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Assessing the Preconditions for Communication Influence on Decision Making: The North American Quitline Consortium

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Abstract

The network of North American quitlines is a loose confederation of telephone-based smoking cessation counseling providers. Each quitline has some leeway in the types of services it provides, and the purpose of this paper is to identify factors that explain such choices. Representatives from quitline organizations responded to a survey regarding the importance of several items that were hypothesized to influence general intentions to adopt and implement new cessation methods. Results indicate that internal (to the quitline) constraints are positively associated with consensus processes and that implementation of practices in general was more likely if consensus processes were used. Unilateral decision making (one person within an organization makes decisions for the quitline on his/her own) was unrelated to either internal or external constraints, and was negatively associated with adoption of quitline practices. Discussion focuses on factors that influence consensus decision making processes beyond those investigated in the paper.

Tobacco use remains the leading cause of preventable death in the US and Canada. Although cigarette smoking among adults in the US and Canada continues to decline, fully 19.3% (45.3 million) of American and 17% of Canadian (6.1 million) adults continue to smoke (Centers for Disease Control and Prevention, 2010; Health Canada, 2010).¹ Most smokers indicate they would quit if they could, but successfully quitting smoking remains a difficult task (sometimes requiring 11 different attempts; see Cohen et al., 1989), and the majority of those who try to quit fail (Messer, Trinidad, Al-Delaimy, & Pierce, 2008). Recent efforts by the U.S. and Canadian governments to encourage and support smoking cessation include new warning labels that provide toll-free numbers to connect smokers who want to quit with their state or provincial, publicly funded quitline (i.e., telephone-based, tobacco cessation counseling).² The quitlines form a network, often sharing information and resources related to the delivery of cessation counseling, though ultimately each quitline operates independently; not all quitlines offer the same array of services nor are they

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¹The CDC defines an adult smoker as a person aged 18 and above, who has smoked in excess of 100 cigarettes in his or her lifetime, and smokes daily or occasionally ("some days"). Health Canada's definition includes people 15 years of age and older, who smoke either daily or occasionally.

²The new warning labels in the U.S. also contain graphic images pertaining to the effects of smoking, and are scheduled to take effect in September, 2012 (pending the outcome of several litigations).

obligated to provide any given service. Thus, the association of quitlines provides a unique opportunity to examine decision making within and across a network of entities that have the same goals (helping smokers quit) but differ in terms of both resources (e.g., budgets) and philosophy (e.g., delivery of only those cessation practices with strong clinical evidence) regarding what services to provide and when.

In this paper, we examine several factors that influence decisions by North American quitlines to offer a range of smoking cessation services. The study presented here is part of a larger examination of the characteristics of the network of quitlines and the role of those characteristics in the diffusion of information regarding the efficacy and reach of smoking-cessation practices (see Messer et al., 2008). Decision making processes related to adoption and implementation of practices has not been well-characterized, though Valente (2008) has demonstrated that a variety of network variables can play a significant role in decision making within networks. Thus, this study seeks to better understand how perceived external constraints (e.g., level of evidence, mandates, and budget) and internal constraints (e.g., organizational values and attitudes) on decision making influence the awareness and adoption of practices by quitlines within the network. We begin by describing general features of the North American network of quitlines that are relevant to decision-making practices regarding cessation. Following that, we describe a study in which relevant attitudinal and decision-making data were collected and analyzed.

The Network of Quitlines in North America

A “quitline” can be understood as a partnership between two or more organizations that collaborate to fund and provide telephone-based tobacco cessation counseling. For example, the state of Arizona’s “Ashline” is funded by the Arizona Department of Health Services, and the counseling is provided by the College of Public Health at the University of Arizona. Other quitlines in other states and in the Canadian provinces have similar arrangements, though there are several variations on the theme.³ Of potential interest is the fact that several large service providers contract with multiple funders. In 2009, which is the year of data collection for this paper, there were 23 service provider organizations for the 63 quitlines; 19 organizations provided quitline services for the 53 U.S. quitlines, and an additional four organizations provided quitline services for the 10 Canadian provincial quitlines. Seventeen service provider organizations provided services for a single state or provincial quitline; six provided services for more than one quitline. Service providers are both for-profit and non-profit entities, including universities and government agencies as well as independent companies.

At the time of data collection, tobacco cessation quitlines were operating in all 50 states and Washington, D.C., Guam, and Puerto Rico, and all 10 Canadian provinces (North American Quitline Consortium, 2006).⁴ These 63 publicly funded quitlines form the North American network of quitlines, the vast majority of which are members of the North American

³In some jurisdictions, the state or province also contracts with a coordinating organization, which may be responsible for quitline oversight, negotiating the contract or sub-contract with the service provider organization, and/or promotion and marketing of the quitline. In addition, some quitlines are funded by more than one organization, with the additional funder(s) typically being an agency from another level of government supporting a defined area of quitline operation (e.g., promoting the quitline to the general or specific populations). In other cases, a single funder organization contracts with both a primary and a secondary service provider organization. In most of these cases there is a single primary service provider with the secondary provider being engaged during periods of high call volume to handle overflow calls (e.g., when media campaigns or increases in tobacco taxes increase the demand for smoking cessation services). In another case, however, the primary service provider conducts intake and screens for eligibility, and provides counseling for a small proportion of callers, while the “secondary” service provider conducts the vast majority of counseling calls.

⁴The Washington State quitline currently serves only smokers who are on Medicaid or who work for companies that contract privately with a quitline service provider due to recent funding cuts. However, at the time of this study, the Washington State quitline provided smoking cessation counseling to all residents of the state of Washington.

Quitline Consortium (NAQC).⁵ The network provides opportunities for quitline representatives to communicate and share data regarding many issues and problem, though efficacy and reach of smoking cessation services are primary concerns. NAQC members often consult with the NAQC staff for professional support, access to educational programs, and opportunities for participation in activities to help improve quitlines. See Figure 1 for a graphic description of how organizations are connected to form individual quitlines and the network of quitlines. A more in-depth description of the network, including empirically based network maps, is in Leischow et al. (In press).

Each state or provincial quitline is responsible for deciding what kinds of smoking cessation practices to provide in order to help tobacco users who call the quitline to quit. Practices examined include those with considerable scientific evidence (e.g., providing nicotine replacement therapies at no cost to callers) as well as innovative practices (e.g., interactive voice response, text messaging). See Table 1 for a comprehensive list of practices available to quitlines at the time this study was conducted.

Not all quitlines choose to adopt the same set of practices for a variety of reasons. In what follows, we focus on two types of influences on quitlines' decisions to adopt and implement a range of smoking cessation practices. The first influence is external constraints which emanate from outside a given organization's structure (e.g., financial resources, government mandates), and the second influence is internal constraints, or issues that are related to the individual and shared attitudes and beliefs of individuals within quitline partner organizations regarding a quitline's mission and responsibilities. In what follows, we address how organizational and group decision making are related to the two types of constraints.

Task Constraints on Organizational and Group Decision Making

Organizational and group scholars have long been interested in the relationship between task features, communication processes, and outcomes. Although perspectives differ in focus, the gist is similar: to evaluate the extent to which task features moderate the relationship between communication and decision making (e.g., Straus, 1999). Researchers working within the social decision scheme framework, for example, argue that some tasks have demonstrably correct answers, and all that is needed is for one member to know the answer and for other members to be sufficiently motivated to solve the problem (see Stasser, 1998). Communication, then, is a conduit through which such information is made manifest—outcomes are mostly predictable from the distribution of knowledge or expertise of a group's members rather than from group discussion. Other tasks, for example ones for which the best answer is based on the judgment of the members and not on any objective criterion, usually require fairly intensive communication before such judgments can be made (Hirokawa, 1990; Laughlin, 1999). Moreover, because decisions are based on members' judgments, discussion likely consists of, or addresses, a wide range of issues, including values, attitudes, and opinions. Applied to decision making within quitlines, there are likely some cases in which decisions regarding the adoption and implementation of a given practice are relatively obvious. In other cases, however, decisions reflect judgmental processes, in which the course of action is not so clear-cut.

It follows that the number of individuals and the amount of communication needed to make a decision varies with task features. There are circumstances under which empowered individuals make effective choices, and other situations in which consensus is desirable. Consensus consists of communication-based interpersonal influence processes, whereas

⁵The number of quitlines has increased, since the time of this study, to 65.

choices made by one person often reflect intra-individual reasoning (Sager & Gastil, 1999, 2006). The issue here is not evaluating the superiority of one process over the other, but rather examining the circumstances under which quitlines as partner organizations unilaterally (i.e., one person decides for the quitline) or consensually (i.e., a group comes to a decision on behalf of the quitline) make decisions about what services to offer. Thus, for many basic and applied investigations on decision making, it is important to distinguish cases or situations in which communication is likely to influence outcomes from those in which other non-communication factors (e.g., normative pressure, budgetary issues) play a primary role in what is decided.⁶

Research on group decision making supports the claim that tasks moderate the relationship between communication and outcomes (Hirokawa & Salazar, 1999; Salazar, 1996, 1997; Salazar, Hirokawa, Propp, & Julian, 1994). Hirokawa (1990) conceptualized the moderating effects of tasks as a set of features related to complexity, and argued that communication becomes more integral to decision making as tasks become more complex. He identified three major categories of task features. *Task structure* includes the degree to which goals and the paths to achieving them are clear, the number of steps necessary to solve the problem, and the obstacles to achieving group ends. *Information requirements* refer to both the distributional characteristic of information within the group or organization (i.e., how many people know something) and the extent to which information processing requires collaborative effort. Finally, *evaluation demand* includes the number of potential solutions, the clarity of the evaluation criteria, and if successful completion of the task includes objective verifiability.

Task complexity, on this account, varies with combinations of the three main task features. Complex tasks include those with high collaborative information processing demands, unclear goals and/or a relatively high number of steps to achieving group goals, and a relatively large number of potential solutions and/or subjective evaluation criteria. Hirokawa (1990) argued that communication is an integral part of problem solving and decision making for complex tasks, and that input characteristics are the dominant factor for solving simple tasks.

Whereas Hirokawa's conceptualization of tasks and its relationship to communication proffers a fairly rational account of decision making, the process often consists of other issues that are in varying degrees related to more subjective task concerns.⁷ For example, McGrath and colleagues (McGrath, 1984; McGrath & Hollingshead, 1994; Straus, 1999) identified two main dimensions, collaboration and cognition, on which tasks might be arrayed. The types of tasks they identified are less relevant for current purposes than is the fact that some tasks, by their nature, include conflict and heightened intra- and interpersonal reasoning processes. Negotiation tasks, for example, often involve conflicts in which members must both cooperate to reach agreement and compete to meet personal interests (Weingart, Brett, Olekalns, & Smith, 2007). McGrath and Hollingshead (1994) argue that these task types "differ in terms of the degree to which effective performance on them depends only on the transmission of information among members of the group, or also requires transmission of values, interests, personal commitments, and the like" (p. 67). When only information transmission is important, then communication, at least according to this model, assumes a very small role in the decision-making process. When, however, other

⁶Pavitt (1993) and Bonito and Sanders (2009), among others, have noted that communication likely has other effects (e.g., increase or decrease cohesion) even when decision making is circumscribed by task and contextual features. Here we confine ourselves to the relation between communication and group decisions.

⁷In fact, Gouran and Hirokawa (1996) noted that rational decision-making processes are not always characteristic of discussion. For example, in some cases participants focus less on the merits of particular solutions and more on interpersonal and egocentric issues. Our concern here is with more organizationally based constraints on decision making.

issues become relevant, then decision making, in the form of consensus, takes on a much more important role.

Another way to conceptualize task characteristics is as constraints on communication and decision making. Many groups and organizations, including quitlines, work in dynamic environments in which factors beyond the group's immediate control regularly influence decision making. Other constraints are potentially controllable. For example, financial resource allocation typically influences the number and kinds of smoking cessation services that a quitline might adopt, whereas internal dynamics, including attitudes and perceptions regarding mission (e.g., prioritizing serving more tobacco users with less-intensive services), influence adoption practices. Thus, it is reasonable to conceive of constraints as having external and internal characteristics, with the former as typically, but not always, beyond the control of the group or organization, whereas the latter are potentially controllable and changeable, primarily through communicative means.

Operationalizing Task Constraints

Task constraints are generally experimentally manipulated in laboratory settings and usually involve student participants (see Orlitzky & Hirokawa, 2001). To our knowledge, researchers have yet to develop instruments that assess participants' perceptions of constraints related to decision making. Because we consider decision making to be a special case of influence, we loosely based our version of constraints on the theory of planned behavior (TPB). The TPB is a model of persuasion in which influence is more likely if certain conditions related to a target's psychological state are matched with message features used to advocate a particular action. Location (i.e., if the source of the problem lies within or outside an individual) and control (i.e., to what extent an individual is responsible for the current and projected state of affairs) are central features of the model (see Ajzen, 1991). In some cases, internal factors, for example disposition and attitude, figure prominently in the process, whereas in other cases external issues (e.g., financial constraints) are salient. Similarly, some factors are beyond the control of the individuals in question and in others are well within their control.

Several studies on organizational decision making have taken a similar tack. Marshall, Cordano, and Silverman (2005), for example, argued that both individual and institutional factors were responsible for the adoption of environmentally friendly wine production techniques. Attitudes (managers' environmental values) and subjective norms (employee welfare, cost savings, and product quality) were conceptualized as individual-level predictors, whereas perceived control (regulations, networks related to market and community) was the institutional level factor. Cordano and Frieze (2000) examined environmental managers' desire to adopt pollution prevention methods and found that managers who perceived greater control over the adoption decision tended to have more positive attitudes about pollution prevention. Other scholars have focused on the adoption of various new technologies in a variety of businesses and organizations (e.g., Au & Yeung, 2007; Grandon & Mykytyn Jr., 2004; Lim, 2003; Lu, Lai, & Cheng, 2007; Riemenschneider & McKinney, 2002; To, Liao, Chiang, Shih, & Chang, 2008). For example, an investigation of the adoption of web-based e-commerce in small businesses found that non-adopters perceive higher costs to e-commerce, while at the same time placing less importance on the opinions of relevant individuals such as customers (Riemenschneider & McKinney, 2002). Concerning the delivery and/or adoption of health-related practices, researchers explained that Turkish health providers' beliefs regarding not only practice effectiveness but also providers' ability to implement changes in practice were related to the adoption of recommended maternity care and/or the elimination of ineffective or harmful practices (Turan, Bulut, Nalbant, Ortayli, & Erbaydar, 2006). Furthermore, researchers examining

factors that compel Canadian physicians to use new methods to educate patients regarding cardiovascular disease found that discussion of those methods with fellow physicians was important to adoption (Scott, Kessler, Karunamuni, Bize, & Rodgers, 2008). Finally, in a review, Godin, Belanger-Gravel, Eccles, and Grimshaw (2008) noted that specific task beliefs (e.g., capabilities to enact a given change in health behavior, consequences of not changing behavior) are an acceptable predictor of the adoption of clinical-related behaviors.

Given the preceding, we reasoned that internal constraints, conceptualized as features of the problem that participants might discuss and use as part of their reasoning processes, would be positively related to consensus processes (i.e., likelihood of making quitline decisions by consensus). As suggested by research on task characteristics, issues within an organization's control are most likely to be discussed and generally require group-level decision making. On the other hand, issues beyond an organization's control (i.e., external constraints such as funding limits or government policies) are less likely to involve collaboration, as no amount of organizational discussion will influence the nature of those issues. This reasoning leads to the following hypotheses and research question:

- H1** Perceptions of internal constraints on decision making are positively associated with quitlines' use of consensus in the adoption of tobacco cessation practices.
- H2** Perceptions of external constraints on decision making are positively associated with quitlines' use of unilateral decision making (i.e., one person in the organization decides) in the adoption of tobacco cessation practices for the quitline.
- RQ1** How are consensus and unilateral decision-making models related to adoption tendencies for quitlines?

Method

Participants

Our focus for this study was the North American network of quitlines. In order to obtain data about decision-making processes from quitline organizations, we determined that it would be necessary to collect data at the individual level. Thus, the list of potential participants ($N = 269$) was comprised of all persons involved in decision making regarding the adoption and implementation of smoking cessation practices from the 93 organizations within the jurisdictions of the 63 quitlines in the North American network.

We developed a list of potential participants by working with NAQC staff to identify all individuals within organizations who were involved with decision making about tobacco cessation quitline practices. During this process, information was also collected about any other organizations that were involved in the adoption and implementation of quitline practices within each jurisdiction (i.e., quitline). Key individuals at those organizations were then phoned to gather contact information for all those engaged in decision making about the adoption and implementation of quitline practices within their organizations. All 269 individuals identified as having a role in their organization's decisions to adopt smoking cessation practices were asked to complete a survey. Follow-up e-mails were sent to those who had not completed the survey or abstained after three weeks, and follow-up telephone calls were made one week later to those who had not completed the survey. After the survey deadline passed, potential respondents were contacted once more via e-mail and telephone.

Out of a total of 269 potential participants, 183 (68.03%) fully completed the survey, 12 (4.46%) partially completed the survey, 36 (13.38%) did not complete the survey but did not formally abstain from the survey, and 38 (14.13%) formally abstained from the survey for

various reasons (e.g., realized they were not involved in the quitline at the appropriate level to answer the survey questions). Of the 93 organizations contacted, 84 had at least 1 person fully complete the survey and 3 had at least 1 partial responder but no complete responders. One-hundred-twenty respondents (71.4%) were from funder/administrator organizations (120 surveys, 52.4%), and 48 respondents (28.6%) were from service provider organizations (109 surveys, 47.6%). In total, 171 respondents completed relevant portions of the survey (a response rate of 63.57%) for 84 organizations. Respondents at service provider organizations who served multiple funders (i.e., were partners within multiple quitlines; see Figure 1 for an example) were asked to complete the survey for each funder that they served (i.e., for each quitline partner), yielding a total of 233 responses.

Procedure

Initial discussions were conducted with NAQC staff, who described many of the issues raised by quitline partner organizations (funder/administrators and service providers) during the process of implementation of new quitline practices. Personal interactions between NAQC staff and quitline organization representatives, postings on the network listserv, and the NAQC asking about specific practices on its annual survey of quitlines, were all referenced as potentially influential elements. Development of the items was partially driven by the researchers' identification of constraints that were likely to influence the decision of whether to adopt a quitline practice. The potential items were then presented to the researchers and discussed. We also consulted a workgroup made up of representatives of the key quitline stakeholder groups, including quitline funders and service providers. Items that were validated by the workgroup as being relevant issues for decision making concerning implementation of quitline practices were included in the final survey instrument.

The survey was deployed via the Web as six separate sections (e.g., implementation, organizational learning, network ties). The data under review for this paper were part of the decision making (DM) section of the survey. These questions were asked at the level of the quitline, so each respondent from a service provider organization serving more than one quitline answered these questions for each quitline the service provider served.

Measures

As noted, we borrowed from the TPB in order to inform our measurement of internal and external task constraints. The TPB identifies three factors as being central to decision making—attitudes, subjective norms, and behavioral control. We reasoned that these factors approximate internal and external constraints to decision making. Attitudinal issues, for example, are largely internal to an organization (and therefore a quitline) whereas subjective norms (e.g., what do other quitlines do? What do national organizations expect?) emanate from outside the quitline. Behavioral control, which is the ability to perform a given action, has both internal (e.g., does the quitline perceive the practice as important or effective?) and external (e.g., does the quitline have the financial resources needed to implement the practice?) qualities. The questions were adapted from Ajzen's (1991) original template so as to be relevant to network characteristics and concerns (see below). This is consistent with other work in the area (e.g., Cordano & Frieze, 2000; Grandon & Mykytyn Jr., 2004) that uses the basic outline of the TPB methodology but adjusts the question content to reflect relevant factors associated with beliefs, subjective norms, and perceived behavioral control. The final list of questions is presented in the Appendix. The first 12 questions assessed perceived constraints on decision making. Several of the questions assessed how respondents viewed organizational attitudes toward adoption of practices, whereas other questions asked if the respondent's organization was influenced by the adoption practices of other quitlines. Finally, several questions asked about how the respondent's organization perceived external pressures (e.g., mandates) that might influence adoption practices. The

various factors were presented as statements, such as “strong evidence of effectiveness was an important consideration.” The set of responses to all questions ranged from *strongly disagree* to *strongly agree* on a 5-point scale. In order to account for the fact that respondents might not have knowledge of the role of all of the identified factors in the decision making process, respondents were also given the option of responding “don’t know” for items.

Several other questions assessed decision-processes and adoption. Question 13 inquired about a general proclivity, in terms of diffusion, of the respondent’s quitline to adopt smoking cessation practices—the responses ranged from the quitline being “last/never to adopt” to “first to adopt” new practices (see Messer et al., 2008). Questions 14 through 16 asked about specific decision-making practices. Question 14 asked if one person makes adoption decisions (unilateral), Question 15 asked if a single decision maker consults with organizational members before deciding to adopt practices (mixed), and Question 16 asked if decisions are made by consensus.⁸ Responses were on a 5-point scale with strongly disagree/strongly agree as the poles, and as with other questions, “don’t know” was a response option.

The instructions asked respondents to focus on the most recent two or three quitline practices their quitline had considered adopting, regardless of whether those practices were actually adopted.⁹ Respondents were also encouraged to focus on practices that required some consideration and discussion within the organization or with the organization’s quitline partners, as opposed to practices that were quickly decided upon (see the Appendix).¹⁰

Variables

The raw data contain two potential sources of nonindependence. The first source is within service providers, as some respondents who work for service provider organizations completed the DM questionnaire several times, one for each funder organization served. To simplify the analysis, we collapsed the scores for any provider representative providing multiple responses by taking the mean of the responses for that provider. The second source of nonindependence is within quitlines, which we addressed by computing the intraclass correlations for each of the questions.¹¹ All but one of the intraclass correlations for each of the questions used in this paper were less than .10 and none were statistically significant (using a liberal alpha of .10; see Kenny, D. A. Kashy, & Cook, 2006). Still, because tests for nonindependence are typically underpowered, we chose a conservative tack by centering the variables at the quitline level, in effect subtracting or controlling the effect of the quitline on individual-level scores (Enders & Tofighi, 2007). Doing so allowed for the estimation of measurement models and subsequent data analysis with independent data.

Constraints—The first 12 items in our instrument measured constraints on decision making. We evaluated the 12 items using an exploratory factor analysis. The results indicated a 2-factor model (see Table 2); three of the items, “decisions based on expertise to

⁸We did not ask about majority-vote situations because our discussions with NAQC personnel suggested it was a very unlikely scenario.

⁹We used this approach because there is variation in the number of practices considered over a given time period, and in the order in which they are considered.

¹⁰These instructions would seem to bias the study’s premise because it excludes practices that were either summarily adopted or rejected. We chose this language because of the concern that not all respondents would be aware of, and thus able to respond to questions about, obviously useful or unhelpful practices. Even so, there is no reason to believe that ones that were considered/discussed were rejected or accepted consensually.

¹¹Some of the data points were nested within organization (i.e., service provider or funder), but many were not. Although multilevel techniques can incorporate “singletons” (i.e., one observation per upper-level unit) in the sense that it provides relatively unbiased estimates for level-1 predictors, doing so overestimates between-group variance relative to within-group variance (Clarke, 2008).

implement,” “decisions influenced by well-respected quitlines,” and “tries not to pay attention to costs” did not load unambiguously on either factor and were excluded from subsequent analyses. The first factor is an indicator of internal constraints given that the questions that load on it address items that are internal to and/or within the control of the organization including whether the practices were evidence-based, how much practices cost, opinions of others within the quitline, and problems associated with bureaucratic procedures. The second factor, external constraints, contains items that are external to and/or beyond the control of the organization, including mandates, whether being first to adopt practices is important, and how well the practices fit the organization’s mission (which, presumably, was developed prior to adoption decisions and is unchangeable without official approval). We used the mean, at the individual level, of the items associated with each factor in our analyses, and refer to the first factor as “internal constraints” and the second factor as “external constraints”.

Decision making—As noted, we asked three questions about specific decision-making processes: unilateral, consensus, and consultation. We decided to drop the consultation item (question 15) because it is conceptually unimportant to the analysis at hand. Unilateral and consensus decision making were negatively associated, $r = -.35$, $p < .001$. Thus, we used the unilateral and consensus decision-making variables as mediators in our analysis.

Adoption—The endogenous variable in our analysis was based on the single item that asked participants to identify the likelihood of their quitline’s adoption of new practices relative to the other quitlines in the network (responses ranged from “typically last” to “typically first”).

Analysis and Results

Analysis

Our analytic strategy was to evaluate path models consistent with our hypotheses and research question. Our decision to work with centered, individual-level data (see above) resulted in an $N = 171$ for our analyses. We used SAS PROC CALIS for all analyses—see Table 3 for the correlations among the variables in the model. We began with the theoretical model, which did not fit the data well, $\chi(3) = 30.13$, $p < .001$. Following procedures outlined by Hatcher (1994), we proceeded by deleting nonsignificant paths and re-evaluating the model. In this case, only the path from external constraints to unilateral decision making was not significant, and after removing that path from the model, fit worsened slightly, $\chi(4) = 31.77$, $p < .001$. Examination of modification indices revealed that the model would be improved by adding a path from consensus to unilateral decision making, and doing so produced better, but not acceptable, fit, $\chi(3) = 8.78$, $p = .03$. In this model, however, the path from internal constraints to unilateral decision making was not significant. Modification indices showed that adding a direct path from external constraints to adoption improved model fit. After making these modifications, the model fit indices were within acceptable ranges, with $\chi(2) = 5.80$, $p = .078$, RMSEA = .08, NFI = .95, and CFI = .97. Final model estimates appear in Figure 2.

In terms of hypothesis tests, the model confirms Hypothesis 1—consensus processes become more important as internal constraints increase. However, Hypothesis 2 was not supported because external constraints were not associated with unilateral decision making. The research question asks how decision processes are associated with adoption. The model indicates that perceptions of adoption within one’s quitline are a function of both consensus and unilateral decision making, but that the direction of these associations differs; participants are more likely to perceive that their quitline intends to adopt cessation practices

in general (a) the more that decision making is conducted by consensus, and (b) the less that decision making is concentrated in one person.

Discussion

This investigation found that internal and external constraints on decision making were associated with intention to adopt cessation practices, although not in precisely the same manner as predicted. Consistent with Hypothesis 1, the importance of internal constraints was positively associated with the use of consensus in decision making regarding the adoption of cessation practices. Furthermore, decision making by consensus was positively associated with quitlines' tendencies to report being leaders in the adoption of new cessation practices. Together, these findings suggest that focusing on the internal constraints, which are potentially controllable by those within the organization, might actually increase adoption in quitlines by encouraging or facilitating the discussion of potential cessation practices. Discussion of internal constraints might also enable quitlines to better understand and cope with those constraints, thereby allowing them to more efficiently adopt new practices.

In contrast, the tendency for one person to make adoption decisions was negatively related to both consensus and the extent to which quitlines adopted new practices. However, unilateral decision making was not directly related to the importance of either internal or external constraints, but was instead only related to these factors via its relationship with consensus decision making. Placing the burden of decision making on a single person might inhibit adoption in several ways. First, given that unilateral decision making was indirectly negatively related to the importance of both internal and external constraints, it might be the case that individual decision makers are less aware of the full range of constraints that might be considered when making adoption decisions. Such a lack of awareness could mean that individual decision makers are less able to account for the influence of these constraints and thus less able to effectively adopt or implement new cessation practices. Alternatively, quitlines with a single decision maker might typically have smaller staff sizes, fewer resources, and fewer opportunities to consider adopting new practices. In contrast, decision by consensus could allow for multiple individuals to bring different pieces of information to the discussion, allowing for the group to address a wider range of considerations than a single individual would be able to do (see Barge & Keyton, 1994). Alternatively, quitlines with multiple decision makers who come to consensus might have larger staff sizes, and more resources, thus more opportunities to consider adopting new practices.

The model reveals several other findings of potential interest. First, importance of external constraints is positively associated with consensus. This finding suggests that organizational members are likely to talk about new quitline practices when issues and concerns that are seemingly out of their control (e.g., mandates) are considered to be more important. Second, intention to adopt cessation practices is directly related to importance of external constraints. This finding might indicate that issues beyond an organization's control have direct bearing on what an organization can do, though how this occurs is unclear. Given that external constraints have both indirect and direct effects on adoption, one might speculate that it is important for organizational members to discuss these constraints even though there is little that can be done about them. For example, a government mandate on some aspect of the type of service to be delivered, or the number of clients to be served, might require elimination of some practices altogether due to the budgetary constraints imposed by the mandate. Quitlines may have decided to cut back on some practices (e.g., mass media campaigns) in order to attract fewer people to the service, or reduce service offerings (fewer calls or free medications), or newer practices (e.g., text messaging) to serve the same number of people with fewer resources. Perhaps there is still value in discussing the limited

set of alternatives, or at least rationalizing the mandates so that they fit with organizational norms and practices. Finally, the model indicates that consensus and unilateral decision making do not co-occur within organizations. For reasons that are undetermined, the choice of one decision-making process makes using the other somewhat unlikely.

Limitations

Several limitations of the current study warrant consideration. First, we assessed individuals' perspectives within quitlines, and these perspectives might vary in the extent to which they align with what actually occurs during decision-making processes in the quitlines. For example, unilateral decision making was not associated with the importance of internal or external constraints. If a respondent is not that sole decision maker, then that individual might underestimate the importance that the decision maker places on internal and external constraints. This concern is partially mitigated by our inclusion of a "don't know" option for each question and the fact that we surveyed individuals who were identified as being key decision makers regarding cessation practices within their organizations. However, future research will need to examine whether and to what extent individuals within organizations correctly perceive the factors that decision makers take into consideration when deciding whether or not to adopt cessation practices.

Second, organizational data is intrinsically multilevel in nature—individuals are nested within organizations and organizations within quitlines. Individuals' reports are necessarily a function of both the organization within which they reside and their own unique perceptions of that organization, as well as that of the quitline. Because we obtained multiple responses for some organizations but not for most organizations, we were unable to use multilevel modeling to test the study hypotheses and instead chose to center the data according to the organizational mean in order to account for potential nonindependence. Although measurement of multiple individuals within each of the 93 organizations we surveyed was not feasible or desirable in many cases, future research could identify smaller networks of organizations and survey several members of each organization. Doing so would allow for associations between internal and external constraints, decision-making processes, and adoption to be examined at both the individual and organizational level.

Application to Practice

One very important application of the outcomes from this research is that NAQC, as the network administrative office (the central hub within the quitline network), could increase its effort to communicate new evidence on practices, or new practices as they emerge, with the larger quitline community, and especially with quitlines that have smaller staff sizes, or those reporting a unilateral model of decision making. This could increase discussion of quitline practices, and thereby speed up dissemination and adoption of practices that have increased potential to help smokers quit, and foster greater standardization of practices across the quitline network.

Future Directions

Although importance of both internal and external constraints was associated with adoption via their association with the use of consensus in decision making, it is unclear how these perceptions of constraints are derived. The extent to which constraints are perceived as important in the decision-making process is likely a function of how these constraints are communicated within and between organizations. For example, external constraints such as governmental mandates for certain practices might be discussed as presenting barriers to the operation of the quitline or opportunities for the quitline to implement new practices. Similarly, internal constraints such as the quitline's mission statement might be discussed as either constraining or guiding quitline decisions. Future research should examine the extent

to which discussion of internal and external constraints influences the impact of those constraints on decision-making processes in quitlines.

Second, quitlines consist of at least two (and sometimes three) organizations, including at least one funder and at least one service provider. Little research has attempted to examine organization-level decisions regarding the adoption of practices, especially when that adoption necessitates the coordination of two independent organizations such as occurs in quitlines. However, decisions are not always made by key stakeholders or small business owners, and even decisions made by individuals are often still preceded by discussion with others. In order to adequately understand adoption in a variety of organizations, researchers must further investigate organization-level processes that impact intention to adopt. The extent to which one of these organizations is involved in the decision to adopt new cessation practices likely varies between quitlines. This variation might influence several factors in the decision-making process. For example, funders and service providers might have different perceptions of relevant internal and external constraints. Similarly, funders and service providers might have different models for the extent to which decision making should occur via consensus or be the responsibility of a single individual. If this is the case, then delegating decision-making tasks to the organization that favors a unilateral decision-making process could inhibit the adoption of new cessation practices within the quitline. Future research identifying the nature and extent of any such differences could assist in more efficient adoption of new cessation practices.

Our results potentially reflect decision-making variability among quitlines in one of two ways. First, it is unclear which organization (funder or service provider) has more authority or influence in making decisions, or how collaborative the process is for arriving at a decision about which practices to implement. In some cases, the funder might make programming decisions for the quitline with minimal input from the service provider, or the service provider might make programming decisions for the quitline with minimal input from the funder. In other cases decision making is shared to a greater or lesser degree between funders and service providers. The locus of decision making likely depends on such factors as the specific practice under consideration or the unique organizational and contractual arrangements between funders and service providers. The second type of variability related to decision making is staff size. In some cases, limited staffing and resources might produce a situation where the funder has limited capacity to provide significant amounts of time to the quitline, and relies primarily on the service provider to handle day-to-day operations and decision making. The result is that consultation, in terms of which cessation practices to adopt and implement, is a possibility for some quitlines or quitline organizations because they have sufficient staff, and for others there are few, if any, opportunities to consult relevant others. Future research, then, should examine how structural features of the provider-funder relationship constrain or enable different types of decision making.

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Appendix: Survey Instrument

The following are the instructions and items for assessing the relative importance of internal and external decision-making constraints

In this section of the survey, we are interested in general perceptions and attitudes regarding decisions that were made to either adopt or not adopt quitline practices (like the ones you just reviewed in the preceding section). Please keep two things in mind as you respond to the following questions. First, we would like you to focus on the last two or three quitline practices < name of quitline> has considered adopting (again, regardless of whether or not it actually adopted them). These might be recent considerations, or if your quitline has not

considered adopting any new practices recently, ones that were considered some time ago. Second, if at all possible, do not focus on the “slam dunks,” the ones that were rejected out of hand or were adopted without controversy or resistance. Instead, focus on those that required some consideration and discussion within your organization, or with your quitline partners.

Once again, remember to simply answer as best as you can from your personal perspective—we will combine your responses with other responses from your quitline to get a full and accurate response. Don’t feel you need to have all the answers yourself.

1. Strong evidence of effectiveness was an important consideration. (*strongly disagree to strongly agree*)
2. The overall financial cost of the quitline practices was extremely important. (*strongly disagree to strongly agree*)
3. A critical consideration was whether or not these quitline practices were consistent with <organization’s name>’s mission. (*strongly disagree to strongly agree*)
4. Opinions of others in <organization’s name>, such as staff or other decision makers, strongly influenced the decision to adopt or not adopt these quitline practices. (*strongly disagree to strongly agree*)
5. Dealing with and overcoming bureaucratic procedures (e.g., rules, red-tape, etc.) was a significant barrier to the adoption of these quitline practices. (*strongly disagree to strongly agree*)
6. The decision was based on the expertise of current staff to implement the quitline practices effectively. (*strongly disagree to strongly agree*)
7. <Organization’s name> tries not to pay much attention to cost when considering adopting a new quitline practice. (*strongly disagree to strongly agree*)
8. The practices used by well-respected quitlines in other states and provinces were important considerations in our decision process. (*strongly disagree to strongly agree*)
9. When considering the adoption of these quitline practices, pressure or mandates from major outside organizations, like other levels of government, agencies such as CDC, Health Canada, national advocacy groups, etc. were (*not very important to very important*)
10. Being among the first to adopt a new quitline practice was (*not very important to very important*)
11. When considering the adoption of these quitline practices, <quitline partner>’s opinion was (*not very important to very important*)
12. Whether most other quitlines had adopted or not adopted these quitline practices was (*not very important to very important*)
13. <Quitline’s name> generally decides to adopt new quitline practices (*never/last, after most other quitlines, about the same time as most other quitlines, before most other quitlines, or first*)
14. One person in our organization generally makes the decision on his or her own.
15. One person first consults with others and then makes the final decision.
16. The decision is made by consensus – most of us at <auto-fill organization’s name> must agree, or we don’t adopt the new quitline practice.

Figure 2. Final path model with standardized estimates for decision-making and adoption of smoking cessation practices.

Table 1**A Sample of Smoking Cessation Services Available to North American Quitlines in 2009**

Conduct an evaluation of the effectiveness of the quitline
Conduct mass media promotions for targeted populations
Conduct mass media promotions for the mainstream population
Fax-to-quit or fax-referral program
Integrate telephone counseling with face-to-face cessation services through referrals or combinations of phone and those services
Integrate telephone counseling with web-based, internet based or eHealth programs through referrals or combinations of phone and those services
Obtain Medicaid or other reimbursement for counseling provided to callers
Provide a multiple call protocol (two or more calls for the same quit attempt)
Provide counseling immediately to all callers who request it
Provide free (or discounted) NRT to callers without requiring counseling
Provide NRT to callers but require that they register for counseling
Provide proactive (outbound) telephone counseling
Provide reactive (inbound) counseling
Provide self-help materials for tobacco users regardless of the reason for calling or services selected
Provide self-help materials for tobacco users who receive counseling
Provide self-help materials to proxy callers
Re-contact relapsed smokers for re-enrollment in quitline services
Refer callers with insurance to health plans that provide telephone counseling
Serve callers without insurance coverage
Staff the quitline with counselors who meet or exceed Masters-level training
Supplement quitline services with Interactive Voice Response (IVR) services
Train provider groups on 2A's or 3A's and refer (with or without a fax referral program)
Use text messaging to provide tailored support in conjunction with or instead of telephone counseling

Table 2

Exploratory Factor Analysis with Varimax Rotation for Theory of Planned Behavior Items

Item	Internal Constraints	External Constraints
1. Strong Evidence Effectiveness	.73	.04
2. Importance Overall Cost	.83	.09
3. Practice Consistent with Mission	.32	.47
4. Opinions Influenced Decisions	.55	.34
5. Bureaucratic Procedures	.41	-.19
6. Decision Based on Expertise to Implement	.38	.32
7. Not Pay Attention to Costs	.34	-.06
8. Influenced by Well-Respected QLs	.47	.56
9. Influence of Outside Mandates	.06	.62
10. Importance of Being First	-.11	.46
11. Opinion of Funder/Service provider	-.01	.63
12. Importance of Other QLs Adopting	-.05	.59

Table 3

Correlation Table of Variables Used in Path Analysis

	1	2	3	4	5	SD
1. Internal Constraints	--	.15*	.17*	-.21**	.29**	0.47
2. External Constraints		--	.15*	.05	.18**	0.57
3. Adoption of Practices			--	-.23**	.30**	0.67
4. Unilateral Decision Making				--	-.35**	0.81
5. Consensus					--	1.14

Note. N= 171. Data centered at the quintile level of analysis. All means, therefore, are equal to 0.

* $p < .05$.

** $p < .01$.