Coordinating Patient Care: A Social Capital Model of High Performance Work Systems

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Coordinating patient care

Hospital-based care is complex and interdependent, involving multiple functions (i.e., physicians, nurses, therapists, case managers, social workers).

Coordination of care is therefore believed to be essential for achieving both quality and efficiency.

But coordination of care is challenging to achieve given the distinct perspectives, training and even status of these different functions.

This study explores the impact of high performance work systems (HPWS) on coordination and on key performance outcomes.
High performance work systems

HPWS are sets of work practices that work together to leverage employees’ ability to create value.

Practices include selection, training, mentoring, incentives, knowledge-sharing mechanisms (Horgan/Muhlau, 2006; Isom-Rodrigues, 2006).

Most effective when practices are mutually supporting or complementary (MacDuffie, 1995; Dunlop/Weil, 1996; Ichniowski, et al., 1996; Batt, 1999; Cappelli/Neumark, 2001).
Causal mechanisms vary

Less agreement on the causal mechanisms through which HPWS influence performance outcomes

- Human capital
- Motivation
- Social capital
Human capital theory of HPWS

- HR practices can improve org performance by increasing knowledge and skills (Becker, 1975)
- Investments in human capital not as readily duplicated as other investments (Barney, 1991)
- Sustained performance advantages from leveraging employee knowledge (Evans/Davis, 2005)
- Human capital takes the form of firm specific idiosyncratic skills, resulting in
  - Increased employee problem solving (Snell/Dean, 1992)
  - Improved customization by workers (Batt, 2002)
Motivation theory of HPWS

- HPWS work by enhancing motivation and commitment of workers
- Requires involving and empowering employees (Whitener, 2001; Caspersz, 2006)
- HR practices can increase control and involvement (Tomer, 2001; Ichniowski, et al, 1996)
Summary

- Human capital theory recognizes knowledge must be shared to be useful.
- Motivation theory recognizes the importance of worker/manager relationships in achieving motivation.
- But neither theory explicitly conceptualizes *relationships between workers* as the desired intermediate outcome of HPWS.
Social capital theory

- Social capital is an asset that adheres in social relations and networks (Leana/Van Buren, 1999)
- Organizational social capital exists in organizations and can be developed by them as a source of advantage (Nahapiet/Ghoshal, 1998)
- Organizational social capital important for
  - sharing knowledge (Tsai/Ghoshal, 1998; Levin/Cross, 2006)
  - coordinating work (Faraj/Sproull, 2000; Gittell, 2000; Adler/Kwon/Heckscher, 2007)
- Less insight on how organizations contribute to or inhibit the development of social capital
Social capital theory of HPWS

- Stable employment relationships and reciprocity norms can facilitate development of social capital (Leana/Van Buren, 1999)
- Work practices can be designed to foster relational coordination among airline workers (Gittell, 2000)
- Work practices influence performance through social networks among production workers (Gant, et al 2002)
Social capital theory of HPWS

- Work practices can encourage collective learning, thus increasing firm performance (Lopez, et al, 2005)
- Work practices can support social capital of top management teams, increasing firm performance (Collins/Clark, 2003)
- Work practices can signal to nurses the importance of relationships, contributing to mindful interaction and higher levels of patient safety (Vogus, 2006)
From HPWS to RWS

- Traditional work practices create divisions between workers in different functions, undermining the coordination of work (Piore, 1992; Heckscher, 1994)
- Rather than reject formal work practices, these practices can be redesigned to support social capital among workers
- We call this type of HPWS a relational work system (RWS)
Different types of social capital

The types of social capital considered in these studies vary substantially

- Relational coordination (Gittell)
- Communication networks (Gant, et al; Collins/Clark)
- Organizational learning (Lopez, et al)
- Mindful interactions (Vogus)

Given the problem of coordinating patient care, we are interested here in a form of social capital through which work is coordinated – relational coordination.
Social capital conceptualized as relational coordination

The communication and relationship ties through which work is coordinated (Gittell, 2002)

**Communication Ties**
- Frequent
- Timely
- Accurate
- Problem-solving

**Relationship Ties**
- Shared goals
- Shared knowledge
- Mutual respect
Hypotheses to be tested

- Relational work system positively predicts relational coordination among workers.
- Relational work system positively predicts performance outcomes.
- The effect of relational work system on performance outcomes is mediated by relational coordination among workers.
Model to be tested

Relational work system
Selection for cross-functional teamwork
Rewards for cross-functional teamwork
Cross-functional performance evaluation
Cross-functional conflict resolution
Cross-functional team meetings
Cross-functional boundary spanners

Relational coordination
Frequent comm
Timely comm
Accurate comm
Problem solv comm
Shared goals
Shared knowledge
Mutual respect

Quality outcomes

Efficiency outcomes
Sample and data sources

- Chose a work process in need of coordination, for which quality and efficiency outcomes could be readily measured
  - Surgical care for joint replacement patients
- Convenience sample of 9 major urban hospital orthopedic departments that conduct large numbers of joint replacements annually
- Patient survey and medical records (n=878)
  - Outcomes and risk factors
- Care provider survey (n=338)
  - Relational coordination
- Administrator interviews (n=32)
  - Relational work practices
### Relational coordination (alpha=.86)

<table>
<thead>
<tr>
<th>Items in RC</th>
<th>Factor loading</th>
<th>Obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent communication</td>
<td>.547</td>
<td>334</td>
</tr>
<tr>
<td>Timely communication</td>
<td>.772</td>
<td>334</td>
</tr>
<tr>
<td>Accurate communication</td>
<td>.789</td>
<td>333</td>
</tr>
<tr>
<td>Problem solving comm</td>
<td>.801</td>
<td>315</td>
</tr>
<tr>
<td>Shared goals</td>
<td>.614</td>
<td>331</td>
</tr>
<tr>
<td>Shared knowledge</td>
<td>.607</td>
<td>333</td>
</tr>
<tr>
<td>Mutual respect</td>
<td>.659</td>
<td>326</td>
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</table>
## Relational work system (alpha=.92)

<table>
<thead>
<tr>
<th>Items in RWS</th>
<th>Factor loading</th>
<th>Obs</th>
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<tbody>
<tr>
<td>Selection for teamwork</td>
<td>.842</td>
<td>9</td>
</tr>
<tr>
<td>Rewards for teamwork</td>
<td>.758</td>
<td>9</td>
</tr>
<tr>
<td>Performance evaluation</td>
<td>.604</td>
<td>9</td>
</tr>
<tr>
<td>Conflict resolution</td>
<td>.813</td>
<td>9</td>
</tr>
<tr>
<td>Team meetings</td>
<td>.536</td>
<td>9</td>
</tr>
<tr>
<td>Boundary spanners</td>
<td>.834</td>
<td>9</td>
</tr>
</tbody>
</table>
Analyses

- Used random effects regression to adjust standard errors for the multi-level nature of the data (patients or providers within orthopedics departments)
- Used Baron/Kenney (1986) method to test for mediation
- Adjusted outcome models for known risk factors
- Standardized all regression coefficients to easily compare size of effects
## Impact of RWS on RC

<table>
<thead>
<tr>
<th></th>
<th>Relational coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relational work system</td>
<td>.30***</td>
</tr>
<tr>
<td>Physician respondent</td>
<td>-.28*</td>
</tr>
<tr>
<td>Resident respondent</td>
<td>-.08</td>
</tr>
<tr>
<td>Nurse respondent</td>
<td>-.20</td>
</tr>
<tr>
<td>Therapist respondent</td>
<td>-.05</td>
</tr>
<tr>
<td>Social work respondent</td>
<td>-.13+</td>
</tr>
<tr>
<td>$R^2$ (between unit)</td>
<td>.91</td>
</tr>
<tr>
<td>Observations</td>
<td>321</td>
</tr>
</tbody>
</table>
## Impact of RWS and RC on outcomes

<table>
<thead>
<tr>
<th></th>
<th>Quality of care</th>
<th>Length of stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relational coordination</td>
<td>.24*</td>
<td>-.31**</td>
</tr>
<tr>
<td>Relational work system</td>
<td>.25***</td>
<td>-.30***</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>.06</td>
<td>.09*</td>
</tr>
<tr>
<td>Surgery type</td>
<td>.11**</td>
<td>.01</td>
</tr>
<tr>
<td>Psych well-being</td>
<td>.14**</td>
<td>-.09*</td>
</tr>
<tr>
<td>Surgical volume</td>
<td>.09*</td>
<td>.18***</td>
</tr>
<tr>
<td>R² (between unit)</td>
<td>.56</td>
<td>.72</td>
</tr>
<tr>
<td>Observations</td>
<td>588</td>
<td>599</td>
</tr>
</tbody>
</table>

Other covariates: patient age, pre-op status, gender, race and marital status.
Summary of findings

**Relational work system**
- Selection for cross-functional teamwork
- Rewards for cross-functional teamwork
- Cross-functional performance evaluation
- Cross-functional conflict resolution
- Cross-functional team meetings
- Cross-functional boundary spanners

**Relational coordination**
- Frequent comm
- Timely comm
- Accurate comm
- Problem solv comm
- Shared goals
- Shared knowledge
- Mutual respect

**Quality outcomes**
- .30***
- .24*

**Efficiency outcomes**
- -.31**
Summary of paper

- We have further developed a social capital model of HPWS, focusing not on individual worker attributes but on the relationships between workers.
- In contrast to traditional bureaucratic practices, the work practices that are relevant are those that reward and encourage collaboration between different workgroups.
- Together they form a relational work system.
Two types of contributions

- To HPWS theory
- To social capital theory
Contribution to HPWS theory

- Shows an alternative way that HPWS can work - through their impact on organizational social capital
- Therefore suggests that social capital theories of HPWS are a promising counterpart to theories of HPWS that focus on worker skill or motivation
- Shows that a special type of HPWS is required – a relational work system
Contribution to social capital theory

- Social capital originally seen as
  - embedded in existing networks (Granovetter, 1973)
  - emerging from independent actions of social actors (Burt, 1992)
  - not something that can be \textit{deliberately shaped} by organizations

- But this paper shows how organizations can support the development of social capital through relational work systems
Limitations

- Study uses interviews rather than surveys to measure work practices, improving reliability of measurement but limiting replicability
  - Could translate interview protocol into survey

- Study finds support for bundling practices together into a relational work system, but does not test complementarities among the practices
  - Need more degrees of freedom to do so