

# Impact of relational coordination on staff and patient outcomes in outpatient surgical clinics

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**Background:** Pressures are increasing for clinicians to provide high-quality, efficient care, leading to increased concerns about staff burnout.

**Purpose:** This study asks whether staff well-being can be achieved in ways that are also beneficial for the patient's experience of care. It explores whether relational coordination can contribute to both staff well-being and patient satisfaction in outpatient surgical clinics where time constraints paired with high needs for information transfer increase both the need for and the challenge of achieving timely and accurate communication.

**Methodology/Approach:** We studied relational coordination among surgeons, nurses, residents, administrators, technicians, and secretaries in 11 outpatient surgical clinics. Data were combined from a staff and a patient survey to conduct a cross-sectional study. Data were analyzed using ordinary least squares and random effects regression models.

**Results:** Relational coordination among all workgroups was significantly associated with staff outcomes, including job satisfaction, work engagement, and burnout. Relational coordination was also significantly associated with patients' satisfaction with staff and their overall visit, though the association between relational coordination and patients' satisfaction with their providers did not reach statistical significance.

**Key words:** interprofessional, job satisfaction, patient satisfaction, relational coordination, staff burnout, work engagement

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**Practice Implications:** Even when patient–staff interactions are relatively brief, as in outpatient settings, high levels of relational coordination among interdependent workgroups contribute to positive outcomes for both staff and patients, and low levels tend to have the opposite effect. Clinical leaders can increase the expectation of positive outcomes for both staff and their patients by implementing interventions to strengthen relational coordination.

In the health care industry, pressures are increasing for clinicians to provide high-quality, efficient care. Amidst these pressures, there is growing concern about the well-being of clinicians and their ability to meet the needs of their patients. Recent evidence suggests that physicians experience high levels of burnout and that their burnout levels have continued to rise in recent years, with negative implications for patient care (Dyrbye & Shanafelt, 2011). Burnout is not unique to physicians, however, and is a growing concern among other staff as well (Cimiotti, Aiken, Sloane, & Wu, 2012). Some scholars have therefore called for expanding the triple aim of quality, access, and patient experience to a quadruple aim that includes the well-being of clinical staff (Bodenheimer & Sinsky, 2014). This raises the question of whether staff well-being can be achieved in ways that are also beneficial for the patient’s experience of care.

## Theory

Relational coordination—defined as “communicating and relating for the purpose of task integration”—is a way to coordinate work through high-quality communication and relationships of shared goals, shared knowledge, and mutual respect among coworkers, supported by structures such as hiring and training for teamwork, shared accountability, shared rewards, shared protocols, shared information systems, and shared meetings (Gittell, Seidner, & Wimbush, 2010). The theory predicts that relational coordination improves outcomes for multiple stakeholders, including workers and their customers (e.g., Gittell, Weinberg, Pfefferle, & Bishop, 2008). Consistent with this theory, relational coordination has been associated with a wide range of positive outcomes, including quality, efficiency, and worker well-being, in multiple industries and countries (Gittell & Logan, 2017).

Relational coordination creates a positive work environment for workers in three ways. The first is instrumental—relational coordination across professional boundaries makes it easier to do one’s job because of increased information processing capacity as well as reduced resistance and greater alignment with others (Gittell et al, 2008). The second is intrinsic—positive connections in the form of high-quality communication, shared goals, shared knowledge, and mutual respect are a source of emotional and physical well-being (Gittell et al, 2008). The third is both instrumental and intrinsic—the positive connections in relational coordination serve as a source of resilience because they provide social

support that increases the ability to cope with stress, thus reducing burnout (Gittell et al, 2008). Consistent with this theorizing, previous studies have found relational coordination to be associated with increased job satisfaction for nursing aides (Gittell et al, 2008), home care workers (Albertsen, Wiegman, Limborg, Thörnfeldt, & Bjørner, 2014), and hospital-based nurses (Havens, Gittell, & Vasey, 2018). Relational coordination is also associated with higher work engagement for hospital-based nurses (Havens et al., 2018; Warshawsky, Havens, & Knafl, 2012) and visiting nurses (Naruse, Sakai, & Nagata, 2016) and reduced burnout for hospital-based nurses (Havens et al., 2018). A recent study found relational coordination to be associated with positive outcomes for a broad range of hospital workers (McDermott, Conway, Cafferkey, Bosak, & Flood, 2017).

Relational coordination across professional boundaries has also been associated with greater satisfaction for patients, including patients undergoing joint replacement (Gittell et al., 2000), patients with pneumonia, patients with cardiovascular disease, and patients undergoing organ transplant (Romanow, Rai, & Keil, 2018) and for hospitalized patients more broadly (Bae, Mark, & Fried, 2010; McDermott et al., 2017). Relational coordination has also been associated with better quality of life for nursing home residents (Gittell et al., 2008) and greater well-being for patients with chronic illness (Cramm & Nieboer, 2012), though it was not associated with patient quality of life in a recent study of primary care (Shortell et al., 2017).

The current study makes two unique contributions. Although other studies have explored the impact of relational coordination on staff well-being and patient satisfaction, these findings have not been replicated in an outpatient clinic setting where office visits are brief relative to inpatient care, long-term care, and chronic care other than a recent study in the primary care context, which found no effect of relational coordination on patient quality of life (Shortell et al., 2017). Why does this matter? Relatively brief interactions increase time constraints, which is one of the three conditions theorized to increase the need for relational coordination. Time constraints paired with high needs for information transfer increase both the need for and the challenge of achieving timely and accurate communication. If these challenges are not addressed by building organizational capacity in the form of relational coordination, patients are expected to be unsatisfied by the lack of timely

and accurate communication, and staff are expected to become burnt out by lack of support for their efforts to provide it.

A second contribution of this study is its inclusive conceptualization of relational coordination among all interdependent workgroups who serve patients and potentially impact the patient experience. This inclusiveness matters because outcomes are increasingly dependent on highly functioning interprofessional teams rather than individual professionals (Sexton, Thomas, & Helmreich, 2000). Although this inclusive approach is typical for relational coordination studies, some studies have measured it from the nursing perspective only, whereas even the more inclusive studies have tended to overlook the indirect support staff involved in patient care. As recommended in “New Directions for Relational Coordination Theory,” the current study is therefore more inclusive of the relevant workgroups—both direct care (physicians, residents, nurses) and support staff (technicians, secretaries and administrators)—than previous studies (Gittell, 2011). What results is a more accurate and inclusive conceptualization of relational coordination across interdependent workgroups, as shown in Figure 1.

## Methods

The potential impact of relational coordination on staff and patient outcomes was tested using data from 11 outpatient surgical clinics (cardiothoracic, dermatologic, general, neurologic, ophthalmologic, otolaryngology, pediatric, plastic, transplant, urologic, and vascular surgery) at the Dartmouth-Hitchcock Medical Center in the United States. For our analyses, we used a one-time survey of surgeons, nurses, residents, administrators, technologists,

and secretaries regarding their job satisfaction, work engagement, burnout, and their relational coordination, plus 12 months of patient satisfaction data.

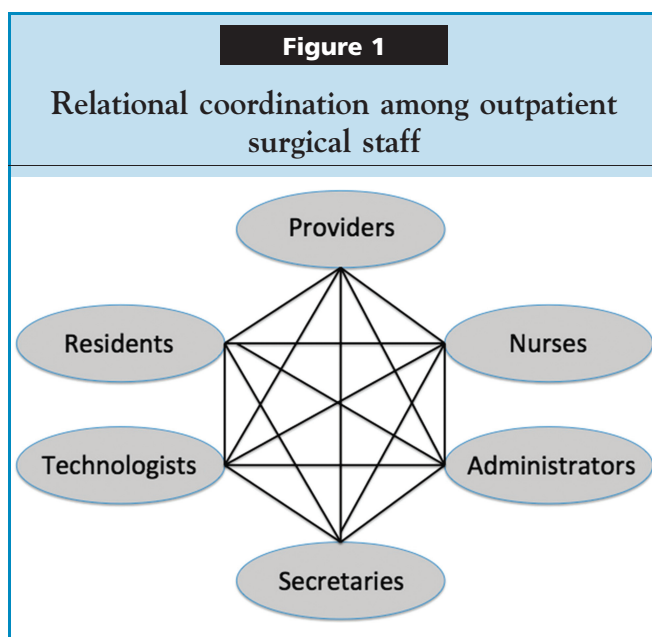
## Patient Survey Subjects

The outpatient satisfaction survey was distributed to patients seen in the outpatient clinic by providers in the 11 outpatient clinics over a 24-month period from December 2012 to November 2014. Patients of each provider were randomly selected to obtain 50 completed surveys per provider per year. Patients received only one survey per year and were resurveyed once if they did not respond to the initial request. For the time period of this study, a total of 8,826 patients returned surveys out of 25,332 surveyed, for a response rate of 35%, which was similar for all 11 clinics. To better match patient outcomes with relational coordination, which was measured at a single point in time, only the final 12 months of patient responses ( $n = 4,473$ ) were included in our models.

## Patient Survey Measures

The patient satisfaction survey was developed by Dartmouth-Hitchcock Medical Center in 1998 and administered by The Research Group in Florence, MA. Patients were asked questions about their experience during their outpatient visit, as the basis for deriving three distinct satisfaction scores. The first score—patient satisfaction with staff—was a composite score based on patient responses to seven questions related to their experience interacting with clinic staff during their visit, addressing courtesy, caring, sensitivity, skill, room wait, exam wait, and information about wait, each measured on a scale of 1–100. The internal consistency of these survey items was tested using Cronbach’s alpha and produced a score of 0.90. Given the early stage of development of this construct, exploratory factor analysis was conducted. We found that the items included in this composite measure loaded onto a single factor with an eigenvalue of 4.23, with all factor loadings greater than 0.50 and with no cross-loadings greater than 0.30, suggesting the items represent a single construct.

The second score—patient satisfaction with provider—was a composite score based on patient responses to eight questions related to their experience with their providers, including time spent, referrals, answers to questions, personal concern, thoroughness, involving the patient, and provider skill and listening, each measured on a scale of 1–100. Again, these survey items were tested for internal consistency using a Cronbach’s alpha producing a score of 0.97. Given the early stage of development for this construct, exploratory factor analysis was conducted. We found that all items loaded onto a single factor with an eigenvalue of 7.73, with all factor loadings greater than 0.50 and with no cross-loadings greater than 0.30, suggesting that the items measure a single construct.



The final score was a single item—patient satisfaction with overall visit—also measured on a 1–100 scale. Overall health status was measured via self-report using a single item from the patient survey (“Compared to others your age, how would you rate your health in general?”), also measured on a 1–100 scale. The full text of patient survey questions is available from authors on request.

### Staff Survey Subjects

The staff survey was distributed in February 2014 to 377 surgeons, nurses, residents, administrators, technologists, and secretaries in 11 surgical clinics. The full text of staff survey questions is available from authors on request. All staff were invited to participate. A total of 348 clinical staff completed surveys, for a response rate of 92%. To create common categories across the 11 surgical clinics, we grouped staff into broader workgroups, with 11 observations dropped due to idiosyncratic roles, leaving 337 observations. “Providers” ( $n = 112$ ) were surgeons, nurse practitioners, physicians’ assistants, and audiologists who saw patients independently in the outpatient clinic. “Residents” ( $n = 53$ ) included residents. “Nurses” ( $n = 61$ ) included registered nurses, licensed nursing assistants, nurse practitioners, or physicians’ assistants who did not serve as independent providers but rather supported providers in the clinic. “Administrators” ( $n = 13$ ) included administrators, “Technicians” ( $n = 40$ ) included vascular, laboratory, audiology, and other surgical specialty technicians, and “Secretaries” ( $n = 58$ ) included secretaries.

### Staff Survey Measures

Staff outcomes including job satisfaction, work engagement, and staff burnout were measured via survey questions. Job satisfaction was measured with a single item “My level of job satisfaction is high” with responses captured on a 7-point Likert scale ranging from “never” to “every day.” Although there has been a trend toward the use of multi-item job satisfaction scales, a study of the efficacy of single-item measures of job satisfaction shows a strong correlation between single-item measures of overall job satisfaction and scales measuring overall job satisfaction (Wanous, Reichers, & Hudy, 1997). Work engagement and staff burnout were measured with single items from the Maslach Burnout Inventory, “I am enthusiastic about my job” and “I feel burned out from my job,” with responses captured on a 7-point Likert scale ranging from “never” to “every day” (Maslach, Schaufeli, & Leiter, 2001; Rohland, Kruse, & Rohrer, 2004).

Relational coordination, a network construct developed and tested in previous research, is a fully validated measure of teamwork in health care (Valentine, Nembhard, & Edmondson, 2015). Relational coordination conceptualizes coordination as occurring through a process of communicating and relating across roles for the purpose

of task integration. Because it is measured across roles, relational coordination is not a traditional measure of teams that requires stability of members but rather has more in common with the concept of teaming in which people engage in teamwork beyond the boundaries of any specific team. This measure does not require that everyone in that process identifies as being on the same team, but rather that their tasks are interdependent for achieving the outcomes of interest. In addition, because relational coordination measures coordination across roles rather than individuals, there is a need to measure the same roles but not the same individuals over time. Conceptually, relational coordination is therefore an unbounded, role-based measure of teamwork (Valentine et al., 2015).

Relational coordination was measured for this study using a previously developed survey (Gittell et al., 2000) that was administered to all staff in each of the outpatient clinics, asking respondents seven questions about their interactions with other staff who shared responsibilities for the same patient population. The survey asks about coordination with one’s own profession as well as with each other profession. Consistent with previous studies, the measure used for our study included cross-professional relational coordination only. All items were measured on a 5-point Likert-type scale. Confirmatory factor analyses suggested that relational coordination can be characterized as a single construct across the seven dimensions, with the following goodness of fit indices: chi-square = 12.19 ( $p = .26$ ), root mean square error of approximation = 0.02, comparative fit index = 0.99, and standardized root mean residual = 0.01. On the basis of these analyses, the seven measures were averaged into a single construct ( $\alpha = 0.93$ ) for each respondent, called *relational coordination*. Relational coordination has been validated as a unit-level construct using ICC1 and ICC2 tests (see Gittell et al., 2010; Valentine et al., 2015).

### Covariates

There are potentially both economies and diseconomies of scale for achieving desired performance outcomes. Models that predict performance outcomes therefore tend to include scale of the operation as a covariate, and accordingly, we included clinic size in each of our models. Because of the wide range of clinic sizes (from 12 to 75 staff), we include *clinic size* as a categorical variable. Specifically, less than 30 staff = small clinic, 31–50 staff = medium clinic, and more than 50 staff = large clinic.

A second covariate is *visit type*—initial versus follow-up—which is included in models of patient satisfaction due to the different experiences associated with initial and follow-up visits. In addition, we included as covariates several patient characteristics, namely patient gender, patient age, and patient overall health as potential predictors of satisfaction, consistent with previous models of relational coordination and patient satisfaction.

## Analyses

For predicting staff outcomes, individual staff reports of relational coordination with other roles were expected to correlate with individual staff well-being. To model the impact of relational coordination on staff outcomes, we developed random effects regression models with employee as the unit of analysis and with clinic as the random effect. Job satisfaction, engagement, and burnout data for each respondent were regressed on his or her relational coordination score and covariates, including dummy variables for profession (nurses, providers/residents, secretaries, and administrators, with technicians as the omitted variable). To control for scale, clinic size (medium and large with small as the omitted variable) was included in the models.

For predicting patient satisfaction, individual staff reports of relational coordination were aggregated to the clinic level in order to link staff to the patients they served in their clinic. To model the impact of relational coordination on patient outcomes, we developed ordinary least squares regression models with the patient as the unit of analysis, where data from each patient visit were regressed on relational coordination for the clinic where that patient visit occurred, with covariates that included patient gender, patient age, patient overall health, and visit type (initial or follow-up). To control for scale, clinic size (medium and large with small as the omitted variable) was included in the models.

## Results

### Descriptive Statistics

Table 1 shows mean staff outcomes and relational coordination across the 11 clinics. The final column of the table shows the results of one-way analyses of variance. The results show that there are significant differences in staff outcomes, relational coordination, and the underlying seven dimensions across the 11 outpatient surgical clinics. Table 2 shows mean levels of all patient characteristics and patient outcomes across the 11 clinics. The final column of the table shows the results of one-way analyses of variance. The results show that there are significant differences in patient outcomes across the 11 outpatient surgical clinics.

Pairwise correlation analyses among the variables to be included in the staff outcomes model show that relational coordination was positively correlated with job satisfaction and work engagement and negatively correlated with burnout. Pairwise correlation analyses among the variables to be included in the patient outcomes model show that relational coordination was positively correlated with patient satisfaction with staff and patient satisfaction with provider, though not with patient satisfaction with overall visit. Patient satisfaction scores were significantly and posi-

tively correlated with patient age, health status, patient gender, and outpatient clinic size. Relational coordination was significantly associated with all of the above correlates. Correlation tables are shown in Supplemental Digital Content 1 (see Supplemental Digital Content 1, <http://links.lww.com/HCMR/A39>).

### Modeling Staff Outcomes as a Function of Relational Coordination

In our adjusted random effects models, clinic size was not significantly associated with staff outcomes. Provider and secretary variables were significantly and negatively associated with job satisfaction, whereas the administrator variable was significantly and negatively associated with burnout. The main variable of interest—relational coordination across professions—was significantly associated with all three staff outcomes—job satisfaction, work engagement, and staff burnout—in the expected directions (Table 3).

### Modeling Patient Satisfaction as a Function of Relational Coordination

We tested for basic assumptions of ordinary least squares (OLS) (heteroscedasticity, covariance, collinearity) to ascertain whether OLS was appropriate. The error terms were heteroskedastic, so we used robust standard errors to correct heteroskedasticity. Using variance inflation factor posttests, we found no evidence of multicollinearity.

In our adjusted OLS models, patient age and health status were positively associated with all three patient outcomes, suggesting that older and healthier patients had more positive experiences than younger and less healthy patients. Patients' initial visit was associated with less satisfaction with their staff and providers. In addition, large clinics were associated with higher patient satisfaction with providers, whereas medium clinics were associated with higher patient satisfaction with the overall visit. The main variable of interest—relational coordination across professions—was positively and significantly associated with patient satisfaction with staff and with the overall visit. The effect of relational coordination on patients' satisfaction with their provider was in the expected direction but did not reach statistical significance (Table 4).

## Discussion

Differences in the strength of relational coordination across clinics suggest that some clinics had achieved a more relational approach to coordination than others and that these clinics tended to enjoy greater staff well-being and greater patient satisfaction than their counterparts. These findings suggest that even when patient-professional interactions are brief relative to other settings (inpatient care,

**Table 1**  
Staff outcomes and relational coordination by outpatient clinic

	Clinic 1	Clinic 2	Clinic 3	Clinic 4	Clinic 5	Clinic 6	Clinic 7	Clinic 8	Clinic 9	Clinic 10	Clinic 11	F test (p value)
Staff outcomes												
Job satisfaction	3.80 (2.07)	6.00 (1.21)	5.11 (1.63)	5.46 (1.61)	4.81 (1.59)	5.32 (1.48)	5.36 (1.03)	5.70 (1.03)	5.08 (1.83)	5.88 (1.23)	5.11 (1.71)	3.58 (p < .01)
Work engagement	5.07 (1.91)	3.53 (0.92)	5.58 (1.35)	5.58 (1.44)	4.53 (1.44)	4.28 (1.37)	6.00 (0.89)	5.89 (1.09)	5.25 (1.76)	6.38 (0.72)	6.00 (1.39)	2.41 (p < .01)
Staff burnout	3.73 (2.12)	6.13 (1.74)	3.90 (1.59)	3.21 (1.84)	5.61 (1.66)	5.68 (1.65)	4.50 (1.35)	3.54 (1.75)	2.92 (2.02)	3.13 (1.65)	3.54 (1.92)	1.93 (p < .05)
Relational coordination												
Relational coordination index	3.63 (0.69)	4.03 (0.49)	3.99 (0.52)	4.11 (0.64)	3.54 (0.51)	3.66 (0.64)	4.29 (0.28)	3.95 (0.38)	3.95 (0.36)	3.96 (0.40)	3.75 (0.54)	4.90 (p < .01)
N = 337	15	46	63	25	39	48	11	27	12	25	37	

Note. Staff outcomes were measured on a 7-point scale. Relational coordination variables were measured on a 5-point scale. Means and standard deviations are shown. Test statistics and p values from one-way analysis of variance are shown in the final column.

chronic care, and long-term care), high levels of relational coordination among staff contribute to a more positive patient experience, and low levels tend to have the opposite effect. Still there is much unexplained variance, perhaps because the relatively brief interactions between office-based staff and their patients mean that relational coordination has little time to impact the patient experience in this setting.

The findings for the impact of relational coordination on staff well-being are more consistent and account for a higher percentage of variance. Still, one might ask whether clinical staff report greater well-being because of relational coordination itself or because their patients are better cared for in such a setting (Johnson et al., 2010). Theory suggests that relational coordination has a direct positive effect on

**Table 2**  
Patient outcomes, patient characteristics, and clinic and visit characteristics by outpatient clinic

	Clinic 1	Clinic 2	Clinic 3	Clinic 4	Clinic 5	Clinic 6	Clinic 7	Clinic 8	Clinic 9	Clinic 10	Clinic 11	F test (p value)
Patient outcomes												
Satisfaction with staff	84.2 (16.8)	87.6 (14.9)	86.2 (16.0)	82.7 (18.7)	81.3 (17.9)	84.1 (17.5)	83.3 (18.7)	84.7 (17.5)	85.8 (15.3)	83.9 (17.1)	82.9 (19.3)	5.3 (p < .01)
Satisfaction with providers	90.3 (17.2)	89.4 (15.4)	91.2 (15.2)	85.9 (21.1)	87.9 (16.6)	89.7 (15.7)	87.0 (18.7)	86.6 (19.8)	88.3 (18.9)	88.1 (17.7)	85.5 (19.4)	4.8 (p < .01)
Satisfaction with overall visit	86.5 (19.3)	87.7 (17.8)	88.4 (18.9)	84.5 (22.7)	84.5 (20.5)	86.3 (19.9)	85.3 (21.5)	83.6 (24.1)	88.4 (17.5)	86.1 (20.1)	85.3 (20.5)	2.4 (p < .01)
Patient characteristics												
Age	70.3 (11.3)	62.6 (17.6)	61.4 (14.3)	62.0 (15.0)	63.6 (22.1)	50.5 (27.9)	8.8 (9.8)	53.8 (21.8)	56.9 (15.4)	66.6 (12.8)	70.6 (12.6)	173.1 (p < .01)
Health status	55.4 (21.9)	73.4 (21.7)	62.1 (26.2)	58.0 (23.9)	69.8 (22.7)	70.3 (23.3)	78.5 (25.1)	70.3 (23.6)	44.1 (28.3)	61.8 (23.7)	55.5 (23.6)	40.7 (p < .01)
Gender (female = 1)	39.9% (0.5)	57.8% (0.5)	68.2% (0.5)	58.2% (0.5)	56.1% (0.5)	51.0% (0.5)	33.5% (0.5)	68.0% (0.5)	42.7% (0.5)	29.2% (0.5)	42.9% (0.5)	25.0 (p < .01)
Visit and clinic characteristics												
Visit type (initial = 1)	56.2% (0.5)	24.5% (0.4)	61.0% (0.5)	48.7% (0.5)	39.5% (0.5)	47.3% (0.5)	71.3% (0.5)	13.1% (0.3)	41.1% (0.5)	36.7% (0.5)	38.9% (0.5)	81.4 (p < .00)
Clinic size (no. of staff)	16	51	73	26	43	48	11	29	16	26	38	NA
N = 4,473	178	630	623	311	522	884	179	294	96	353	403	NA

Note. Patient outcomes and health status were measured on a 1–100 scale. Means and standard deviations are shown. F-test statistics and p values from one-way analysis of variance are shown in the final column. NA = not applicable.

Table 3

## Relational coordination and staff outcomes

	Job satisfaction	Work engagement	Staff burnout
Relational coordination	1.38*** (0.15)	0.92*** (0.07)	-0.93*** (0.15)
Nurses	0.44 (0.29)	0.26 (0.24)	-0.82 (0.29)
Providers/residents	-0.22* (0.10)	-0.24 (0.16)	0.07 (0.13)
Secretaries	-0.39** (0.20)	0.05 (0.19)	-0.11 (0.26)
Administrators	0.52* (0.29)	0.29 (0.25)	-1.33** (0.40)
Medium clinic size	0.01 (0.17)	0.07 (0.19)	0.07 (0.48)
Large clinic size	-0.24 (0.25)	-0.30 (0.25)	-0.14 (0.43)
Constant	0.15 (0.65)	2.37*** (0.43)	7.70*** (0.77)
Between clinic $R^2$	0.44	0.46	0.20
$n$	314	314	311

Note. Random effects GLS models with clinic as the random effect. For profession, "Technician" is the omitted category. For clinic size, "Small Clinic" is the omitted category. Standard errors are shown in parentheses. GLS = generalized least squares.

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

staff well-being because it is a way of working together that is both instrumentally and intrinsically satisfying (Gittell et al., 2008). This theory and the evidence that supports it are not inconsistent with the idea that staff well-being is reinforced by positive experiences of their patients.

Although we do not directly explore motivation in this study, relational coordination is expected to enhance motivation and performance by connecting individuals to one another through shared goals (a shared sense of purpose), shared knowledge (knowledge of the overall work process and how each role contributes), and mutual respect (respect for the contribution of each role). Relational coordination thus suggests an alternative approach to motivation that may be better suited to today's health care environment than individual purpose, autonomy, and mastery (Waddimba et al., 2016).

Previous findings suggest that relational coordination fosters learning and innovation (Carmeli & Gittell, 2009; Fu, 2015; Noël, Lanham, Palmer, Leykum, & Parchman, 2013). Working in a setting where aims are mutually understood, goals are appropriately shared, and communication is respectful may foster mindfulness of the impact of one's actions, the ability to learn from one's mistakes, and to experiment with mitigation strategies (Godfrey, Nelson, Wasson, Mohr, & Batalden, 2003). Findings from this study regarding relational coordination and reduced burnout are consistent with previous findings for nursing aides (Gittell, 2008) and hospital-based nurses (Havens et al., 2018) and provide additional support for the argument that relational coordination enables clinicians to respond more effectively to the pressures they face on a daily basis.

Table 4

## Relational coordination and patient outcomes

	Patient satisfaction with staff	Patient satisfaction with providers	Patient satisfaction with visit
Relational coordination	8.70** (4.64)	6.51 (4.59)	12.56** (5.45)
Patient age	0.07*** (0.01)	0.04*** (0.01)	0.11*** (0.02)
Patient health status	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)
Patient gender (female = 1)	-0.82* (0.54)	-0.59 (0.54)	-0.63 (0.63)
Visit type (initial visit = 1)	-1.15** (0.56)	-1.13** (0.56)	-0.60 (0.65)
Medium clinic size	1.71 (1.95)	3.11* (1.99)	4.47** (2.37)
Large clinic size	0.95 (0.78)	1.60** (0.81)	0.73 (0.95)
$R^2$	0.04	0.04	0.04
$n$	4,051	4,037	3,977

Note. OLS regression models with robust standard errors. For clinic size, "Small Clinic" is the omitted category. Standard errors are shown in parentheses.

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

## Limitations

This study has several limitations worth noting. First and foremost, cross-sectional design is a limitation of our study, preventing us from proving causality. Second, common method variance is a concern in our staff well-being models due to measurement of both outcomes and predictors in the same instrument at the same point in time (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The threat of common method variance is reduced for this study in two ways: first, by varying the scales for outcome and predictor variables—staff well-being is measured on a 7-point scale whereas relational coordination is measured on a 5-point scale, and second, by varying the target referent for outcome and predictor variables—the target referent for staff well-being is the respondent himself or herself whereas the target referents for relational coordination are the other professions he or she works with (e.g., “how frequently do people in each of these workgroups communicate with you about...?”).

In addition, patient outcomes over a 12-month period of time were included in the model to ensure a sufficient sample size for analysis, whereas relational coordination and staff outcomes were measured at one point during that period. This is typical of relational coordination studies. Because relational coordination reflects interprofessional culture, it is expected to be relatively stable over time. Still, the closer the timing of the measurement of relational coordination and related outcomes, the better for predictive validity; therefore, only the 12 months of patient data closest in time to the measurement of relational coordination were included in our models.

Finally, the small values of  $R^2$  for our regression models suggest that there are other things going on beyond the variables included. For models of patient satisfaction, we suspect that relational coordination between staff and the patients themselves also contributes to patient outcomes, as shown in a handful of studies (e.g., Cramm & Nieboer, 2015; Warfield, Chiri, Leutz, & Timberlake, 2014; Weinberg, Lusenhop, Gittell, & Kautz, 2007). For models of staff well-being, it would be desirable to include demographics such as gender, age, ethnicity, and job tenure that could impact staff experience of working in a particular clinic. The staff survey did not include these variables, in part due to the sensitivity of the relational coordination questions and the increased possibility of revealing one’s identity if demographic data were collected. We recommend that future studies strive to collect these demographics, while reassuring respondents about the confidentiality of their responses.

## Practice Implications

The findings reported here suggest that leaders should strive to build relational coordination across interdependent professions in their organizations. Previous findings suggest

that leaders can build relational coordination by adopting organizational structures such as shared accountability, shared rewards, shared meetings, shared protocols, and shared information systems, while hiring and training for interprofessional teamwork (Gittell & Douglass, 2012; Gittell & Logan, 2017; McDermott et al., 2017; Romanow et al., 2018). These are the so-called structural interventions that are identified in the relational model of organizational change (Gittell, 2016). Relational coordination theory argues that, rather than seeing these formal structures as alternatives to relational coordination, leaders should see them as ways to support relational coordination (Gittell & Douglass, 2012).

In addition to structural interventions, leaders can use an inclusive process of coaching and dialogue to achieve changes in relational coordination (Perloff et al., 2017; Resnick, Temkin, Lax, & Gittell, 2016). According to the relational model of organizational change, these so-called relational interventions help to create readiness for the structural interventions described above (Gittell, 2016). In summary, both theory and evidence suggest ways to improve relational coordination, and the findings reported here suggest the potential benefits of doing so.

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