

## ORIGINAL ARTICLE

## Revisiting the Worksite in Worksite Health Campaigns: Evidence From a Multisite Organ Donation Campaign

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*This article advances the beginnings of a general theory of organizational features to aid in understanding why health campaigns that work well in one organization may be ineffectual in another organization. The physical, social, and information structures of organizations are theorized to create an interaction environment that is distinct to each organization and that influences health campaigns. To test this argument, an organ donation campaign was conducted in 46 organizations. Multilevel modeling yielded mixed findings. Physical structure was negatively associated with signing an organ donor card. Social structure and information structure were positively associated with communication with coworkers about donation and communicative peer influence. Industry type was positively associated with knowledge change.*

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Worksite health promotion and prevention programs in general have had much success over the last few decades (see, e.g., the 1988 special issue of *Social Science and Medicine* dedicated to worksite health promotion), leading to improved health for many organizational members. The most basic argument for the success of worksite campaigns is the quality of the campaign itself, with a focus on messages and dissemination strategies, grounded in theories that emphasize individual exposure and cognition as predictors for behavior change (Hornik & Yanovitzky, 2003). However, the effects of campaigns may operate or be mediated through social and organizational paths as well (Sorensen, Linnan, & Hunt, 2004), and a campaign that

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works well in one organization may be ineffectual in another. As such, we argue that the nature of the organizational context will affect the outcomes of health campaigns and advance the beginnings of a general theory of organizational features as they relate to health campaigns.

To accommodate the plethora of contextual features that might influence worksite campaigns, our arguments draw from a wide range of organizational theory and worksite health promotion literature. We begin with an overview of how we believe health campaigns are affected by organizational features. This is followed by a more detailed analysis of how three features of organizations, which we conceptualize collectively as the *interaction environment* (physical structure, social structure, and the information structure), may affect health campaigns. We do not claim that these features are all inclusive or that we have accounted for all elements within these features, but given the state of literature on the subject, we advance these as a robust starting point for theorizing. These arguments were tested in the context of a 10-week organ donation campaign in 46 organizations.

Social Representations Theory (SRT) helps frame how we have theorized various organizational variables (Moscovici, 1984). The theory highlights how three elements intersect and interact within a community to produce that community's understanding of and response to novel phenomena. These elements include: (a) mass media representations of the phenomena, (b) attitudes and cognitions of individual members of the community, and (c) interpersonal communication between community members. Morgan (2009) shows how SRT can help inform what is known about how individuals view organ donation. Most research on organ donation, and other health-related issues, has focused primarily on one of these elements (Morgan, 2009). This study, however, begins to lay the foundation for examining the three elements concurrently. First, the campaign provides the media to the community in the form of various campaign materials while concurrently studying group-level attitudes and knowledge toward organ donation. In addition, we attempt to understand what enables and constrains interpersonal communication within worksite communities.<sup>1</sup>

Indeed, when looking at the "doing of work" within organizational "communities," individuals engage in action within a physical space that both limits and facilitates certain types of activities and communication. They do so not in isolation, but through developing working relationships of various degrees of influence with their colleagues, and they communicate and share information through the use of available channels within an organization. These constitute the basic interaction environment of the workplace. We see the identification and examination of information, physical, and social structures as a logical way of organizing basic elements of an organizations' influence on interpersonal communication. Furthermore, these elements can be readily used for campaign design and implementation purposes.

### **How do worksite campaigns work?**

Recent literature suggests that worksite campaigns are most effective when they combine media with interpersonal channels to disseminate messages (Feeley & Moon,

2009; Morgan, 2009). However, even these types of campaigns often rely on the “old school” hypodermic needle model of individual attitude and behavior change: Inject individuals with the message and they will change their attitudes and behavior accordingly. Because campaigns take place in complex environments, and factors in the environment are likely to affect campaigns, individual influence models are likely to account for only a portion of campaign effects (Hornik & Yanovitzky, 2003). Specifically, Hornik and Yanovitzky (2003) posit social and institutional factors influence campaigns, and argue for social diffusion as an additional mechanism for campaign effects. We view the interaction environment in organizations as affecting processes that influence the social diffusion of messages. Social diffusion of campaign messages in organizations is likely to go beyond media messages and interactions with campaign workers, and are likely to reflect interaction with coworkers as well.

The interaction environment influences campaigns in a nonlinear fashion. Akin to Moscovici’s (1998) process of the development of social representations, the interaction environment affects how the issues in the campaign become part of the consciousness of the organizational milieu, and from there enter, at least temporarily, into organizational discourse and interaction. In essence, organizations having more densely/tightly connected sets of relationships among employees are likely to experience increased communication and interaction (buzz), and thus, hopefully stronger effects from campaigns. One analogy for the function of the interaction environment is the game of pinball. The tighter the bumpers, the more the pinball bounces around, comes into contact with other bumpers, and moves into all areas of the board. The interaction environment is the equivalent of the tightness of the bumpers with the campaign representing the pinball. The tighter or more “crowded” the interaction environment relative to the space occupied by employees, the more rapidly the ideas disseminate, come into contact with other bumpers (people), and gain more points (has more influence on attitude and behavior). Below, we theorize how physical, social, and information structures are likely to influence health campaigns in organizations.

### **The physical structure of organizations**

Previous studies examining the impact of physical characteristics on workplace campaigns have found that size and occupational features influence policy adoption (Emmons *et al.*, 2000), and that physical structures affect health-related interactions (Harrison *et al.*, 2009; Oldenberg, Sallis, Harris, & Owen, 2002). These initial findings suggest that the physical structure of organizations is an area deserving of further exploration.

The physical structure of organizations represents the material realities that can influence communication processes. Our theorizing focuses specifically on size, industry type, and physical layout. It is our assertion that physical structures influence the frequency and nature of interaction with others in the organization. This contact with other individuals in the organization affects the social diffusion of campaign messages, and will likely influence the individual’s knowledge about the health

campaign due to exposure to and discussion of relevant messages, as well as the shaping of social norms using organizationally relevant actors, a variable we term communicative peer influence.

Organizational size has mixed influences on organizations. Larger organizations not only have better organizational climates and are more sociable (Payne & Mansfield, 1973), but also have more specialization and formalization that inhibit informal communication, suggesting smaller organizations have tighter and more influential networks (Koene, Vogelaar, & Soeters, 2002). Thus it is difficult to say how size, as a physical characteristic, might influence the dissemination of campaign information.

Arguably, another variable that could influence the interaction within the organization may be the type of industry of which the organization is a part. Companies within the same industries tend to share characteristics of everyday work routines, interaction, conflict, and relational patterns (e.g., Morrill, 1995). We expect these similarities and differences across industries to influence the success of campaigns.

Although little research on worksite campaigns focuses on the influence of physical structure, the Checklist of Health Promotion Environments at Worksites (CHEW; Oldenberg *et al.*, 2002) does show promise (e.g., Sorensen *et al.*, 2004). Although the broad categories used in the CHEW have some similarity to the categories we advance, the CHEW focuses strictly on direct relationships to individual behavior. Our theorizing extends this approach to how the environment influences the nature and flow of interactions, communication, and message dissemination, and hence to individual behavior change.

We draw additional support from research on the physical environment that examines communication and interaction patterns relative to proximity. Proximity in an organizational setting means that “at any time there is a specified level of opportunity for face-to-face communication among all organizational members by virtue of their relative dispersal in various physical locations throughout the organization” (Monge, Rothman, Eisenberg, Miller, & Kirste, 1985, p. 1130). Thus opportunities for interaction, as enabled or constrained by the physical environment, influence the frequency and nature of communication. Indeed, we believe that proximity increases the opportunity for colleagues to discuss issues in the moment. That is, when they receive campaign materials, immediate discussion with those who work around them is possible.

In summary, several features of the physical organization may influence whether the environment may be conducive to workplace health campaigns. Previous research suggests that the most salient among these features is the size of the organization, the type of industry, and the interaction opportunities provided by the physical layout of the organization. It is our contention that these variables will influence the process and outcomes of our campaigns. On the basis of the research reviewed above, we advance the following hypothesis and research questions:

- H1:** Physical structures that reflect tighter dispersion and include more arenas for interaction will be positively associated with increases in campaign outcomes.

For all hypotheses and research questions, campaign outcomes are: knowledge, attitudes, communicative peer influence, intent to sign cards, signing of organ donor cards or registry forms, and number of conversations with colleagues about organ donation).<sup>2</sup>

**RQ1:** What effect does industry type have on campaign outcomes?

**RQ2:** What effect does the number of employees have on campaign outcomes?

### **The social structures of organizations**

In the spirit of Conrad (1988), we framed the organizations we studied as “social organizations” to “highlight the social, organizational, and interactional factors that create and affect work place health promotions” (p. 487). The organizations participating in our study have social capital, defined as “connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 2000, p. 19). The social structure consists of the elements that exist within the organization that encourage or discourage social ties and interaction.

Research has shown that social links between individuals in organizations encourage commitment and identification. In fact, Boessenkool, Leisiuk, and Verweel (2003) contended that people develop commitments in interactions with others, creating the sense of community within organizations. The ties within these communities may influence individuals’ behaviors. Buller *et al.* (1999) pointed to the importance of social groups for improving healthy eating. Although promoting healthy eating is much different than promoting organ donation, we would argue that the use of peer educators in these campaigns points to the large influence that relationships and communication with coworkers play within organizations, and how they can be important factors in all health-related campaigns. Campaigns can provide messages and cues (i.e., campaign materials, especially materials featuring stories of coworkers), that will take advantage of these relationships and increase discussions about the targeted health behavior. Thus it is our contention that social structures that promote interaction will facilitate campaigns.

In our model, the social structure includes the opportunities for individuals to be exposed to other employees as enabled by organizationally structured functions such as meetings, lunch, company picnics, and so forth. These events allow for the creation of linkages among employees both within and outside of the workflow. The social structure of the organization should influence frequency of communication with coworkers about organ donation and the salience of peer influence, thus facilitating the process of social diffusion of campaign messages. This approach should also help answer Elsbach and Pratt’s (2008) call to link the physical organization with the social organization. In light of these arguments, we advance the following hypothesis:

**H2:** Social structures reflecting stronger relationships and more frequent opportunities for interaction with coworkers will be positively related to campaign outcomes.

### **The information structures of organizations**

Our third component of the interaction environment is the information structure. The information structure in the organization refers to the channels that are available for the dissemination of messages within the organization. The CHEW addresses issues of the information structure and provided a starting point (Oldenberg *et al.*, 2002). Specifically, the CHEW focuses on the number of existing posters and bulletin boards directly related to health issues. We conceive of the information structure more broadly, and include within that structure all channels (both traditional and electronic) available for the dissemination of messages. Electronic channels include listservs, e-mail, online newsletters, online bulletin boards, company homepage, and department homepages.<sup>3</sup> Traditional communication channels include newsletters, newspapers, paycheck stuffers, memos, and internal television or radio. Although it is possible that not all employees utilize each of these channels to obtain information, we are interested in the cumulative number of ways that exist to disseminate information and believe that represents a more comprehensive picture of information flow than individual preference alone.

Our goal is to examine channels as a structural feature of the organization and how structural channels might be connected with communication norms and patterns, frequency, and amount of peer influence as these would be indicative of information dispersion in an organization. Thus, a greater number of channels represent more potential use and dispersion of information.

Although our focus is not orthodox comparisons between new and old media, we do posit that having electronic channels available is of key importance for worksite campaigns because these channels operate differently in the dispersion of information than traditional channels. Generally speaking, these channels are able to overcome some of the barriers of time, location, permanence, distribution, and distance (Rice, D'Ambra, & More, 1998). The availability and use of electronic communication also tends to increase the volume of information flowing in an organization, and may also encourage broader, more lateral, and more diverse participation in communication and information sharing (DeSanctis & Monge, 1998). The use of communication channels also reflects norms of the organization (DeSanctis & Monge, 1998), and further supports our arguments about dispersion in a manner similar to those proposed regarding the physical and social structures of the organization.

In addition to communication channels, we posit that areas for information sharing will influence campaign processes such as communication with coworkers and peer influence. Most organizations have bulletin boards designated for posting information, and also have break rooms where employees congregate, and these break rooms frequently have places to post and share information.<sup>4</sup> Thus, we add these as areas to post information and believe these further enhance the information structure of an organization.

Ultimately, we argue that the stronger the information structure, such as more channels and locations available for communication, the more informal communication will occur among organizational members. Informal communication is

more positively evaluated than formal communication (Johnson, Donohue, Atkin, & Johnson, 1994) and is critical in facilitating the process and success of worksite campaigns. Returning to our pinball metaphor, having multiple channels and having electronic channels to supplement traditional communication channels should function to increase the dispersion of ideas in the milieu of the organizational environment. More channels equal more opportunity for the sharing of information. As such, the sheer number of channels is expected to influence campaigns, as is the nature of those channels. In addition to messages “bouncing around” more frequently, more channels also offer the opportunity to present multiple messages using multiple channels and sources, a key component of effective persuasion. As such, we advance the following hypothesis:

**H3a:** Organizations with stronger information structures will demonstrate greater increases in campaign outcomes.

**H3b:** Organizations with more electronic communication channels will demonstrate greater increases in campaign outcomes than those with fewer electronic communication channels.

Although the channels chosen are important for campaign processes, the channels and information areas available may prove influential merely by their existence and their overall impact in shaping communication patterns within an organization.

### **The intersection of physical, social, and information structures**

Although each of the items we discuss as relevant to the interaction environment of the organization is thought to have direct effects on campaign processes and outcomes, it is also likely that each element interacts in complex ways with other elements of the interaction environment (e.g., the earlier review found electronic channels facilitate interpersonal relationships). Thus, it is important to examine how the overall interaction environment of an organization impacts health campaigns:

**H4:** Organizations having interaction environments that reflect greater opportunities for interaction, positive social structures, and stronger information structures will demonstrate more positive change in campaign outcomes.

### **Organ donation**

Although space precludes a full review of the organ donation literature, a brief review is offered here to set the stage for the campaign implemented in this study. As of January 2009, over 100,000 candidates are on the waiting list to receive an organ (United Network for Organ Sharing, 2009). To date, over 81,000 people have died while candidates on the waiting list (Organ Procurement and Transplantation Network, 2009). Despite extensive efforts to promote organ donation, the need far outstrips the supply of available organs.

The campaign presented in this study followed the organ donor model and focused on knowledge and social norms to target attitude, behavioral intent, and behavior toward signing an organ donor card (Morgan, Miller, & Arasaratnam,



2002). The organ donor model posits that intention to behave and subsequent behaviors toward donation are influenced by knowledge, attitude, and social norms. On the basis of this model, studies have identified certain knowledge gaps and misguided beliefs that distinguish donors from nondonors. These include items such as belief in a black market, fear that doctors will not work as hard to save your life, and bodily integrity, among others (Morgan, Harrison, Chewning, Davis, & Di Corcia, 2007). Many of these fears and misperceptions appear to be a direct result of media portrayals of organ donation (Harrison, Morgan, & Chewning, 2008; Morgan, Movius, & Cody, 2009; Morgan *et al.*, 2007; Movius, Cody, Huang, Berkowitz, & Morgan, 2007), and tend to influence the public to be less willing to become potential donors (Morgan, 2009). As such, campaigns that target myths about organ donation while simultaneously focusing on social norms have proven effective in changing knowledge, attitudes, perceived social norms, intent to behave, and behavior toward declaring intention to donate (e.g., Harrison, Morgan, & Di Corcia, 2008; Morgan & Miller, 2002).

## Method

### Description of campaign and interventions

Forty-six companies located in New Jersey, ranging in size from 90 to 4,200 employees, participated in this study during 2004–2007.<sup>5</sup> Sixteen companies in this study received a high-intensity campaign consisting of messages disseminated through internal media channels, as well as a series of onsite interpersonal outreach visits. Fifteen companies received the media-only campaign and 15 companies served as control companies, completing the pretest and posttest surveys, but receiving no campaign intervention until after posttest surveys were completed. Interventions occurred in five waves of nine (the final wave had 10) companies (three per condition). Each wave typically lasted 3–3.5 months, with the intervention lasting 10 weeks, and data collection occurring in the weeks before and after.

For both the low- and high-intensity conditions, employees received an array of campaign materials. All employees received “myth busters” materials developed to dispel common myths about organ donation. In addition, members of the organization who had been touched by organ donation were featured in stories about donation that were disseminated through company newsletters, websites, posters, e-mail, and other channels. All employees received a brochure featuring answers to common questions about organ donation and a postage-paid organ donor registry card.

For the onsite interpersonal interventions (high-intensity condition only), project staff and volunteers staffed tables at central location(s), such as cafeterias or main entrances to the organization, three to four times over the course of 10 weeks. Outreach workers and volunteers promoted interpersonal interaction by distributing free pens, cups, and magnets, as well as by offering to witness the signing of organ donor cards or registry forms. They distributed additional brochures on how to talk



to family members about organ donation and reminded new (and current) card signers that they should notify loved ones about their wishes to donate. Tables also displayed a panel from the New Jersey organ donor quilt.

### **Organizations**

Companies were chosen to maximize variation in industry type, and were assigned to conditions to counterbalance the types of organizations by condition. Counterbalancing allowed us to match and control error that might arise from organization size and type. For example, where possible we tried to have hospitals in all three conditions.

### **Participants**

A total of 9,294 respondents provided pre- and/or posttest survey data. Most were female (63.3%); the average age was 44.6. We had a full range of occupations, with over 200 distinct job titles, including “trash-man,” trial manager, x-ray technician, vice president, traffic coordinator, stylist, social worker, and staff nurse, to name just a few.

### **Survey administration and sampling procedures**

To secure access from the widest variety of companies, we offered two methods of survey administration: phone and paper/pencil. Phone surveys were administered to 20 of our 46 companies by Princeton Survey Research Associates, and paper surveys were collected by project staff for the remaining 26 companies. Pretest surveys were administered in the 2–3 weeks leading up to the campaign and posttest surveys in the 2–3 weeks following the end of the campaign. For phone surveys, up to seven attempts were made to contact an individual. For paper surveys, two surveys were distributed to each employee about 1 week apart to maximize response. We distributed small gifts (e.g., travel clocks, book lights, and pedometers) worth less than \$5 each to everyone who returned a paper survey.

Random selection of employee names, addresses, and/or phone numbers was generated from complete employee rosters. Where permission for the use of phone surveys could not be secured, we increased our sample size to assume a lower response rate, following the recommendations of Krejcie and Morgan (1970). A comparison of pretest scores among companies receiving each type of survey administration demonstrated that responses to individual questions did not differ significantly even though response rates for paper versus phone surveys differed to the degree anticipated, approximately 26% versus 45%, respectively.

### **Survey measures**

#### *Knowledge about organ donation*

Knowledge about organ donation was measured by asking respondents to indicate whether six statements of fact were true or false (a “don’t know” option was also provided).

*Attitude toward organ donation*

Attitude toward organ donation was measured by three items, 5-point Likert scale, with higher scores indicating a more favorable attitude toward organ donation. Reliability for this instrument is high, Cronbach's coefficient  $\alpha = 0.89$ .

*Peer influence*

Peer influence was calculated as the tenor of conversations about organ donation with colleagues multiplied by how much the conversations influenced their decisions to donate.

*Number of conversations with coworkers*

Respondents were asked how many conversations about organ donation they had with coworkers during the last month.

*Signed organ donor cards*

Respondents were asked a single yes/no question about whether they have already signed an organ donor card. In addition, all employees at all worksites received a postage prepaid organ donor card that was precoded for the organization.

*Demographic items*

Respondents were asked to provide their age, gender, level of education, employment category, household income, and race/ethnicity.

**Interaction environment measures**

Organizational assessments were completed by members of the research team with assistance from a member of the organization.

*Physical structures*

The physical structure was calculated as an index composed of density multiplied by interaction opportunity. Density was calculated as the number of employees/(floors  $\times$  buildings)/shifts. The interaction opportunity score was calculated as the number of lunchrooms and cafeterias/number of buildings.

*Social structures*

Social structures consisted of individual (frequency of lunch and meetings with coworkers, levels of liking, and respect of their coworkers) and organizational (corporate sponsored parties/picnics/events annually) levels of data.

*Information structures*

Information structures consisted of electronic channels of communication, including listservs, e-mail, online newsletters, online bulletin boards, company homepage, department homepage, and other. Traditional communication channels included newsletters, newspapers, paycheck stuffers, memos, internal television and radio, and other. Bulletin boards and break rooms constituted the final element of information structure as the number of places information could be posted.

*Industry type*

We grouped organizations into five categories: (a) government/university, (b) consumer products corporate/professional, (c) service/manufacturing, (d) pharmaceutical corporate, and (e) hospitals.

**Results****Multilevel models for hypothesis testing**

Multilevel models were constructed using HLM 6.05. Multilevel modeling allowed for the simultaneous analysis of individual and organizational levels of measurement without violating statistical assumptions such as independence of observations. Negligible differences between the ordinary least squares and robust standard errors indicate appropriate model specification (Raudenbush & Bryk, 2002). Robust standard errors are reported throughout the results. We selected an  $\alpha$  level for statistical tests of 0.10, because this is an exploratory analysis. The number of organizations and participants determined the power in our analyses but power was primarily determined by the number of organizations. Findings based on tests that reached only the 0.10  $\alpha$  level require more cautious interpretation, so we have indicated those tests in the results.

The dependent variables considered here include change in knowledge about organ donation, frequency of communication with colleagues about organ donation, communicative peer influence, and donation cards signed. Models of intent to sign and change in attitudes about organ donation did not yield significant results. Cards signed was a dichotomous outcome and was thus modeled using the penalized quasi-likelihood approach (the dependent outcome is transformed and the multilevel model is produced through an iterative procedure). Hayes (2006) recommended multilevel modeling when the intraclass correlation exceeds 0.05. Although the intraclass correlations are small for change in knowledge, peer influence, and cards signed ( $ICC = 0.04$ ), the test of the organizational variance components was significant for all dependent variables suggesting that multilevel analysis is still a prudent and necessary analysis strategy. Tables 1–4 show the models of the dependent outcomes.

The results provide no support for H1. Inconsistent with H1, the index of physical structures had no significant effects on knowledge change, conversation frequency, and communicative peer influence. However, a negative relationship existed between the physical structure index and cards signed ( $OR = 0.9978$ ). The investigation of RQ2 revealed no dependable relationships between organization size and the campaign outcomes and processes. However, the exploration of industry type suggests that unmeasured structural features may influence campaign processes. To explore this research question, separate models were created for industry type. Only experimental conditions were retained in each model as controls. Industry type was modeled using dummy-coded variables.

These data do suggest a relationship between industry type, an organization-level variable, and campaign processes. Participants in the organizations in the

**Table 1** Model of Change in Knowledge About Organ Donation

Predictors	Coefficient	SE
Fixed part		
Intercept ( $\gamma_{00}$ )	0.0025	0.0282
Physical structure index ( $\gamma_{01}$ )	0.0001	0.0002
Organizational social structures index ( $\gamma_{02}$ )	-0.0028	0.0021
Electronic media ( $\gamma_{03}$ )	0.0067	0.0066
Traditional media ( $\gamma_{04}$ )	-0.0168**	0.0073
Number of posting opportunities ( $\gamma_{05}$ )	-0.0006	0.0027
High-intensity condition ( $\gamma_{10}$ )	-0.0110	0.0197
Low-intensity condition ( $\gamma_{20}$ )	0.0222	0.0205
Individual social structures ( $\gamma_{30}$ )	0.0001	0.0001
Random part		
Individual-level variance component	0.0614	—
Organization-level variance component	0.0024	—
Deviance	271.1076	—
Deviance change from intercept-only model	18.7464**	—

Note: Robust standard errors are presented.

Significant coefficients, \*\* $p < .05$ .

pharmaceutical corporate industry category had a significantly higher change in their knowledge about organ donation than other industries ( $\gamma = 0.0682$ ,  $SE = 0.0302$ ,  $p = .03$ ). The amount of conversation generated varied significantly across industries where organizations in the hospital sector reported the highest amount (1.99, 95% CI = 1.36–2.66) followed by service/manufacturing (1.43, 95% CI = 0.69–2.16), government/university (1.15, 95% CI = 0.43–1.87), consumer product corporate/professional (1.13, 95% CI = 0.45–1.82), and pharmaceutical corporate organizations (0.90, 95% CI = 0.26–1.82). Organizations in the hospital sector reported the highest level of peer influence of the exchanges between colleagues (4.45, 95% CI = 3.72–5.18) followed by government/university (3.49, 95% CI = 2.60–4.38), pharmaceutical corporate (3.26, 95% CI = 2.44–4.09), service/manufacturing (3.25, 95% CI = 2.45–4.05), and consumer product corporate/professional sector organizations (2.68, 95% CI = 1.91–3.46).

The results provide mixed support for H2 that social structures reflecting stronger relationships and more frequent opportunities will be positively related to campaign processes. Tables 1–4 show the models used to test this hypothesis. Social structures did not have dependable effects on change in knowledge, but they did influence communication and peer influence. The individual social structures index, a combination of social meetings and respect for colleagues, had a positive effect on both conversations ( $\gamma = 0.0044$ ,  $SE = 0.0013$ ,  $p < .05$ ) and peer influence ( $\gamma = 0.0014$ ,  $SE = 0.0009$ ,  $p < .10$ ). Moreover, the relationship between individual

**Table 2** Model of Conversation Frequency

Predictors	Coefficient	SE
Fixed part		
Intercept ( $\gamma_{00}$ )	0.5365	0.3392
Physical structure index ( $\gamma_{01}$ )	−0.0022	0.0014
Organizational social structures index ( $\gamma_{02}$ )	−0.0193	0.0202
Electronic media ( $\gamma_{03}$ )	−0.0243	0.0898
Traditional media ( $\gamma_{04}$ )	0.1157*	0.0602
Number of posting opportunities ( $\gamma_{05}$ )	0.0470*	0.0286
High-intensity condition ( $\gamma_{10}$ )	1.0344**	0.2123
Low-intensity condition ( $\gamma_{20}$ )	0.5870**	0.1544
Individual social structures ( $\gamma_{30}$ )	0.0044**	0.0013
Random part		
Individual-level variance component	4.4640	—
Organization-level variance component	0.2308	—
Individual social structures random slope ( $\gamma_{30}$ ) variance component	0.0001	—
Deviance	20244.4499	—
Deviance change from intercept-only model	2669.6561**	—

Note: Robust standard errors are presented.

Significant coefficients are flagged with an asterisk, \* $p < .10$ ; \*\* $p < .05$ .

social structure and conversations varied depending on the organization as evidenced by the significant random variance component. Follow-up analyses between interactions of organizational-level variables and individual social structure did not yield any significant results. However, contrary to this hypothesis, organizational social structures, organization-wide opportunities for interaction, had a slightly negative relationship with peer influence ( $\gamma = -0.0560$ ,  $SE = 0.0222$ ,  $p < .05$ ).

Hypotheses 3a and 3b, which communication channels will have a positive relationship with campaign processes and outcomes, received mixed support. Inconsistent with the hypotheses, the number of traditional media outlets had a small negative relationship with knowledge change about organ donation ( $\gamma = -0.0168$ ,  $SE = 0.0073$ ,  $p < .05$ ) and cards signed ( $OR = 0.8836$ ), but as predicted the number of traditional outlets was positively related to conversation frequency ( $\gamma = 0.1157$ ,  $SE = 0.0602$ ,  $p < .10$ ). Also as predicted, the number of electronic media outlets was positively related to peer influence ( $\gamma = 0.1889$ ,  $SE = 0.0877$ ,  $p < .05$ ) and the number of posting opportunities was positively related to conversation frequency ( $\gamma = 0.0470$ ,  $SE = 0.0286$ ,  $p < .10$ ) and cards signed ( $OR = 1.0607$ ).

The results provide mixed support for H4, that organizations having interaction environments that reflect greater opportunities for interaction, positive social structures, and stronger information structures will demonstrate positive change in knowledge, attitudes, communicative peer influence, intent to sign cards, signing of

**Table 3** Model of Communicative Peer Influence

Predictors	Coefficient	SE
Fixed part		
Intercept ( $\gamma_{00}$ )	2.8381	0.4610
Physical structure index ( $\gamma_{01}$ )	0.0003	0.0017
Organizational social structures index ( $\gamma_{02}$ )	−0.0595**	0.0222
Electronic media ( $\gamma_{03}$ )	0.1889**	0.0877
Traditional media ( $\gamma_{04}$ )	−0.1024	0.1195
Number of posting opportunities ( $\gamma_{05}$ )	0.0001	0.0400
High-intensity condition ( $\gamma_{10}$ )	0.3560	0.2840
Low-intensity condition ( $\gamma_{20}$ )	0.1614	0.3089
Individual social structures ( $\gamma_{30}$ )	0.0014*	0.0009
Random part		
Individual-level variance component	11.785	—
Organization-level variance component	0.482	—
Deviance	16497.8894	—
Deviance change from intercept-only model	1954.7576**	—

*Note:* Robust standard errors are presented.

Significant coefficients are flagged with an asterisk, \* $p < .10$ ; \*\* $p < .05$ .

organ donor cards or registry forms, and number of conversations with colleagues about organ donation. The change in attitude did not have a multilevel structure, and was not included in these analyses. Consistent with the hypothesis, the final models presented in Tables 2–4 significantly improved the intercept-only models. Chi-squared tests of the change in deviance revealed a significant improvement for

**Table 4** Model of Cards Signed

Predictors	Coefficient (SE)	OR
Fixed part		
Intercept ( $\gamma_{00}$ )	−1.9459 (0.3939)	0.1429
Physical structure index ( $\gamma_{01}$ )	−0.0022 (0.0010)**	0.9978
Organizational social structures index ( $\gamma_{02}$ )	−0.0170 (0.0184)	0.9832
Electronic media ( $\gamma_{03}$ )	−0.0357 (0.0578)	0.9649
Traditional media ( $\gamma_{04}$ )	−0.1237 (0.0693)*	0.8836
Number of posting opportunities ( $\gamma_{05}$ )	0.0589 (0.0344)*	1.0607
High-intensity condition ( $\gamma_{10}$ )	0.9640 (0.2197)**	2.6221
Low-intensity condition ( $\gamma_{20}$ )	0.4297 (0.2628)*	1.5367
Individual social structures ( $\gamma_{30}$ )	0.0009 (0.0010)	1.0009
Random part		
Organization-level variance component	0.0713	—

*Note:* The unit-specific model and robust standard errors are presented.

Significant coefficients are flagged with an asterisk, \* $p < .10$ ; \*\* $p < .05$ .

each model. The final models presented in these tables accounted for additional variance in knowledge change (12.41% reduction of variance at the organizational level and 2.29% reduction of variance at the individual level), conversation frequency (11.46% reduction of variance at the organizational level and 0.79% reduction of variance at the individual level), and peer influence (46.98% reduction of variance at the organizational level and 0.28% reduction of variance at the individual level). However, inconsistent with the hypothesis, not all of the variables demonstrated consistent effects across the dependent variables.

## Discussion

Our attempt at generating and testing a generalized theory of organizational features in relation to health campaigns met with mixed success, but does show promising avenues for future investigations. The physical structure of the organization is the only feature of our interaction environment that influenced the behavioral outcome of signing an organ donor card; however, this relationship was the inverse of what we expected. The findings indicate that organizations that are denser and have more interaction opportunities produced negative effects on desired behavior. This may be in part because of unique characteristics surrounding the issue of organ donation; many barriers to organ donation are based on beliefs fostered by entertainment television (e.g., Harrison, Morgan, & Chewning, 2008), and these myths are often a key part of conversations that occur about the issue (e.g., Morgan *et al.*, 2005). The effects of physical structure in this instance may be mitigated by conversations and peer influence about organ donation. Findings related to these issues are further discussed.

Although physical structure was not significantly associated with any of our other dependent variables, we still believe this is an area deserving of further theorizing and testing. Although it is possible there are few effects to be found, it is also possible that our conceptualization of the variable should be further refined. We did assess organizations on a much broader host of characteristics than went into our index of physical structure. For example, our organizational assessment measured the number of break rooms, exercise areas, childcare facilities, nature of workspace (office type), and vending machine areas, but these variables were not included in the analysis because of theoretical concerns and measurement specificity. These are elements of the physical structure of an organization that might provide opportunities for interaction among employees. Thus, it is possible that our operationalization of physical structure was flawed, incomplete, or too simplistic. In addition, given the complexity and variety of physical characteristics of organizations, we may not have the power or sophistication in measurement to accurately assess the effects of structure on our variables of interest. Finally, it may be that the physical structure as we define it does not have significant effects, and that the social and information structures of organizations are much more influential in affecting campaign processes in organizations.



However, this is not to say that features of the organization do not influence campaigns. Significant findings for industry type on knowledge, communication with colleagues about organ donation, and communicative peer influence indicate that organizations do vary in ways consequential for health campaigns. Interestingly, pharmaceutical corporate industry companies were the only companies to significantly improve on knowledge scores, but they had the lowest frequency of communication with colleagues about organ donation and only moderate communicative peer influence. Hospitals reported the greatest frequency of communication with coworkers about organ donation and also the greatest amount of communicative peer influence. Service/manufacturing had the second highest rate of communication with coworkers, but reported among the lowest communicative peer influence.

These findings suggest patterns of communication occurring within industry types. Hospitals and service/manufacturing would seem to share certain characteristics of work that may be systematically different from corporate headquarters, governments/universities, and consumer product corporate/professional organizations: On surface analysis they would appear to have a much greater rate of interaction with coworkers on a daily basis and less access to electronic forms of communication. Nurses share stations, make rounds, and communicate with doctors; service workers and those engaged in manufacturing/distribution plants typically work in open environments and often banter back and forth among themselves. Such proximity seems to be a result of the nature of work rather than physical environment structure, but it does support the claim that distance between people is important and can promote or hinder communication (e.g., Monge *et al.*, 1985). Thus, in these environments one would expect more frequent communication with coworkers in general, and it can be taken as a measure of campaign success that they also talked more about the campaign issue.

The results of analysis pertaining to the information structures of the organization were mixed. The number of traditional media channels is negatively associated with knowledge, which might be attributable the more traditional nature of organizations with fewer electronic channels, with employees in less skilled jobs associated with lower socioeconomic status and education. The findings that more traditional media channels gave rise to more conversations about organ donation could support this explanation. Previous studies of organ donation (Morgan, Harrison, Long, Afifi, & Stephenson, 2008; Morgan *et al.*, 2005) have found that many conversations about organ donation actually draw on myths and fears represented in the mass media and have a chilling effect on decisions to donate. These conversations may just serve to reinforce already incorrect beliefs, even if the findings do not show strong support for peer influence for this variable. The finding that higher numbers of electronic media outlets was positively related to peer influence may represent the inverse of the previous explanation and be related to industries that have more skilled workers with higher education levels, thus leading to an increased likelihood to be influenced by peers. This explanation fits well when taken in conjunction with previous findings about industry type that showed strong peer influence in pharmaceutical corporate

industries, even though there were a low number of conversations. Finally, the sheer number of places to post information did have a positive effect on generating conversation about the issue of organ donation.

The findings overall suggest that organizational structures may work in conjunction, such that the information structure of an organization may influence the social structures of an organization. Indeed, research has shown that the preponderance of electronic channels within organizations has altered the nature of social relationships within those organizations, such that “electronic communication increases the amount of contact individuals have with each other” (Uhlig, 1977, p. 122). However, this is not personal contact and new means of developing trust are needed when technology reduces face-to-face contact (O’Connell, 1988). In fact, diminishing face-to-face contact in several organizations has altered the social structure of these organizations. Furthermore, research has shown that while media messages are important for acquiring information, interpersonal channels are more important for influencing behaviors (Schuster *et al.*, 2006).

Similarly, the physical structure of the organization may influence the social relationships between individuals. For one, Oldham and Brass (1979) contend that open office plans facilitates the development of social relationships between employees because of increased opportunity to socialize and increased information flow. Furthermore, organizations become boundaries for “trust production.” As Zucker, Darby, Brewer, and Peng (1996) explain, trust is an important element in social influence and “by defining the group of others who are likely to be open to social influence reciprocally, determines where the information boundaries will be drawn” (p. 93). In other words, within the organization, individuals may have certain social networks which they will trust during the process of social influence.

In addition to implications for health campaigns *per se*, this research also has implications for organizational theory and for issues of campaign design. This work posits a new direction for examining features of the organization beyond the usual static features of physical layout and suggests that physical layout interacts with other organizational structures in ways that change organizational communication processes. This area of research may prove fruitful for those interested in design issues as they relate to both organizations and health campaigns (e.g., Aakhus, 2007; Harrison & Morrill, 2004; Jackson, 1998). The design perspective as advanced by Harrison *et al.* (2009) suggests that the systematic design of messages and interactions to attain specific goals must also take into account the structural features of organizations. The findings support that argument and suggest that each organization has a unique set of features that require unique campaign design.

Although this paper offers the beginnings of general theory of organizational features relevant to health campaigns, it is important to note that this particular study examines one health issue (i.e., organ donation) with a specific type of campaign (i.e., promotion versus detection or prevention). There are a myriad of health concerns that may be addressed in the organizational setting and numerous ways to create and implement a campaign targeting those issues. Although the interplay between

the organizational context and each of these types of campaigns may be different, this particular campaign represents a starting point in theorizing about relevant organizational factors. Future research will need to examine organizational features of a variety of workplace-based health campaigns.

## Conclusion

This study demonstrated significant findings related to the communicative processes of organizations and inversely to the signing of organ donor cards. Our early analogy of the organization's environment functioning like a set of pinball bumpers for campaign messages to bounce around still seems relevant for this study. Organizations' characteristics such as interactive work styles, moderate size, strong individual social structures and relationships, and a strong information structure all influenced the frequency of communication about organ donation and the level of communicative peer influence. However, those conducting campaigns in organizations should be cautious in interpreting these findings. Increased communication and peer influence are not always a good thing, as evidenced by our lack of positive findings on intention and behavior toward signing an organ donor card. The results also suggest that the relationships between individual factors and campaign outcomes can vary depending on the organization.

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## Notes

- 1 Workplaces are argued to have emerged "as a complement to or replacement of the 'catchment areas' of communities, family systems, and public schools" (p. 503). This argument is not surprising given the amount of time individuals spend at work and the decreased amount of time they spend with friends, family members, and others in their community (Putnam, 2000). The argument is well supported by scholars of organizational communication that see the workplace as a community characterized by commitment, trust, and interpersonal relationships (Boessenkool, Leisiuk, & Verweel, 2003; Harrison & Doerfel, 2007; Morgan, 2009).
- 2 Because we are testing these arguments using an organ donation campaign, we are framing our hypotheses and research questions to represent this particular type of campaign.

- 3 At the time this study began, wikis, instant messaging, and social networking were relatively unheard of in organizational contexts and no organizations in our study indicated other forms of electronic communication beyond what is defined in our measures. Given the rapid changes in technology and virtual communication, these and newer forms should be considered in future research.
- 4 Bulletin boards and break rooms could arguably be considered physical structures, but because they are used as information posts, we classify them as information structures.
- 5 Tables presenting organizations, demographics, descriptive statistics for organizational and individual variables, and continuous variables intercept-only model are available on the author's website.

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## 重访健康宣传活动的宣传地：多地点器官捐赠宣传活动的启示

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### 【摘要：】

本文是探讨组织特征通用理论的开端，以利于理解为何在一个组织效果良好健康宣传活动在其他组织却没有良好的效果。我们将组织的物理结构、社会结构和信息结构理论化以创造了一个交互环境，该环境因组织而异，并以此左右健康宣传活动。为了验证该论点，作者在 46 个组织进行了器官捐赠宣传活动。多级模型产生了复杂的研究结果：物理结构与签署器官捐赠卡呈负相关，社会结构和信息结构与和合作者沟通捐赠情况以及朋辈影响呈正相关，行业类型与知识改变呈正相关。



## Revisiting the worksite in worksite health campaigns: Evidence from a multi-site organ donation campaign

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### **Der Aspekt „Arbeitsplatz“ im Hinblick auf Gesundheitskampagnen am Arbeitsplatz: Ergebnisse einer standortübergreifenden Organspendekampagne**

Dieser Artikel erweitert die Ansätze einer allgemeinen Theorie der Eigenschaften von Organisationen, um besser verstehen zu können, warum Gesundheitskampagnen in der einen Organisation gut funktionieren während sie in der anderen ineffektiv sind. Die physische und soziale sowie die Informationsstruktur von Organisationen werden theoretisch beleuchtet, um ein Interaktionsumfeld zu schaffen, das individuell für jede Organisation ist und das Gesundheitskampagnen beeinflusst. Um diese Argumentation zu testen, wurde eine Organspendekampagne in 46 Organisationen durchgeführt. Die Multi-Ebenen-Modellierung erbrachte verschiedene Ergebnisse. Die physische Struktur hing negativ mit einer Unterschrift auf dem Organspendeausweis zusammen. Sozialstruktur und Informationsstruktur waren hingegen positiv assoziiert mit der Kommunikation mit Kollegen über Organspende und dem kommunikativen Peer-Einfluss. Der Industrietyp hing positiv mit Änderungen auf der Wissensebene zusammen.

## 작업장건강캠페인들에서의 작업장 재고려: 다면적 장기 기증 캠페인으로부터의 증거

### 요약

본 논문은 한 조직에서 잘 운용되는 건강 캠페인들이 다른 조직에서는 효과적이지 않은지에 대한 이해를 돕기 위한 조직적 측면에서 나타나는 일반이론의 처음단계를 진전시키고자 한 것이다. 조직들의 물리적 구조들, 사회적 체계들, 그리고 정보 체계들이 이론화 되었는데, 이는 각 조직에 독특하고 보건 캠페인들에 영향을 미치는 상호작용 환경을 창조하기 위한 것이다. 이러한 논의를 테스트하기 위해, 장기기증캠페인이 46 개 기관들에서 시행되었다. 다면적 모델링은 혼합된 결과를 산출했다. 물리적 구조는 장기 기증자 카드에 사인하는 것과 부정적으로 연계되는 것으로 나타났다. 사회적 구조와 정보적 구조는 장기기증과 상호소통하는 동기간 영향력에 있어 동료들과의 커뮤니케이션에 있어서 긍정적으로 연계되는 것으로 나타났다. 반면, 산업 구조는 지식교환과 긍정적으로 연계되는 것으로 나타났다.

Re-visitando el Lugar de Trabajo en el Lugar de Trabajo de las Campañas de Salud: La  
Evidencia de una Campaña de Donación de Órganos en Múltiples Sitios

Resumen

Este manuscrito adelanta los comienzos de una teoría general de las características organizacionales para ayudar a entender porqué las campañas de salud que trabajan bien en una organización pueden ser inefectivas en otra organización. Las estructuras físicas, las estructuras sociales, y las estructuras de la información de las organizaciones son teorizadas para crear un ambiente de interacción que es distinto en cada organización y que influye en las campañas de salud. Para poner a prueba este argumento, una campaña de donación de órgano fue conducida en 46 organizaciones. El modelo de nivel múltiple produjo resultados mixtos. La estructura física fue asociada negativamente con la firma de la tarjeta de donador de órgano. La estructura social y la estructura de la información fueron asociadas positivamente con la comunicación con los compañeros de trabajo acerca de la donación y la influencia comunicativa de la influencia de los pares. El tipo de industria fue asociado en forma positiva con el cambio de comportamiento.

Revoir le lieu de travail dans les campagnes de promotion de la santé en milieu de travail :  
résultats d'une campagne multisite en faveur du don d'organes

### Résumé

Cet article propose les premiers éléments d'une théorie générale des caractéristiques organisationnelles afin d'aider à comprendre pourquoi une campagne de promotion de la santé qui fonctionne bien dans une organisation peut être inefficace dans une autre. Nous concevons que les structures physiques, sociales et informationnelles des organisations créent un environnement interactionnel spécifique à chaque organisation et qui influence les campagnes de promotion de la santé. Pour vérifier cette idée, une campagne en faveur du don d'organes a été menée dans 46 organisations. Une modélisation à plusieurs niveaux a donné des résultats mitigés. La structure physique était associée négativement au fait de signer une carte de don d'organes. La structure sociale et la structure informationnelle étaient positivement associées à la communication entre collègues concernant le don et à l'influence communicationnelle des pairs. Le type d'industrie était associé positivement au changement dans les connaissances.