Health Care Institutions, Communication, and Physicians' Experience of Managed Care: A Multilevel Analysis

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Abstract

This study uses the institutional theory of organizational communication (ITOC) to explain physicians' reactions to managed care. ITOC posits that enduring beliefs and practices both transcend and shape particular organizations and organizing. We found that physicians' institutional beliefs moderated the negative relationship between managed care medical practice and satisfaction. ITOC also posits that the negotiation of institutional, environmental, organizational, and individual factors occurs through communication. Controlling for these factors, communication with managed care representatives remained significantly and positively related to satisfaction. The results provide support for ITOC and macro approaches to organizational communication research and offer insights for the management of professionals in general and physicians in particular.

Health Care Institutions, Communication, and Physicians' Experience of Managed Care: A Multilevel Analysis

Recent theoretical work has explored the institutional character of communication (Lammers & Barbour, 2006; Phillips, Lawrence, & Hardy, 2004) as a way to contribute to organizational communication scholarship (Kuhn, 2005; McPhee & Zaug, 2000). Such theorizing has argued that as macro-level phenomena, institutions influence micro-level communication behavior, even as that behavior constitutes institutions. However, actually modeling and studying institutions and individual behaviors simultaneously presents a research challenge that is not easily overcome. Organizational communication scholarship tends to be dominated by a focus on communication among individuals in specific organizations (Jones, Watson, Gardner, & Gallois, 2004), whereas an institutional view suggests investigations across multiple organizations and at multiple levels of analysis. To pursue such an investigation, we focused on the influence of management processes in health care and in particular on a puzzle, physicians' inconsistent reports about managed care. An application of Lammers and Barbour's (2006) institutional theory of organizational communication (ITOC) can contribute an explanation of physicians' different reactions to managed care (e.g., satisfaction with their position or with managed care organizations), and in so doing demonstrate the utility of an institutional perspective on organizational communication research.

The concept of institution has been invoked widely in organizational communication scholarship (Conrad & Haynes, 2001; Deetz, 1992; Finet, 2001; J. R. Taylor, Flanagin, Cheney, & Seibold, 2001). Flanagin, Stohl, and Bimber (2006) applied the concept to the structure of collective action as a "mode of engagement" characterized by "normative rules to be followed by all participants involving little control on the part of individuals" (p. 37). Phillips et al. (2004)

identified the production of self-policing texts as a defining feature of institutions where violating institutional orders carried cognitive, social, and economic costs. According to Lammers and Barbour (2006), the sociological literature on institutions and organizations views institutions as consisting of "rule-like beliefs, behaviors, or practices; they tend to be fixed, enduring, formal, and independent of organizations; and they act as real but unseen constraints on organizing…at both the microlevel within organizations and at the macrolevel across organizations" (p. 360, 362). In seeking to specify a role for organizational communication in sustaining institutions, Lammers and Barbour defined institutions as "constellations of established practices guided by formalized, rational beliefs that transcend particular organizations and situations" (p. 364). Expanding on this definition of institution, we see institutional beliefs as propositions that participants hold as true related to established norms that cut across organizations. In the case of physicians, these propositions or institutional beliefs relate to autonomy, self-regulation, and the role of management in medicine. We view this approach as appropriate for considering organizational communication that is locally situated and also widely established, such as that found in health care organizing.

Managed care, the currently dominant mode of health care organization and financing in the United States (Miller & Ryan, 2001, p. 91), represents just such institutional phenomena. W.R. Scott, Ruef, Mendel, and Caronna (2000) observed, "managed care organizations bring into close association operations that had traditionally been widely separated and segregated because of physicians' fears that financial controls could jeopardize their autonomy" (p. 41). However, research results regarding physicians' experience of managed care have been uneven. As we detail below, some research has found physicians experienced with managed care to be less satisfied than physicians in alternative settings, whereas other research has found physicians'

experience with managed care to correlate with similar or higher satisfaction compared to those in other work arrangements. A careful consideration of physicians' institutional beliefs and communication behaviors, in conjunction with their different work settings, can assist in sorting out how their reactions to managed care will differ. In applying ITOC to the case of physicians and managed care, we argue that physicians are participants in organizing who, as professionals, have multiple and varying institutional affiliations independent of their specific organizational affiliations. Moreover, we see communication as the process by which institutional beliefs and managed care arrangements interact to influence physicians' satisfaction. Specifically, we demonstrate that physicians' communication with managed care organizations and their institutional beliefs influence their satisfaction independent of their specific work settings. In taking such an approach, we hope to help to resolve the aforementioned contradictory findings and demonstrate the value of an institutional approach.

Beginning with the practical problem under study, we first review the research on physicians' experience of managed care, focusing on physicians' satisfaction as an indicator of the quality of that experience. We highlight two sets of contradictory findings: First, research has shown that managed care may indeed have deleterious effects on physician satisfaction, but in its myriad forms, it is not always dissatisfying. Second, research has argued that managed care is dissatisfying for physicians, because it threatens their autonomy, but sustaining autonomy does not always coincide with increased satisfaction. To account for these inconsistencies, using ITOC as a framework, we posit a model of the communication between managed care representatives and physicians as influenced by physicians' institutional beliefs (see Figure 1).

We articulate this model with four sets of hypotheses about physicians' reactions to managed care. We analyze data from a survey of physicians (n = 1,049) nested in medical

practices (n = 492) and present multileveled models of these data to test the hypotheses and control for nonindependence in the data. Too few studies of physicians and managed care have included data from multiple organizations, limiting the external validity of findings. Even fewer have considered communication between managed care representatives and physicians, limiting the explanatory power of the research. Addressing these limitations offers a valuable contribution to the literature on physicians' experience of managed care.

The results provide support for ITOC and the applicability of an institutional approach for organizational communication research. Although physicians in our sample practicing in arrangements typical of managed care were less satisfied than others, institutional beliefs moderated the relationship between experience of managed care and satisfaction. Moreover, we found that professional commitment was related to satisfaction regardless of the practice situation. Additionally, controlling for organizational and institutional factors, the association between physicians' communication with managed care representatives and satisfaction remained. This finding demonstrates the value of communication as a source of explanations in the study of health care organizing. Moreover, understanding the institutional aspects of professional identity and behavior may contribute to successful communication between professionals and managers. After reviewing these findings in more depth, we discuss the limitations of this project and directions for future research.

Physicians and Managed Care

Managed care has become a catch-all term for changes in the U.S. health care sector (Bodenheimer & Gurumback, 2005; W. R. Scott, Ruef, Mendel, & Caronna, 2000), but the term belies the complexity and variety of changes involved (Hacker & Marmor, 1999). It involves changes in how we provide and finance care, as well as changes in how we understand and give

meaning to health care. Before managed care, most health care was paid for on a fee-for-service basis. Physicians diagnosed illnesses and prescribed treatments, hospitals and physicians set prices, and patients, insurers, employers, and governments paid. Physicians' professional dominance (Starr, 1982) meant that their own judgments determined what services would be rendered, and whether those services would be delivered in inpatient or outpatient settings. The full range of choices in delivery of medical services, from length of hospitalization to use of particular drugs, as well as the fees to be charged, was entirely under the control of physicians (Freidson, 1986). In the middle of the 20th century, rising health care costs spurred lawmakers and business leaders to place administrative and contractual controls on health care, introducing an alternative set of requirements for the accomplishment of health care. Managed care—it was hoped—would reign in spending while improving the quality and accessibility of health care through better management.

Lammers, Barbour, and Duggan (2003) observed that the crux of management in health care is formal, contractual arrangements between patients, providers, and plan administrators that specify ways patients receive care, ways organizations and practitioners provide care, and ways governments, employers, and insurance companies pay for care. The new arrangements resulted in increased pressures for efficiency in medical practices, and in the proliferation of organizational forms that express those pressures, such as health maintenance organizations (HMOs), preferred provider organizations (PPOs), and ambulatory care centers (Christensen, Bohmer, & Kenagy, 2000; Lammers, Barbour, & Duggan, 2003). Managed care thus presents multiple changes at multiple levels for health care professionals (Apker, 2001; W. R. Scott, Ruef, Mendel, & Caronna, 2000).

Researchers have studied physicians' experience of managed care in particular, because physicians are central to health care organizing and patient care (Mechanic, 2003; Roter, 2000). Any negative effects on them—it has been postulated—might in turn hurt patients by impinging on the physician-patient dyad (Lammers & Geist, 1997). Research has demonstrated that arrangements typical of managed care (e.g., practice in HMOs, gatekeeping responsibilities, fewer fee-for-service patients, administrative load, time pressures, and contractual arrangements that shift financial risks to physicians) may indeed threaten physicians' mental and physical health, autonomy, professional identity, ability to provide high-quality care, and practice satisfaction (Mechanic, 2003; Williams et al., 1999; Williams & Skinner, 2003).

Much research has focused on physician satisfaction in particular as an overall indicator of physicians' experience of managed care (Burdi & Baker, 1997; Hadley & Mitchell, 1997; Schultz, Scheckler, Moberg, & Johnson, 1997). Past research has demonstrated that physician satisfaction sits in a web of other important outcomes (Bunderson, 2001; Hoff, 2001; Linzer et al., 2000). For example, dissatisfied physicians are more likely to report less open relations with patients, less responsiveness to patients, and less attention to the psychosocial aspects of care; physician dissatisfaction has also been linked to higher turnover and loss of productivity (Williams & Skinner, 2003).

Despite these concerns, explaining what about managed care makes physicians more or less satisfied has proven difficult. For example, research findings indicate that arrangements typical of managed care are not always dissatisfying for physicians in every organizational setting. Hadley and Mitchell (1997) found that an increase of 20% in the number of patients covered by managed care plans doubled the likelihood that physicians would report dissatisfaction with practice, but Burdi and Baker's (1997) study of younger physicians found no

reliable association between increasing HMO market share and physician dissatisfaction. Indeed, Schulz, Scheckler, Moberg, and Johnson (1997) found that physicians grew *more* satisfied with practice in HMOs over time.

Researchers have turned to physician autonomy to resolve the inconsistent findings, believing threats to physicians' autonomy central to their dissatisfaction. Hadley and Mitchell's (2002) longitudinal study revealed the importance of autonomy. They found that controlling for changes in income and autonomy, managed care measured by HMO growth had no effect on satisfaction. Still, not all physicians crave autonomy per se, and the incorporation of autonomy has not uniformly predicted physicians' reactions to managed care (Bunderson, 2001; Hoff, 2001). For example, Linzer et al. (2000) found that HMO physicians expressed high levels of autonomy, but were still dissatisfied with how the administration served their medical practice. HMO physicians were more likely to leave despite their autonomy.

These inconsistencies suggest the need for a more nuanced view of physicians' experience of managed care. For example, physicians' beliefs include more than the need for autonomy. Their values also emphasize at the very least the status of the profession, a sense of responsibility to the patient, quality of care, and egalitarianism (Horowitz, Suchman, Branch, & Frankel, 2003). Hoff (2001) argued that viewing physicians as lockstep in favor of autonomy and resistant to managed care oversimplifies physicians' experience as organizational members. Bunderson (2001) demonstrated that physicians can react to the same managed care arrangements in different and contradictory ways and explained the paradox as rooted in the varying ideologies that apply to physicians' work.

Past research has also measured managed care in limited ways and taken an overly uniform view of physicians' professional affiliations. Physicians' experiences with managed care

have often been measured in only one way (e.g., practice in an HMO, number of managed care patients, or number of managed care contracts), and research has with few exceptions ignored the communication between managed care organizations and physicians. Measuring multiple aspects of managed care, including physicians' beliefs and communication behaviors, may help resolve the inconsistencies. We therefore turn to a model of physicians' reactions to managed care based on ITOC.

An Institutional Perspective on Managed Care Change

As a framework for explaining physicians' experience with managed care, ITOC draws attention to the institutional and communicative, as well as the organizational aspects of that experience. The crux of institutional theory is the search to understand forces that operate outside of day-to-day organizational life but nonetheless influence and are sustained through organizing (Powell & DiMaggio, 1991; W. R. Scott, 2001). However, whereas past institutional scholarship has treated communication as a black box, Lammers and Barbour's (2006) ITOC specifies institutions for communication researchers. Their explication emphasized that institutions are manifested in practices and beliefs (Jepperson, 1991); that individuals enact institutions (Giddens, 1984); that communication involving institutions has a bias towards reproduction (Tsoukas & Chia, 2002, p. 569) and thus institutions change slowly (Galvin, 2002; Orlikowski & Barley, 2001); that institutions involve formal communication (Cooren, 2004; W. R. Scott, 2001); and that institutions have a rational or means-ends orientation; that is, they prescribe ways of getting things done (Meyer & Rowan, 1977). Lammers and Barbour defined institutions based on this explication as "constellations of established practices guided by formalized, rational beliefs that transcend particular organizations and situations" (p. 364).

To apply ITOC involves identifying the dominant modes of practice and beliefs in particular realms. Lammers and Barbour (2006) argued for example that the university system in the U.S., with its routines of classrooms, accreditation, and commencements, represents the prevailing institution of education in the U.S., though within that realm, the established practices and beliefs of research, teaching, and fund-raising may compete for individuals' loyalty and attention. Thus, we may say that within a realm more than one set of beliefs and their associated practices may be identified in the behavior and beliefs of individuals.

In the ITOC frame, physicians as professionals carry competing institutions, that is, established beliefs and practices, into organizing. Their communication with other providers, patients, administrators, managers, nurses, technicians, and managed care representatives about those beliefs and practices constitutes, in part, the organizing of medicine. The various institutions of medicine posit different and potentially contradictory means-ends statements (i.e., different arguments about how health care should be accomplished). Also according to ITOC, formal arrangements shape institutional communication, and physicians' relationships with managed care are based on contracts. Physicians therefore are participants in medical organizing who also have attachments to extra-organizational entities and hold beliefs by virtue of those attachments (e.g., professional memberships, contractual arrangements, and associated beliefs).

Indeed, the salient characteristic of professionals for the study of organizations is their extra-organizational connections and beliefs (Abbott, 1988; C. R. Scott, 1997). In a rare study of physicians in multiple organizational contexts, Alexander et al. (2001) argued that physicians' experience with managed care "may reflect the fact that, unlike most organizations, health care systems have traditionally operated with a production core of physicians that has been loosely affiliated with the formal organization and whose professional values emphasize autonomy and

freedom from bureaucratic control" (p. I31). Iedema, Degeling, Braithwaite and White's (2003) discourse analysis of the communication of a doctor-turned-manager similarly centered on how the physician had to negotiate the dual pulls of managing and doctoring.

Specifying Health Care Institutions

ITOC suggests that an attempt to understand the institutional aspects of particular communication phenomena should begin by explicating the institutions involved (Lammers & Barbour, 2006, pp. 369-370). Scott et al. (2000) described the advent of managed care as a period of profound institutional changes in health care. They argued that such profound institutional change involves multiple levels, and involves rules, governance structures, logics, actors, meanings, relations among actors, population boundaries, and field boundaries, among patients, providers, and managers. They described the evolution of the dominant belief structures in the health care sector in terms of three institutional eras: quality (1945-65), equity (1966-82), and cost (1983-present). According to Scott et al., institutions of cost, dominant at present, represent an "era of managerial controls and market mechanisms," emphasizing the efficiency of services (p. 21). Lammers et al. (2003) concurred that, "managed care represents the rise of norms of efficiency and market values in what until recently was a sector defined by sacred intangible and untestable beliefs about the importance of the patient-provider relationship and public trust" (p. 334). Managed care suggests that by applying management doctrine and tactics (e.g., utilization review, evidence-based medicine, electronic medical records, and primary care givers as care gatekeepers) health care may be improved and controlled akin to the factory floor (Lammers & Geist, 1997). According to Scott et al., the older institution of quality represents instead the dominance of physicians' professional judgments and the singular importance of patient outcomes. Left unsaid in Scott et al.'s analysis were the extent to which individual

physicians actually subscribe to dominant institutions, and the role that physicians' communication experiences with managed care entities might play. In the next section, we propose hypotheses to consider the relationships between physicians' beliefs, experiences, and satisfaction guided by ITOC.

A Model of Physicians as Institutional Members

Our application of ITOC in the following hypotheses builds on past research by examining physicians' satisfaction in context of their organizational situations while accounting for their beliefs and the communication with managed care entities. ITOC underscores the importance of modeling potential conflict between institutions. We consider the institutions of cost and quality, because past research suggests that physicians must negotiate these two institutions in practice (Iedema, Degeling, Braithwaite, & White, 2003). In general, managed care has been construed as a threat to physicians' traditional beliefs about quality, and therefore, arrangements typical of managed care should be negatively related to physician satisfaction, thus:

H1a. The greater the physicians' exposure to arrangements typical of managed care, the lower physicians' level of satisfaction with their positions will be.

H1b. The greater the physicians' exposure to arrangements typical of managed care, the lower physicians' level of satisfaction with managed care will be.

These hypotheses are consistent with the argument made in much research on physicians' experience of managed care (Mechanic, 2001, 2003); however, we see this first set of hypotheses as only a starting point. After all, managed care has also been shown to be satisfying in some cases. Therefore, following ITOC, we would predict that arrangements typical of managed care would only have a negative influence on satisfaction to the extent that physicians also hold

beliefs antithetical to the institutions of cost. Likewise, physicians' acceptance of beliefs consistent with the institutions of cost should help physicians experience satisfaction in managed care settings:

> H2a. Physicians' institutional beliefs will moderate the relationship between exposure to managed care arrangements and physicians' satisfaction with their positions.
>
> H2b. Physicians' institutional beliefs will moderate the relationship between exposure to managed care arrangements and physicians' satisfaction with managed care.

As suggested by ITOC, our model also predicts that the communication between managed care representatives and physicians should be associated with physician satisfaction above and beyond the influence of individual predispositions, organizational structures, and institutional beliefs, and so:

> H3a. Controlling for individual, organizational, and institutional factors, physicians' satisfaction with managed care communication will be positively related to their satisfaction with their positions.
>
> H3b. Controlling for individual, organizational, and institutional factors, physicians' satisfaction with managed care communication will be positively related to their satisfaction with managed care organizations.

Central to ITOC are the claims that institutional beliefs endure in organizing, that organizing occurs in communication, and that individuals co-enact their institutional beliefs in that communication (Lammers & Barbour, 2006). The next set of hypotheses model the influence of those institutional factors on communication between physicians and managed care representatives. Physicians who are highly committed to the profession of medicine and who hold beliefs consistent with the institutions of quality would report more dissatisfaction with

their communication with managed care representatives, but physicians open to the institutions of cost would report more satisfaction with their communication with managed care representatives. Thus, to explore further the communication between managed care representatives and physicians, we hypothesize that:

H4a. Physicians' satisfaction with managed care communication will be inversely related to their commitment to the profession of medicine and beliefs in the institutions of quality.

H4b. Physicians' satisfaction with managed care communication will be positively related to their beliefs in the institutions of cost.

To test these hypotheses, we employed the following methods.

Methods

Participants and Sample Design

The principal method of our research was a survey of physicians in multiple organizational and geographic settings to encourage both organizational and institutional variance as suggested in Lammers and Barbour (2006, p. 370). Three cities matched by population were selected based on the level of HMO penetration in their respective states. HMO penetration refers to the percentage of patients enrolled in HMOs. Metropolitan areas in states with high (53.5%), medium (25.1%), and low (18.5%) levels of HMO penetration were selected. One thousand participants were randomly selected in each metropolitan area (Following human subjects protection guidelines to protect the privacy of our participants, we have withheld the names of the metropolitan areas). For the purposes of these analyses, the sites were then combined into one data set.

Medical society directories served as sampling frames, because belonging to local associations is the norm rather than the exception among physicians. Also, the small cost of joining a local medical society is outweighed by the potential for patient referrals. Moreover, physicians' employers or medical groups often pay the membership fee, and there is an expectation among physicians that they will belong. The directories provided information such as membership in the American Medical Association (AMA), specialty, and board certification that proved useful in comparing respondents and non-respondents.

Data Collection

Questionnaire and mailing design followed the guidelines for mailed survey research suggested by Dillman (1999). Each questionnaire contained forty-four items and was numbered to monitor responses. Using a combination of addresses, archival data, and website information, each respondent was also assigned an organizational code. In addition, each organizational code was assigned a value representing the number of physicians in each practice based on archival sources as of June 2000. For this analysis, we used medical group membership figures to indicate practice size. For example, if a respondent worked in a five-member clinic as a part of a forty-member medical group, we included that respondent as a member of the forty-member group. Table 1 presents scale reliabilities and descriptive statistics of the variables measured. An illustration of our conceptual model including the variables used is provided in Figure 1.

Measuring Managed Care

Because managed care is not a singular phenomenon, it is not advisable (and perhaps impossible) to measure exposure to managed care with a single variable. The combinations of arrangements that are typical of managed care (e.g., organizational, financial, and contractual arrangements that emphasize efficiency and cost control) are too varied. Instead, it is necessary

to measure and model multiple aspects of managed care. Such aspects include individual physician characteristics, organizational and environmental facets typically influenced by the growth of managed care, physicians' institutional beliefs, and physicians' perceptions about their communication with managed care representatives. We discuss each in turn below.

Measuring Individual Preconditions

Preconditions that in the past have been associated with physicians' experiences with managed care included specialty (Linzer et al., 2000), gender (Carr et al., 1998; McMurray et al., 2000), and years of practice (Hadley & Mitchell, 2002; Sturm, 2002). These control measures represented aspects of individual physicians' distinct experience that they bring to organizing, separate from and occurring before their organizational entry.

Measuring Organizational and Environmental Facets

Aspects of the organization were measured through archival research. Using the archival data discussed above, we identified each physicians' practice site and the practice size. These are the group-level or second-level variables in the analyses allowing us to control for nonindependence between respondents practicing in the same organization. Much of the literature examining physicians' experience of managed care has seen practice in larger organizations as typical of managed care (for example, as an employee instead of a independent contractor). Indeed, there has been a growth trend in the size of medical practices since the advent of managed care (Lammers, Barbour, & Duggan, 2003, p. 323).

Physicians' exposure to managed care present in the organizational environment was also measured as the number of managed care contracts to which a physician was a party and the percentage of his or her patients paying by the traditional fee-for-service method. Contracts and

patient loads represent financial agreements among organizations beyond the physician's specific practice.

Measuring Institutional Aspects of Physicians Experience of Managed Care

We measured physicians' commitment to the profession of medicine and specific institutional beliefs about the practice of medicine to tap the institutional factors shaping their experience of managed care. We used three scales from past health services research and a new measure created for this research. Each scale consisted of Likert-type items ranging from 1 (strongly disagree) to 5 (strongly agree).

We have argued that a primary characteristic of professions is extra-organizational attachments. Professional commitment serves as a measure of physicians' attachment to the profession of medicine. Physicians' professional commitment was measured using Hoff's (2000) scale, which included items such as, "I am proud to tell others that I am part of this profession," aimed at assessing the physicians' general commitment to the profession of medicine.

We also measured physicians' acceptance of particular institutional beliefs using Hoff's (2000) belief in autonomy and belief in self-regulation scales. For example, the statement "only a physician can fully evaluate another's medical judgments," represents an institutional belief tapped by the belief in self-regulation scale. The statement, "individual physicians should be left alone to exercise their own judgment in their work," represents an institutional belief in autonomy. Each of the Hoff scales were reliable in past research (Cronbach's $\alpha = 0.84$ for Hoff's professional commitment scale, 0.88 for the belief in self-regulation scale, 0.75 for the belief in autonomy scale, pp. 1442-1443).

An aspect of physicians' professional identity not yet considered by researchers was how open physicians might be to the institutions of cost. The openness to managed care scale,

developed for this project, measured physicians' level of acceptance of beliefs consistent with institutions of cost. The scale included the following items: "My practice improves when I am responsible to a health plan," "Physicians should be regarded as team members rather than as team captains in health services," "A large organization provides better medical services than a small one," "Solo practices are inefficient means of delivering health services," "Physicians who have business sense make better practitioners," and "Well-informed management practices lead to the best medicine."

Measuring Physicians' Communication with Managed Care

Physicians' perceptions of the communication between themselves and managed care organizations were operationalized as their reported frequency of communication between physicians and six different managed care representatives: (a) utilization review committees, (b) utilization review nurses, (c) utilization managers, (d) managed care contract managers, (e) insurance reimbursement officers, and (f) Medicare reimbursement officers. The question asked, "In your main mode of practice, about how frequently do you communicate (face-to-face, electronically, or in writing) with the following people?" and offered six response alternatives: daily, weekly, monthly, quarterly, yearly, and never. The responses were recoded to the common denominator of times per year and summed to provide an overall indicator of amount of contact involved in the relationships. The degree of satisfaction with the communication between the physicians and with managed care organizations was measured similarly. We asked, "In your main mode of practice, how satisfying to you is your communication with the following people?" The same roles were identified and assessed using a five-point scale ranging from very dissatisfying (1) to very satisfying (5) and not applicable.

Measuring Physician Satisfaction

Taking physician satisfaction as a dependent variable offers a metric that is comparable with past research and important in its own right. The dependent variables, physicians' satisfaction with their positions and their satisfaction with managed care organizations provided overall measures of physicians' experience of managed care. The evaluation of the position satisfaction was operationalized using the item, "All in all, how satisfied are you with your present position?" Physicians' evaluations of managed care organizations generally was operationalized using the item, "All in all, how satisfied are you with the managed care organizations with which you contract or work?" Response alternatives to these questions ranged from very dissatisfied (1) to very satisfied (5). Although using single-item measures is not ideal, to avoid overburdening our participants, we relied on past research that has demonstrated that single item measures have produced lower but "respectable levels of reliability" (Judge, Parker, Colbert, Heller, & Ilies, 2001, p. 33).

Results

Response Rate

The overall response rate, calculated by dividing the number of responses (n = 1,049) by the number surveyed (N = 3,000) and excluding any undeliverable letters (n = 289) was 38.7%. Using chi-squared tests, few significant differences were found between respondents and non-respondents. Non-respondents were no more or less likely than respondents to be board certified, to belong to the AMA, or to be male or female. Respondents were slightly less likely to practice primary care than specialist care (w = .04, p = .03, df = 2). Respondents were also more likely to come from a region with high HMO penetration (w = .13, p < .01, df = 2). For the purpose of this analysis participants with missing data were removed. This resulted in different subsamples for each dependent variable (896 physicians in 489 practices for the analysis of satisfaction with

position, 824 physicians in 449 practices for satisfaction with managed care organizations, and 685 physicians in 417 practices for satisfaction with communication with managed care representatives).

The mean response per practice was 1.82 participants (*SD* = 6.68). There were 195 solo practices each represented by one participant, and 58 partnership practices represented by one (*n* = 53, 91.4%) or two (*n* = 5, 8.6%) participants. Excluding solo practices and partnership practices, there were data available from an average of 2.66 (*SD* = 9.49) participants per practice. The majority of the 239 group practices were represented by one (*n* = 143 practices), two (*n* = 44 practices), or three (*n* = 29 practices) participants. Between four and twenty-eight participants per practice accounted for most of the remaining practices (*n* = 22), and 143 of the participants belonged to a large group from the region of highest HMO penetration. Another way of understanding response per practice is to compare the number of respondents per practice to the total number of physicians in a practice. Excluding solo and partnership practices, the response per practice was 30.01% (*SD* =21.1).

Despite the relatively large number of practices represented by only one physician in these data, multilevel analysis is the appropriate analysis strategy. An individual-level analysis would ignore the nonindependence in the data suggested by the intraclass correlations in Table 2. An analysis using data aggregated to the practice level would waste individual-level information reducing the available power, fostering problems of interpretation, and making the examination of solo practices along with the other practices impossible. Although the practices with only one physician do not contribute information to the within practice variance, they do contribute information to the between practice variance. Despite the fact that this approach precludes the

examination of random slopes or aggregated variables, retaining the practices with only one physician is the best use of the available information.

Descriptive Presentation of Data

Table 1 contains descriptive statistics for the individual-level variables, zero-order correlations, and reliabilities of the scales. Each scale was satisfactorily reliable. Reliability scores (Cronbach's α) ranged from .69 to .95. The mean practice size was 13.45 (*SD* = 58.56). The median practice size was 2.00, and seventy-five percent of practices included fewer than 7 physicians. The data contain a mix of solo and partnership practices, small and large group practices, and very large prepaid group practices. Solo practices (*n* = 195) and partnership practices (*n* = 58) represented the smallest practices, and the data also contained very large practices (i.e., practices with 30 physicians or more, *n* = 32; practices with 100 physicians or more, *n* = 12; practices with 500 physicians or more, *n* = 4; practices with 750 physicians or more, *n* = 1). Most of the practices came from the region with the medium level of HMO penetration (*n* = 213, 43.3%) as opposed to the lowest (*n* = 151, 30.7%) or highest (*n* = 128, 25.8%) regions of HMO penetration.

Multilevel Models for Hypothesis Testing

Multilevel models were constructed using HLM 6.0 (Raudenbush & Bryk, 2002). Multilevel modeling allowed for the simultaneous analysis of different levels of measurement (individual and practice) without violating statistical assumptions such as independence of observations. Raudenbush and Bryk (2002) have indicated that large differences between the OLS and robust standard errors can indicate a model misspecification (pp. 276-280). We examined the differences between the standard errors in each of our models. We found only negligible differences, and robust standard errors are reported thought the results.

The main outcome variables included physicians' satisfaction with position, satisfaction with managed care, and satisfaction with communication with managed care representatives. As an indicator of the degree to which these vary at the individual and organizational levels, Table 2 presents the results of an intercept-only analysis of each outcome. Tables 3 and 4 present the models of the measures of satisfaction with position and of satisfaction with managed care organizations including significant interactions. Overall, these models significantly improved on the intercept-only models. Adding these variables accounted for additional variance in satisfaction with position (33% reduction of variance at the practice level, 25% reduction of variance at the individual level) and satisfaction with managed care organizations (62% reduction of variance at the practice level, 18% reduction of variance at the individual level). Variables measuring physicians' exposure to arrangements typical of managed care included the number of managed care contracts, the percentage of patients paying fee-for-service, practice size, and the frequency of communication with managed care representatives. The models of these exposure variables also included individual controls for gender, years of practice, and specialty (primary versus specialty).

Consistent with hypothesis 1a, exposure to managed care was correlated with physicians' satisfaction with their present positions. The frequency of physicians' reported communication with managed care representatives (γ = -0.0004, SE = .0002, p = .01) was negatively correlated with satisfaction with position. Practice size, the number of managed care contracts, and percent of patients paying fee-for-service produced interactions with the institutional variables when predicting satisfaction with position, and are discussed further below.

Consistent with hypothesis 1b, exposure to managed care, measured by the frequency of communication with managed care representatives, was also significantly correlated with

physicians' satisfaction with the managed care organizations with which they contract (γ = -0.0003, *SE* = .0001, *p* = .02). Practice size and the number of managed care contracts produced interactions with the institutional variables when predicting satisfaction with managed care, and are discussed further below.

We tested hypotheses 2a and 2b by comparing models including the exposure to managed care variables and the institutional variables with models that also included interactions between these variables. Institutional variables included professional commitment, belief in autonomy, belief in self-regulation, and openness to managed care. Exposure and institutional variables were grand-mean centered (Raudenbush & Bryk, 2002, p. 33). The interactions were tested by removing the interaction terms and comparing the model deviances using a chi-squared difference test (Hox, 2002, p. 45). Each model was further refined by removing non-significant interactions. Significant interactions were probed following Aiken and West's (1991) recommendations (see also Cohen, Cohen, West, & Aiken, 2003, pp. 255-301). Tables 3 and 4 present these models.

Consistent with hypothesis 2a, institutional variables did moderate relationships between exposure to aspects of managed care and satisfaction with position. First, professional commitment moderated the relationship between practice size and position satisfaction. For physicians reporting a high degree of professional commitment, the data indicate a positive relationship between practice size and position satisfaction. For physicians reporting a low degree of professional commitment, the data show a negative relationship between practice size and position satisfaction. Second, belief in autonomy also moderated the relationship between practice size and position satisfaction. For physicians reporting a high belief in autonomy, the relationship between practice size and position satisfaction was negative, but for those with a low

belief in autonomy, there was no dependable association between practice size and position satisfaction. Third, openness to managed care moderated the relationship between the number of managed care contracts and satisfaction with position. Openness to managed care ameliorated the negative relationship between the number of managed care contracts and position satisfaction. Fourth, professional commitment also moderated the relationship between the percentage of patients who pay fee-for-service and satisfaction with position. For physicians reporting a high degree of professional commitment, there was a positive relationship between the percentage of patents paying fee-for-service and position satisfaction, but for physicians reporting a low degree of professional commitment that relationship was negative.

Consistent with hypothesis 2b, institutional variables also moderated relationships between the exposure to aspects of managed care and satisfaction with managed care organizations. First, belief in self-regulation moderated the relationship between practice size and satisfaction with managed care. Belief in self-regulation intensified the positive relationship between practice size and managed care satisfaction. Second, openness to managed care moderated the relationship between practice size and satisfaction with managed care. Openness to managed care also intensified the positive relationship between practice size and managed care satisfaction. Third, belief in autonomy moderated the relationship between the number of managed care contracts and physicians' satisfaction with managed care. For physicians reporting a high degree of belief in autonomy, there was a positive relationship between the number of managed care contracts and managed care satisfaction, but for physicians with a low degree of belief in autonomy, that relationship was negative.

Consistent with hypotheses 3a and 3b, satisfaction with managed care communication added significantly to both models. Analyzing the subset of physicians reporting direct

communication with a managed care representative (n = 685 in 417 practices), we built on the models presented in Tables 3 and 4 by adding satisfaction with managed care communication. We tested the difference between the models by comparing the model deviances using a chi-squared difference test. Managed care communication satisfaction added a positive effect on satisfaction with position (γ = 0.198, SE = .056, p < .01) on top of all the variables in presented in Table 3, further reducing variance at the individual level by 2.5%. Managed care communication satisfaction also added a positive effect on satisfaction with managed care organizations (γ = 0.354, SE = .039, p < .01) on top of all the variables in presented in Table 4, further reducing variance at the individual level by 9.6% and at the practice level by 2.2%.

Hypotheses 4a and 4b explored why satisfaction with managed care communication would significantly predict satisfaction with position and managed care. Our model suggests that physicians base their evaluations of communication in part on their institutional beliefs. To test these hypotheses, a model of satisfaction with managed care communication was created that contained individual-level control variables, frequency of communication, and the institutional variables. Table 5 contains the results of this analysis.

Consistent with hypothesis 4a, belief in autonomy was negatively related to managed care communication satisfaction (γ = -.107, SE = .054, p = .05). However, inconsistent with hypothesis 4a, professional commitment was positively related to managed care communication satisfaction (γ = 0.215, SE = .047, p < .01). Consistent with hypothesis 4b, openness to managed care was positively related to managed care communication satisfaction (γ = 0.336, SE = .057, p < .01). Finally, there was no dependable relationship between satisfaction with managed care communication and gender, years of practice, specialty, or belief in self-regulation.

Discussion

This exploration of physicians' reactions to managed care confirms how difficult it is to study a puzzle as complex and varied as institutions of medicine (Hacker & Marmor, 1999). Using measures of multiple aspects of managed care is a complicated undertaking. Our findings offer insights both for solving the puzzle of physicians' satisfaction with managed care, and more generally for communication scholars interested in the institutional aspects of communication. In this discussion, we will first consider how the use of multilevel analysis suggests that institutions—modeled here as physicians' beliefs about their work—were correlated with communication behaviors and satisfaction. Then, after considering the limitations of the research, we turn to a discussion of the prospects for future research using ITOC and other macro approaches.

Using ITOC to Solve the Puzzle of Physician Satisfaction with Managed Care

Our research confirmed others' findings that exposure to managed care, in terms of numbers of contracts, was negatively correlated with physicians' satisfaction. In addition, we also found that frequency of communication with managed care representatives also was negatively correlated with physicians' satisfaction. This supports the popular view that managed care is not always popular with physicians. In our view, however, considering physicians' frequency of communication adds an important step in sorting out why some physicians are more satisfied than others in their dealings with managed care. After all, time spent communicating with administrators is not time spent with patients.

Our next step was to consider institutional beliefs. Consistent with our hypotheses, physicians' beliefs about the profession, their openness to managed care principles, their belief in autonomy, and their belief in self-regulation, were all correlated with their reports of satisfaction,

independent of environmental and organizational facets and individual preconditions. We view this as an important contribution, because those beliefs are aspects of institutions, upon which physicians rely in their understandings of who they are and what they do. Moreover, those beliefs are at once widely shared and yet paradoxical.

We then considered physicians' reports of satisfaction with their communication with managed care representatives, including insurance representatives and utilization review committees. As we predicted, when controlling for individual, organizational, and institutional factors, physicians' satisfaction with managed care communication was still significantly and positively related to physicians' satisfaction with position and satisfaction with managed care organizations.

Understanding institutional beliefs may help us understand the link between communication and satisfaction. Consistent with ITOC and our explication of the institutions of medicine, negative relationships between position satisfaction and managed care satisfaction and the numbers of managed care contracts were moderated by institutional beliefs. Likewise, professional commitment moderated the relationship between percentage of patients paying fee-for-service as well as practice size and position satisfaction. Also, for physicians with a high belief in autonomy, we found a negative relationship between practice size and position satisfaction.

We return now to the puzzle identified in our introduction that managed care is not always dissatisfying, and that sustaining autonomy does not always coincide with increased satisfaction. Our findings demonstrate that institutional beliefs, frequency of communication, and satisfaction with communication each play a role in physicians' reactions to managed care. Two issues remain in sorting out the puzzle, however: the interaction of possibly paradoxical beliefs

and the role of practice size. As mentioned above, following Scott et al (2000), we anticipated that professional commitment and openness to managed care would always be negatively correlated with each other. Similarly, belief in autonomy and self-regulation should have had negative relationships with openness to managed care and practice size. Our findings were not so simple.

With respect to beliefs, we found, not surprisingly, that openness to managed care nearly eliminated the negative relationship between position satisfaction and the number of managed care contracts. However, physicians with a high belief in autonomy and more managed care contracts expressed higher, not lower satisfaction with managed care. It may well be that having multiple contracts—though perhaps adding an administrative burden—increases a physician's freedom to choose patients, or more contracts may be necessary for maintaining autonomy in the era of managed care.

Also, we expected professional commitment to represent a strong attachment to the profession of medicine and thus a strong attachment to the institutions of quality. We anticipated that such attachment would be antithetical to managed care. Instead, professional commitment acted as a source of satisfaction across the models. Past institutional research has assumed that membership in a professional group (e.g., membership in the American Medical Association) alone could stand for the acceptance of beliefs stereotypical of the group. These data underscore the value of considering actual beliefs as well as membership.

Professional commitment also played a role in the contribution of practice size to satisfaction. Past research has argued that physicians will find practice in large organizations (especially as an employee) dissatisfying, because being self-employed is part of physicians' professional identities, and yet our findings are inconsistent with that argument. For physicians

with a high commitment to the profession, there was a positive relationship between practice size and satisfaction with position, but for physicians expressing low commitment, there was a negative relationship between practice size and position satisfaction.

Our findings on practice size are consistent with arguments that practicing in very large organizations (e.g., prepaid group practices) may in fact shield physicians from the hassles of managed care (Remler, Gray, & Newhouse, 2000). In fact, even belief in self-regulation intensified the positive relationship between practice size and satisfaction with managed care. Post hoc analyses confirmed a negative relationship between the frequency of communication and practice size. A multilevel model of communication frequency regressed on practice indicated a strong negative association, suggesting that physicians in large practices communicate less frequently with managed care representatives (γ = -0.202, SE = .047, $p < .01$). Taken together these results suggest that as beliefs evolve, old ones, like a belief in self-regulation, are not necessarily replaced by new ones, like openness to managed care, even as organizational circumstances such as size of practice change. Indeed, the role of communication in the results supports the work of researchers such as Iedema, Degeling, Braithwaite, and White (2003) whose focus is the communicative negotiation of such beliefs.

Limitations of the Current Research and Directions for Future Research

We find four main limitations in our study. A first limitation is the small number of variables used to measure what is a vastly complex process. In particular, we were limited to frequency and satisfaction in our measures of communication. For example, we had no data on the content, specific episodes, or types of communication involved. Lammers and Barbour (2006) suggested that such messages are available for study not only in conversation but also in formal documents. For example, the field of medicine, replete with contracts, regulations, usage

manuals, and laws, offers an opportunity to investigate links between the communicative and the institutional. However, the data do offer empirical support and guidance for future research: The consideration of institutions and communication in the study of health care holds considerable potential.

A second limitation concerns our exclusive focus on physicians. The measurement of communication here does not account for the roles played by other non-physician staff members in that communication. This might explain, for example, why it was possible for a physician to report no communication with managed care representatives despite having managed care contracts. The study of managed care communication can benefit from examining the teams of providers, staff, and managers involved, and not just physicians. ITOC would suggest that institutional factors shape communication for all the members of health care teams.

A third limitation of this study is the lower than desirable response rate, which speaks to the difficulty of studying health care professionals and physicians in particular, a group whose time pressures have been the focus of not a small amount of research. However, attempts to study physicians in multiple organizations and regions can offer value by capturing institutional variation and bolstering the external validity of the results despite the lower-response-rate tradeoff.

Fourth and finally, concerning the multilevel analysis strategy used here, the inability to consider aggregated variables or random slopes was a limitation. This analysis demonstrates the robustness of the techniques of multilevel modeling, but unevenness in the representation of practices is best avoided. More complete data would have allowed us to go beyond just accommodating the nested structure of the data to examining specifically how the relationships between the institutional beliefs and practices differ at each level of analysis.

Notwithstanding these limitations, we have confidence in the validity of our findings. We used well-established measures (contributing to construct validity), and we had a large sample (contributing to external validity). The large sample represented a cross-section of practices in differing concentrations of managed care arrangements, and we identified physicians in a wide range of practice circumstances. We used a method of analysis that provided us with the ability to single out particular sources of variation across multiple levels of analysis. Additionally, we were able to disambiguate physicians' perceptions of their satisfaction with their position and satisfaction with managed care: two linked but separate outcomes. The results support the notion that future research should not conflate differing sorts of satisfaction.

Prospects for Future Research Using ITOC and Other Macro Approaches

ITOC is best seen as one of several macro approaches that emphasize phenomena that cut across organizational boundaries. Other approaches that consider macro issues include organizational rhetoric (Finet, 2001), Foucault's *Archaeology of Knowledge* (1972), applications of network theory (M. Taylor & Doerfel, 2003), actor network theory (Latour, 2005), and the situated values approach (Geppert & Williams, 2006). The institutional approach emphasizes the influence of constellations of established beliefs and practices (Lammers & Barbour, 2006). The findings on physicians and managed care offer encouragement to scholars interested in multileveled studies of the role of macrostructures like institutions, particularly in studies of professions, identity, and organizational change.

The study of professionals offers an excellent example of how extra-organizational forces may express themselves in organizational communication. We identified clusters of beliefs (autonomy, self-regulation and openness to management) important to one profession. We found those beliefs predictive of satisfaction independent of other aspects of work settings across

locations. The study of other occupational groups such as knowledge workers may benefit from considering how institutional beliefs shape communication behavior independent of and in concert with the particular organizational context.

In other words, our results also have implications for studies of multiple targets of identification (Kuhn & Nelson, 2002; C. R. Scott, 1997). The results suggest targets of identification not typically included such as professional groups. More specifically, the findings indicate that conflicts between sources of identification may be resolved by holding general, nonspecific commitments to multiple, potentially contradictory targets. For example, physicians in our study held beliefs about openness to managed care while simultaneously professing strong commitments to their profession. The results also demonstrate the need to include measures not only of attachment but also the acceptance or rejection of specific beliefs. In this way, we could separate out how orientation to ideas, attachment to a profession, and identification with multiple targets play out in communication behavior.

Finally, this multileveled study joins a chorus of communication research aimed at connecting individuals' actions and established and emerging social patterns. Large-scale changes like managed care occur in a context of other macro-structures. Other feared- or hoped-for large scale social changes are similarly situated. National health insurance, corporate social responsibility, globalization, environmentalism, and human rights all are evolving in institutional contexts. As society grapples with changing institutions, building new institutions, or rebuilding damaged institutions, perspectives that link communication behavior and institutional forces may help connect small-scale change with big picture outcomes.

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Table 1

Continuous, Individual-Level Descriptive Statistics

Variables	N	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1 Position Satisfaction	900	3.71	1.30	—	829	900	688	898	898	897	897	900	900	898
2 Managed Care Satisfaction	892	2.35	1.30	.34	—	829	657	827	827	826	826	829	829	827
3 Communication Frequency	901	129.84	283.34	-.12	-.18	.78	689	899	899	898	898	901	901	899
4 Communication Satisfaction	689	2.81	0.98	.27	.53	-.17	.95	687	687	687	687	689	689	687
5 Professional Commitment	899	3.87	0.71	.44	.20	-.03	.18	.84	899	898	898	899	899	897
6 Belief in Autonomy	899	3.94	0.81	-.13	-.30	.10	-.26	.05	.86	898	898	899	899	897
7 Belief in Self-Regulation	898	4.33	0.72	-.05	-.17	.03	-.17	.05	.44	.85	898	898	898	896
8 Openness to Managed Care	898	2.57	0.71	.16	.50	-.08	.39	.10	-.37	-.24	.69	898	898	896
9 Managed Care Contracts	901	8.20	23.17	-.07	-.11	.01	-.02	.02	.03	-.07	-.02	—	901	899
10 Percentage of FFS Patients	901	25.60	35.90	-.04	-.21	.01	-.11	.03	.11	.05	-.20	.14	—	899
11 Years of Practice	901	23.55	10.18	-.03	-.06	.03	.02	.19	.03	-.05	-.02	-.02	.04	—

Note. Correlations are presented below the diagonal and sample size above. Scale reliabilities (Cronbach's α) are provided on the diagonal when applicable.

Table 2

Intercept-Only Models of Physicians' Satisfaction with Position, Managed Care, and Communication with Managed Care Representatives

	Position Satisfaction	Managed Care Satisfaction	Communication Satisfaction
Individual-Level Variance Component	1.561	0.940	0.760
Practice-Level Variance Component	0.141	0.251	0.156
Deviance	2999.329	2431.387	1874.114
Infraclass Correlation Coefficient	0.08	0.21	0.16

Table 3

Model of Satisfaction with Position

Predictors	*Coefficient*	*SE*
Fixed Part		
Intercept, $\gamma 00$	4.030*	0.118
Practice Size, $\gamma 01$	-0.0001	0.0002
Professional Commitment, $\gamma 10$	0.733*	0.064
Professional Commitment X Practice Size, $\gamma 11$†	0.0006*	0.0001
Belief in Autonomy, $\gamma 20$	-0.168*	0.054
Belief in Autonomy X Practice Size, $\gamma 21$†	-0.0002*	0.0001
Belief in Self-Regulation, $\gamma 30$	-0.020	0.054
Openness to Managed Care, $\gamma 40$	0.123*	0.061
Number of Managed Care Contracts, $\gamma 50$	-0.007*	0.002
Openness to Managed Care X Number of Managed Care Contracts, $\gamma 60$†	0.010*	0.004
Percentage of Fee-For-Service Patients , $\gamma 70$	-0.0001	0.001
Professional Commitment X Percentage of FFS Patients, $\gamma 80$†	0.006*	0.001
Frequency of Communication, $\gamma 90$	-0.0004*	0.0002
Gender (Female), $\gamma 100$	0.065	0.096
Years of Practice, $\gamma 110$	-0.014*	0.003
Specialty Practice (versus Primary), $\gamma 120$	0.021	0.074
Random Part		
Individual-Level Variance Component	1.171	
Practice-Level Variance Component	0.095	
Deviance	2735.800	

Note. Robust standard errors are presented. Significant coefficients are flagged with an asterisk, *$p < .05$. Variables are grand-mean centered for interaction analysis. Interactions are flagged with a cross, †. Additional digits are needed in some cases because of the scale of the variable.

Table 4

Model of Satisfaction with Managed Care Organizations

Predictors	*Coefficient*	*SE*
Fixed Part		
Intercept, $\gamma 00$	2.182*	0.115
Practice Size, $\gamma 01$	0.001*	0.001
Professional Commitment, $\gamma 10$	0.363*	0.057
Belief in Autonomy, $\gamma 20$	-0.138*	0.043
Belief in Self-Regulation, $\gamma 30$	-0.209*	0.058
Belief in Self-Regulation X Practice Size, $\gamma 31$†	0.0004*	0.0001
Openness to Managed Care, $\gamma 40$	0.332*	0.058
Openness to Managed Care X Practice Size, $\gamma 41$†	0.0005*	0.0001
Number of Managed Care Contracts, $\gamma 50$	-0.003*	0.001
Belief in Autonomy X Number of Managed Care Contracts, $\gamma 60$†	0.005*	0.002
Percentage of Fee-For-Service Patients , $\gamma 70$	0.001	0.001
Frequency of Communication, $\gamma 80$	-0.0003*	0.0001
Gender (Female), $\gamma 90$	0.185*	0.076
Years of Practice, $\gamma 100$	-0.003	0.004
Specialty Practice (versus Primary), $\gamma 110$	-0.126	0.066
Random Part		
Individual-Level Variance Component	0.769	
Practice-Level Variance Component	0.098	
Deviance	2199.235	

Note. Robust standard errors are presented. Significant coefficients are flagged with an asterisk, *$p < .05$. Variables are grand-mean centered for interaction analysis. Interactions are flagged with a cross, †. Additional digits are needed in some cases because of the scale of the variable.

Table 5

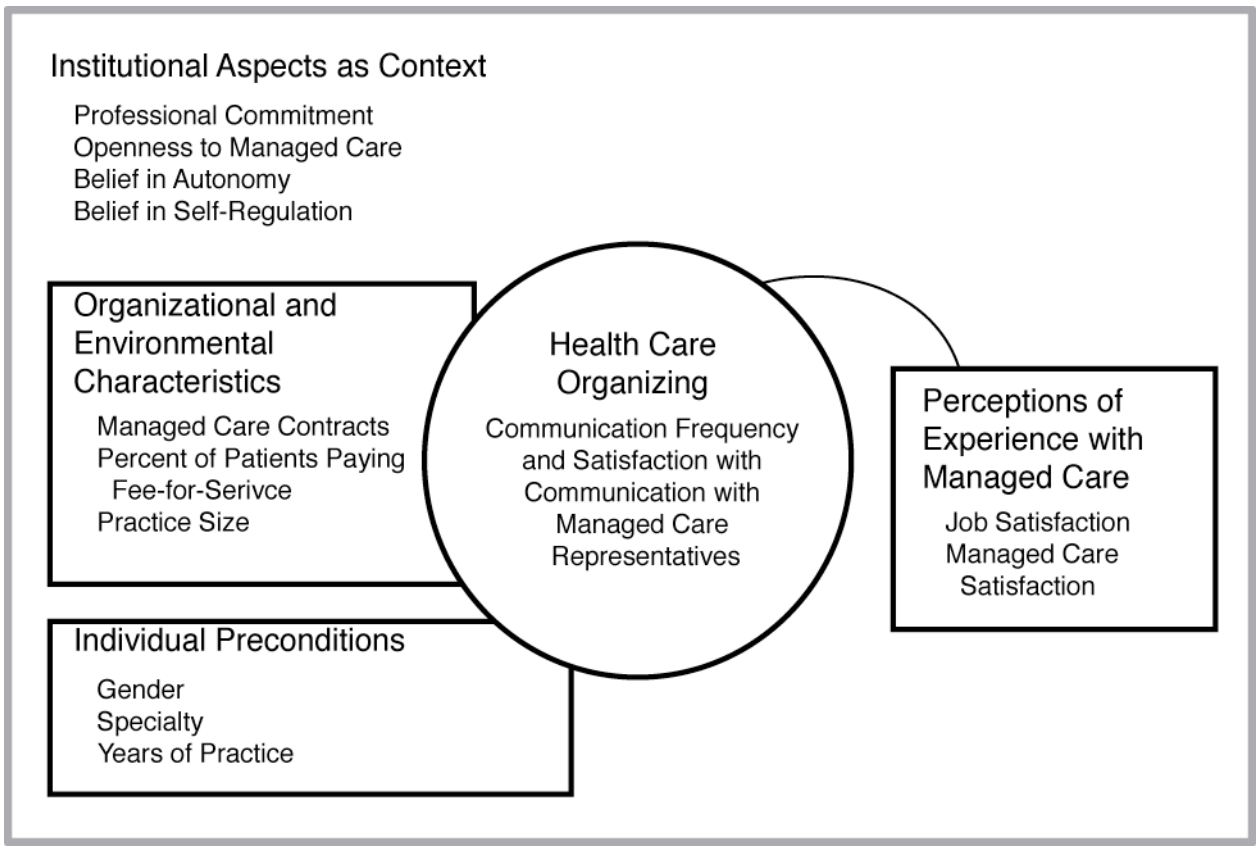
Model of Satisfaction with Communication with Managed Care Representatives

	Model 1		Model 2	
Predictors	*Coefficient*	*SE*	*Coefficient*	*SE*
Fixed Part				
Intercept, $\gamma 00$	2.671*	0.042	1.845*	0.339
Managed Care Communication Frequency, $\gamma 10$			-0.0003*	0.0001
Professional Commitment, $\gamma 20$			0.215*	0.047
Belief in Autonomy, $\gamma 30$			-0.107*	0.054
Belief in Self-Regulation, $\gamma 40$			-0.078	0.062
Openness to Managed Care Communication, $\gamma 50$			0.336*	0.057
Gender (Female), $\gamma 60$			0.078	0.080
Years of Practice, $\gamma 70$			0.002	0.004
Specialty Practice (versus Primary), $\gamma 80$			-0.076	0.071
Random Part				
Individual-Level Variance Component	0.760		0.682	
Practice-Level Variance Component	0.156		0.084	
Deviance	1874.114		1794.009	

Note. Robust standard errors are presented. Significant coefficients are flagged with an asterisk, *$p < .05$. Additional digits are needed in some cases because of the scale of the variable.

Figure Captions

Figure 1. Simplified Model of Physicians' Multileveled Experience of Managed Care


Institutional Aspects as Context
Professional Commitment
Openness to Managed Care
Belief in Autonomy
Belief in Self-Regulation
Organizational and Environmental Characteristics
Managed Care Contracts
Percent of Patients Paying Fee-for-Serivce
Practice Size
Individual Preconditions
Gender
Specialty
Years of Practice
Health Care Organizing
Communication Frequency and Satisfaction with Communication with Managed Care Representatives
Perceptions of Experience with Managed Care
Job Satisfaction
Managed Care Satisfaction