further reinforce it.

Shared Accountability and Rewards

Shared accountability across roles within an organization is theorized to support relational coordination by focusing attention on their shared goals (March & Simon, 1958). Nearly all findings testing this hypothesis thus far have been consistent with this proposition. Shared accountability was associated with relational coordination across diverse roles in airlines (Gittell, 2000), health care (Ghaffari et al., 2020; Gittell, 2008; Gittell et al., 2010) and banking (Siddique et al., 2019). Similarly, shared accountability in the form of multisource feedback was associated with relational coordination in manufacturing firms (H. W. Lee & Kim, 2019). Shared rewards were positively associated with relational coordination in both health care and banking (Gittell et al., 2010; Siddique et al., 2019). McDermott et al. (2017) further found that formative performance monitoring with proactive feedback was positively associated with relational coordination in a study of the health care sector. Systems of shared accountability across organizations helped strengthen relational coordination among key stakeholders in community-based schools (Van Rooyen, 2018) and in public/private partnerships (Sambaza, 2019). Taken together, these findings support the proposition that shared accountability and rewards help strengthen relational coordination.

Conflict Resolution

Proactive horizontal conflict resolution is expected to support relational coordination by using conflicts to build relationships rather than allowing conflicts to fester, potentially causing lasting divides. Conflict resolution can be embedded into formal systems or be carried out as a regular function of frontline managers (Gittell, 2000). While few studies have been conducted thus far, the findings have been consistent. In airlines (Gittell, 2000), surgical care (Gittell et al., 2010), and elder care (Jakobsen et al., 2018), proactive horizontal conflict resolution was found to be positively associated with relational coordination across roles. Exploring the reverse causal path, a study of hospital care found that relational coordination was associated with fewer conflicts between employees and managers and with fewer strikes (Ekwueme, 2018).

Shared Meetings

By providing opportunities for information and idea exchange, regular meetings between interdependent roles can foster teamwork and strengthen relational coordination. In

health care, the impact of meetings on relational coordination was first studied in the context of interdisciplinary patient rounds, where the inclusiveness of these rounds was positively associated with relational coordination (Gittell, 2002b). Schölmerich et al. (2014) supported this finding in a study of collaboration between hospital-based and community-based midwives and Solberg et al. (2014, 2015) identified the absence of inclusive meetings as a barrier to improving relational coordination. Huddles with structured agendas likewise strengthened relational coordination in primary care (Cromp et al., 2015), while shared meetings were positively associated with relational coordination among elder care workers (Jakobsen et al., 2018), and structured interprofessional bedside rounds were associated with sustained positive changes in relational coordination (Abu-Rish Blakeney et al., 2019). Last, Derrington (2012) found that open houses and community events held by hospitals for early intervention agencies were associated with higher levels of relational coordination between the two types of organizations.

Recent studies of shared meetings have gone beyond health care and have found that shared meetings are supportive of relational coordination in the human services and social services sectors (Derrington 2012; Sambaza, 2019), in construction (Hellenes & Thrap-Meyer, 2017), and in software development (Berntzen et al., 2019). While the great majority of findings regarding shared meetings have been positive, some have not. For example, an intervention involving regular cross-disciplinary meetings in a university research context did not produce an increase in relational coordination (Perloff et al., 2017). In supply chain dyads, meetings only increased relational coordination when meeting facilitators were able to create a relational space (Stjerne et al., 2019).

Shared Space

By creating proximity and greater opportunities for face-to-face communication, shared space is expected to strengthen relational coordination (McEvoy et al., 2011). Only a few findings about shared space were identified through our systematic review, and all were consistent with the hypothesis. In community-based care, relational workspaces supported relational coordination between case managers and their coworkers (McEvoy et al., 2011) and other interdisciplinary staff (Bligaard Madsen & Burau, 2020; Williams et al., 2019). In primary care, shared spaces were conducive to developing relational coordination among providers (Bergman et al., 2016; Cromp et al., 2015; Faruquee et al., 2019). However, these findings did not hold up in the venture capital industry (Kuebart, 2019). The author theorized that this may be due to the fact that relational coordination is a form of proximity that does not depend on spatial proximity. These findings suggest that the importance of physical proximity for relational coordination may depend on the nature of the work.

Shared Protocols and Routines

Shared protocols are expected to strengthen relational coordination by providing visibility into the work process and illustrating interdependencies between the tasks to be

carried out by the different stakeholders involved. This hypothesis was first developed and tested empirically in the context of surgical care, where Gittell (2002b) found more inclusive interdisciplinary clinical pathways predicted stronger relational coordination among care providers, with stronger effects under conditions of greater uncertainty. Since then, this relationship has been well tested with 22 reported findings. Shared protocols were associated with higher levels of relational coordination among members of health care provider teams (Aeyels et al., 2019; Hustoft et al., 2018; Jakobsen et al., 2018; Solberg et al., 2015), between teachers and parents in the education sector (Douglass & Gittell, 2012), between educators and mental health providers (Parsons, 2012), and among staff in accounting firms (Fu, 2014). However, there have also been a few studies with null findings (Crompton et al., 2015; Deneckere et al., 2012; Seys et al., 2019).

The reverse relationship was explored as well. Patients in practices with higher levels of relational coordination were more likely to receive care aligned with clinical guidelines, protocols, and process recommendations (Cramm & Nieboer, 2012a; Hartgerink et al., 2012; Hartgerink et al., 2014). Taken together, this evidence suggests a mutually reinforcing cycle in which the use of shared protocols supports stronger relational coordination, while relational coordination supports the willingness to use shared protocols (Cramm & Nieboer 2012a, 2014b), again suggesting the potential for a more dynamic theory of relational coordination.

Shared Information Systems

Information systems are expected to strengthen relational coordination when they are accessible to all stakeholders who need to coordinate and when they are implemented in a relational way, for example, to supplement rather than replace other forms of communication and to provide visibility into the overall work process rather than to obscure it (Claggett & Karahanna, 2018). Findings on the relationship between shared information systems and relational coordination have been mixed. For example, in an early study of flight departures, shared information systems seemed to replace direct contact rather than complement it and were negatively associated with relational coordination (Gittell, 2000). But in health care, shared information systems have been positively associated with relational coordination among care providers (Cramm & Nieboer, 2012b; Romanow et al., 2018; Saryeddine, 2011). The lack of standardized data reporting platforms was associated with weaker relational coordination between public managers and nonprofit managers in the contracting process (Carnochan et al., 2019), providing further support for the theory.

Other findings were consistent with a more dynamic theory of relational coordination. One study (Sebastien, 2014) found that the association between shared information systems and relational coordination depended on the relational context in which the information systems were used, suggesting that some baseline relational coordination is required to successfully implement shared information systems. Tang et al. (2019) further supported this finding again suggesting that the strength of baseline relational coordination and the presence of additional

supportive structures may moderate the relationship. Other studies in health care provide additional support, suggesting relational coordination may mitigate challenges caused by lack of physical proximity in a patient portal network (Otte-Trojel et al., 2017), and suggesting that the implementation of new technology and information systems is more effective in the presence of moderate to high levels of relational coordination (Williams et al., 2019).

Relational and Work Process Interventions

If cross-cutting structures are not adequate for building relational coordination when the baseline level of relational coordination is too low, how can change agents intervene? A more dynamic, iterative theory of relational coordination is emerging that suggests two additional paths (Gittell, 2016) (Figure 1, lower panel). *Relational interventions* are coaching and feedback strategies designed to start new conversations to create new ways of thinking and new ways of relating, thereby shifting the culture toward higher relational coordination and enabling the implementation of new structures that further support and strengthen it (e.g., Schein, 2013). *Work process interventions* such as lean and plan-do-study-act cycles are also expected to strengthen relational coordination by providing participatory methods to identify the current state, envision a future state, and work toward closing the gap (e.g., McMackin & Flood, 2019).

While studies of relational interventions are in their infancy compared with studies of structural interventions, nearly all reported findings have been positive. Relational interventions have been associated with increased relational coordination (e.g., Abu-Rish Blakeney et al., 2019; Brazil et al., 2019; Cramm & Nieboer, 2014b; Purdy et al., 2020; Ross, 2015), as well as increased efficiency (Bitter, 2017), and improved quality (Goldstein et al., 2014) in the health care sector. Often these relational interventions have been implemented in tandem with structural interventions such as cross-functional training programs (Ross, 2015) and cross-functional meeting structures (Abu-Rish Blakeney et al., 2019). For example, in trauma care, relational and structural interventions implemented together increased relational coordination (Brazil et al., 2019). However, in another setting a relational intervention based on coaching and feedback had no measurable impact on relational coordination, despite being implemented in tandem with a new cross-functional meeting structure (Perloff et al., 2017). Some studies found that the same relational interventions worked for some teams but not others without being able to explain why, for example, when seeking to create a relational space in meetings between supply chain partners in a supply chain intervention (Stjerne et al., 2019).

Three studies identified by our review tested the impact of work process interventions on relational coordination. In the first, no effects were found even though other outcomes improved (Edwards & Lundstrøm, 2014). In the second study, lean adoption was associated with higher relational coordination as expected (Griend, 2019), and in the third study, relational and work process interventions increased relational coordination over time in two sites but increases were only sustained in the site that carried out structural interventions as well (Gebo & Bond, 2020).

Findings About the Outcomes of Relational Coordination

Findings regarding the outcomes of relational coordination were grouped into four categories based on the theory—quality outcomes, efficiency outcomes, worker outcomes, and learning and innovation outcomes. See Table 2 for a summary of these findings.

Quality Outcomes

Most of the studies testing the relationship between relational coordination and quality outcomes were supportive of the theory, across industry contexts. For example, in the airline industry, relational coordination across 12 workgroups was associated with quality outcomes such as fewer passenger complaints, fewer late arrivals, and fewer baggage handling errors (Gittell, 2001). Similarly, subsequent studies in health care found relational coordination among interdisciplinary staff was positively associated with quality outcomes such as postoperative functional status, patient-reported quality of care and quality of life, family satisfaction with care, patient trust and confidence in their providers, and patient psychological well-being (Azar et al., 2017; Bae et al., 2010; Cramm et al., 2014; Cramm & Nieboer, 2012a, 2014a; DeJesus, 2015; Gittell, 2002a; Gittell et al., 2000; Gittell et al., 2008; Havens et al., 2010; Noël et al., 2013; Romanow et al., 2018; Sakai et al., 2015; Sakai et al., 2016; Weinberg et al., 2007) as well as staff-reported quality of care (McDermott et al., 2017; McIntosh et al., 2014). These findings were further replicated in studies conducted in the pharmacy, professional services, higher education, and elder care industries (Alvarez, 2014; Drewery et al., 2016; Gittell et al., 2008; Hoos et al., 2012; Margalina et al., 2017; Skakon, 2014).

Relational coordination between staff and clients is theorized to further improve quality through engagement of the client in the coproduction of those outcomes. Through this systematic review, we identified several studies that measured relational coordination between staff and clients in the health care industry and in early and special education. Findings were largely supportive of the theory. For example, in health care relational coordination between patients' family members and care providers across the continuum was positively associated with high-quality post-surgical outcomes, greater patient well-being, and patient-perceived quality of care (Cramm & Nieboer, 2014b, 2016; Weinberg et al., 2007). Relational coordination between family members and care providers across the continuum of care was positively associated with family members' preparation for caregiving (Weinberg et al., 2007) and with the implementation of shared decision making with patients (Tietbohl et al., 2015). Similarly, in studies of early intervention services, early education and special education services, relational coordination between clinical or educational staff and patients, families, and caregivers was positively associated with family engagement and retention in services, reduced parental stress, and greater ability of parents to care for their children (Derrington, 2012, Douglass & Gittell 2012; Warfield et al., 2013).

Nearly 20% of findings regarding quality outcomes ran counter to the theory. For example, in a multicity study of community-based efforts to reduce offender recidivism, relational coordination between agencies was associated with increased rather than reduced recidivism by criminal offenders (Bond & Gittell, 2010). Four studies of relational coordination among providers in outpatient health care settings reported null or negative findings regarding the relationship between relational coordination and patient quality measures or patient satisfaction (Flieger, 2013; Hagigi, 2012; Lundstrøm, Edwards, Knudsen, et al., 2014; Shortell et al., 2017). Collectively, these findings suggest that the association between relational coordination and quality outcomes may be moderated by task complexity or work context.

Efficiency Outcomes

Relational coordination theory suggests that relational coordination is positively associated with efficiency and productivity. Often these outcomes lead to positive financial outcomes for organizations. In early studies conducted in the airline industry, relational coordination was associated with higher staff productivity and faster aircraft turnaround times on the ground (Gittell, 2001). This association has been further supported in the health care industry in the form of shorter risk-adjusted hospital length of stay for both medical and surgical patients and lower overall costs of care in outpatient settings (Gittell et al., 2000; Gittell et al., 2008; Hagigi, 2012). As expected, this association was the strongest under conditions of greater uncertainty (Gittell, 2002b). Relational coordination was also associated with improved cost outcomes in the pharmacy sector (Alvarez, 2014), with growth in deposits, advances, and profitability in banking (Siddique et al., 2019), with market share gains in software (Medlin et al., 2005), and with productivity, operational effectiveness, higher net profits, and firm competitiveness in manufacturing (H. W. Lee & Kim, 2019).

About 32% of findings about efficiency outcomes have been mixed or have run counter to the theory. For example, two studies found relational coordination was associated with longer rather than shorter hospital lengths of stay (Brewer, 2006), though one of them found this association only in the presence of higher nursing workloads (Lin, 2010). Hagigi (2012) found that relational coordination was associated with higher rates of costly emergency department use for highly complex patients but lower rates of hospitalization for those same patients. In primary care, relational coordination improved the productivity of the health care team but not the productivity of individual physicians (Lundstrøm, Edwards, Reventlow, et al., 2014). Beyond health care, a study of accounting firms found that while relational coordination was not associated with employee productivity, it was positively associated with the relative market performance of firms (Fu, 2014). In footwear manufacturing, relational coordination between manufacturers, suppliers, and customers was associated with greater trust, commitment, and satisfaction but not with lower costs (Margalina et al., 2019). These null or negative findings suggest that the relationship between relational coordination and efficiency outcomes may be moderated by task complexity or the level of uncertainty.

Worker Outcomes

In addition to quality and efficiency outcomes, relational coordination is expected to increase worker well-being and engagement. Findings thus far have been highly consistent with the theory. In health care, relational coordination among care providers has been positively associated with job satisfaction, professional efficacy, motivation, identification with organizational values, and reduced burnout (Cramm et al., 2014; Gittell et al., 2018; Havens et al., 2013; Havens et al., 2018), while relational coordination between managers and care providers has been positively associated with work engagement and proactive work behaviors (Naruse et al., 2016; Warshawsky et al., 2012). Similarly, relational coordination among care providers and between care providers and patients has been positively associated with job involvement, satisfaction, use of one's competence on the job, confidence in collaboration, and the experience of social support (Albertsen et al., 2014; Havens et al., 2018; Naruse et al., 2013). In other studies, relational coordination among hospital employees was associated with an index of positive employee outcomes (McDermott et al., 2017), workplace spirituality (Faro, 2017), reduced conflicts and strikes (Ekwueme, 2018), and reduced turnover (Falatah & Conway, 2019). Relational coordination was also associated with positive worker outcomes in sectors such as disability services (Van der Meer et al., 2017) and higher education (Margalina et al., 2017).

Studies of relational coordination and worker outcomes have produced relatively few findings that run counter to the theory. Findings on relational coordination and worker outcomes have been replicated in settings as diverse as North America, South America, Europe, Africa, South Pacific, and Asia, suggesting that workers across cultural contexts have similar relational needs. One reason for such consistent findings may be that relational coordination serves as a protective factor and as a source of resilience in the face of stress (Gittell, 2008). For example, in health care relational coordination reduced the adverse effects of time pressures on primary care clinic workers (McDonald et al., 2018), and reduced the negative effects of time pressures on emotional exhaustion for nursing home workers (Cao & Naruse, 2019). Relational coordination may also support the specific behaviors and routines that have been found to promote a positive work environment (Cameron et al., 2011; Geue, 2018).

Learning and Innovation

As described above, relational coordination is theorized to support adaptive capacity for learning and innovation. This hypothesis has been tested in numerous studies and findings have been largely supportive. For example, the first study of relational coordination and learning found that relationships of shared goals, shared knowledge, and mutual respect were positively associated with the ability to learn from failures in software, electronics, and finance firms (Carmeli & Gittell, 2009). This early finding was supported by findings from studies in rural primary care clinics (Noël et al., 2013) and the pharmacy sector (Alvarez, 2014). Relational coordination between employees offering different services (online vs. in person) was further

associated with successful service redesign in banking (Plé, 2013). Relational coordination was positively associated with the ability to innovate in the accounting industry (Fu, 2014) and with creative problem solving among information systems professionals (Bozan, 2017).

Other studies have explored the connection between relational coordination and psychological safety, a factor that is widely acknowledged as a precondition for learning and change (Edmondson, 2004). For example, Stühlinger et al. (2019) found that relational coordination was associated with job satisfaction through its effect on psychological safety, while Carmeli and Gittell (2009) found that relational coordination was associated with learning from failure through its impact on psychological safety. Looking in the opposite direction, psychological safety in obstetric units was positively associated with the communication dimensions of relational coordination through its impact on the relational dimensions of relational coordination (Henrichs, 2013). These findings together provide support for the hypothesis that relational coordination strengthens learning and innovation and that psychological safety plays a role in this process.

Discussion

Relational coordination theory is a highly practical theory about how stakeholders coordinate their work through a process of communicating and relating across roles, how this process is supported—or not—by existing organizational structures, and how this process enables stakeholders to achieve multiple desired outcomes. A great deal has been learned about the outcomes associated with relational coordination, with the highest levels of support found for worker outcomes and for learning and innovation outcomes. A great deal has also been learned about the organizational structures that shape relational coordination. Some of the structures that were expected to support relational coordination—shared accountability and rewards, shared conflict resolution, relational job design, relational leadership roles, boundary spanner roles, shared meetings, and shared protocols—have received nearly unanimous support in the empirical literature thus far. Other structures, including selection and training for teamwork and shared information systems, have had less predictable effects.

In this discussion, we highlight insights from this review such as how change agents can (1) intervene to help stakeholders progress from struggling to coordinate their work through fragmented dysfunctional relationships to more easily coordinate their work through strong cohesive relationships supported by cross-cutting structures, (2) build relational coordination across diverse social identities, (3) build relational coordination through micro processes such as psychological safety, and (4) use relational coordination to achieve more equitable outcomes between high and low power roles.

Helping Organizations Learn How to Coordinate

While relational coordination was originally conceptualized as a linear structure–process–outcome theory, it did not explain very well how stakeholders can progress from

struggling to coordinate their work through fragmented dysfunctional relationships, to coordinating their work through strong cohesive relationships supported by cross-cutting structures. In the effort to answer that question, relational coordination has begun to evolve into a dynamic theory of *learning how* to coordinate work by iteratively building structures and relationships across networks of roles, even redesigning the roles themselves when needed. Rather than structures supporting relational coordination in a linear way as originally theorized, the newer more dynamic theory suggests that cross-cutting structures such as relational job design, shared technology platforms, and boundary spanner roles require a strong relational context for their effective implementation, and only then can they help strengthen relational coordination (Gittell, 2016). While this logic seems circular at first glance, we are describing an iterative process of structuration (Giddens, 1984). The idea that stakeholders may need relational coordination in order to be able to embrace and use cross-cutting structures is consistent with a more dynamic theory of relational coordination (Claggett & Karahanna, 2018; Gittell, 2016; Thomas et al., 2018) and with other relational theories of change (Bartunek, 1984; Feldman & Rafaeli, 2002; Fletcher et al., 2009; Kellogg, 2009). This is why the arrow between structures and relational coordination is *bidirectional* in the dynamic theory of relational coordination, rather than *unidirectional* as in the linear theory (Figure 1).

How can change agents help organizations learn how to coordinate? As shown above, change agents can engage in *relational interventions* such as humble inquiry and empathetic connection to establish a safe space to reflect on interdependencies and transform fragmented relationships into more connected ones (Abu-Rish Blakeney et al., 2019; Gittell, 2016; Purdy et al., 2020). As relational coordination begins to gain strength, change agents are able to implement *structural interventions* with relational intent, thus further reinforcing relational coordination.

Gebo and Bond (2020) conducted a quasi-experimental study in which multiple stakeholders in four different cities worked to reduce youth violence, as reported above. Two of the cities were guided in the use of *relational interventions* such as conversations of interdependence to enable stakeholders to reflect on their interdependencies and transform existing power dynamics, giving rise to conversations between youth advocates and representatives of police, probation, and parole about sensitive issues such as the school-to-prison pipeline. In those two cities, relational coordination increased relative to the two cities that did not receive relational interventions. However, only in the city that also implemented a cross-organizational boundary spanner (*structural intervention*) to continue shared meetings among stakeholders (*structural intervention*) were these higher levels of relational coordination sustained over time. This study provides empirical support for the dynamic version of relational coordination theory yet leaves us with much more to learn about how this change methodology works. To better understand the dynamic path of these change processes will require longitudinal research designs that include close attention to how people themselves are transformed through the interaction between structures and relationships as the change process unfolds (e.g., Aristidou & Barrett, 2018; Kellogg, 2009).

Building Relational Coordination in a Diverse Workforce

While this systematic review has revealed many insights about building relational coordination across occupational diversity, the challenge of building relational coordination across demographic diversity is a more recent area of focus. One study in our review found that female physicians experienced significantly lower levels of relational coordination from their colleagues than did male physicians (Manski-Nankervis et al., 2015), while another found that relational coordination was significantly stronger in interprofessional teams with a higher percentage of women (Hustoft et al., 2018). H. W. Lee and Kim (2019) were the first to systematically incorporate demographic diversity into relational coordination theory, proposing that demographic diversity tends to weaken relational coordination due to a reduction in social cohesion. They further proposed that demographic diversity can strengthen relational coordination due to greater information richness among stakeholders, and that this is more likely to occur when supported by cross-cutting structures. Their findings largely supported these propositions. Given the increasing diversity of today's workforce, researchers and practitioners should build on these findings to explore ways to use diversity as an asset to build relational coordination and better achieve other desired outcomes (e.g., Singh et al., 2019).

Microprocesses That Support Relational Coordination

In addition to cross-cutting structures, this review suggests the importance of microprocesses such as psychological safety for helping stakeholders coordinate across differences (e.g., Carmeli & Gittell, 2009; Henrichs, 2013; Stühlinger et al., 2019). Going forward, other microprocesses that enable relational coordination should be explored as well. For example, Stephens (2020) has identified an aesthetic process through which individuals notice fragmentation, triggering a negative emotional response that motivates efforts to repair the fragmentation by coordinating more closely with others until wholeness is restored. Relational leaders can play the role of helping individuals to see the whole and guide them toward restoring the whole, for example, as a skilled choir director might do. Empathy is another microprocess that may support relational coordination. Humans have evolved as an empathetic species, and this empathy has been central to our evolutionary success (Wilson, 2019). Yet as interdependence has expanded across networks of strangers, our ability to build empathetic connections with diverse others has not caught up, resulting in an empathy gap (Gutsell & Inzlicht, 2010; Wexler, 2008).

Exploring psychological safety, aesthetics, and empathy as microprocesses for building relational coordination is an important agenda item for research and practice, to gain insight into what motivates and enables stakeholders to relationally coordinate with one another, and to understand how interventions such as relational leadership, relational spaces, relational mapping, and humble inquiry may help to trigger these microprocesses (Kellogg, 2009; Schein, 2013).

Achieving Equitable Outcomes

In this review, we found that relational coordination positively predicts organizational outcomes such as quality, efficiency, learning, and innovation. Even more consistently, we found that relational coordination predicts worker outcomes such as increased job satisfaction and work engagement, and reduced burnout, emotional exhaustion and turnover. The evidence suggests that relational coordination relaxes traditional trade-offs, thus creating value for multiple stakeholders (Caldwell et al., 2017; Pagell et al., 2015). But there is no evidence thus far about the distributional consequences of relational coordination. We found no studies that explore whether stakeholders share financially in the value that they create through their engagement in relational coordination. While national data show steadily increasing productivity in the United States since the early 1970s, real wages have remained nearly constant, demonstrating that productivity gains have not been equitably shared with workers (Zucman, 2019).

The dynamic version of relational coordination theory (Figure 1, lower panel) hints at how relational coordination could help achieve a more equitable distribution of value. Relational mapping and other relational interventions can increase stakeholder awareness of interdependence, particularly when power differences and the invisibility of undervalued work (Bolinger et al., 2018) limit that awareness. Awareness of interdependence enables less powerful stakeholders to become aware of their power, and more powerful stakeholders to become aware of their dependence on others to achieve their desired outcomes. This heightened awareness—and evidence that strong relational coordination across diverse roles creates new value in many industries—may provide less powerful stakeholders with the narrative they need to claim a more equitable share of that value. To address the epidemic of inequality in the United States and beyond, there is an opportunity for scholars and practitioners to design and test relational interventions in partnership with social movement organizations (Tapia, 2019).

Conclusion

The growing need for well-coordinated work calls for an evidence-based theory that can guide us to better coordinate work across boundaries and inform us about how such coordination can optimize desired outcomes. In this article, we have reviewed the empirical literature on relational coordination. We discussed how the evidence expands our understanding of relational coordination theory from a linear structure–process–outcomes model to a dynamic model of change. Finally, we have highlighted key insights from the review, including how change agents can (1) intervene to help stakeholders who are struggling to coordinate their work through fragmented dysfunctional relationships to more easily coordinate their work through strong cohesive relationships supported by cross-cutting structures, (2) build relational coordination across diverse social identities, (3) build relational coordination through microprocesses such as psychological safety, and (4) use relational coordination to achieve more equitable outcomes between high and low power roles. By addressing critical challenges that organizations are facing today, relational coordination theory will continue to support significant contributions to research and practice.

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