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Interpersonal influences on patients' surgical decision making: the role of close others

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Abstract

Patients make medical decisions in consultation with their partner, family, and friends. However, little is known about the ways in which these close others influence their decisions, particularly with respect to discrete decisions such as those related to medical treatments. This cross-sectional study investigated their influence on the surgical decisions of inflammatory bowel disease patients referred for surgery to remove their colon (N = 91). Guided by research on social control and classic research on power and influence in close relationships, we identified four types of close other decision influence: persuasion, assistance with understanding, indirect influence, and negative influence. Linear logistic and regression analyses showed that patients were more likely to have surgery when their close other used persuasion, and they reported lower decisional conflict when their close other helped them understand the decision. Patients were less likely to have surgery and reported greater decisional conflict when their close other used negative influence tactics. Findings demonstrate the importance of considering social context when investigating patient decision making.

Keywords

Decision making; Interpersonal; Partner; Social control; Social influence

Introduction

The decision to undergo a life-altering surgery is never easy, but it is likely to be particularly difficult when the need for surgery is uncertain and the choice is highly consequential.

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Research on these types of decisions has focused on the role of intrapersonal factors such as patients' perceived risk for adverse outcomes (e.g., Fang et al. 2003), consistent with robust evidence that patients' health beliefs affect their decisions (Fishbein et al. 2001; Weinstein 1993). However, it is also the case that patients make decisions in a social context that includes their partner, family members, and friends. Relatively little is known about the role these individuals play in patient decision making (i.e., *interpersonal* influences). The present study investigated patients' perceptions of the role their close others played in a major surgical decision made by a population facing a particularly difficult decision—inflammatory bowel disease (IBD) patients facing a decision about surgery to remove their colon (*colectomy*).

Medical features of IBD and the surgical referral

IBD includes Crohn's disease and ulcerative colitis, chronic diseases that cause unpredictable episodes of gastrointestinal inflammation and physical disability (Jewell 1997) and psychosocial impairment (Casati et al. 2000; Guthrie et al. 2002). Partners and other people in patients' lives are also affected by IBD (Casati et al. 2000), reporting distress and worries about how symptoms and impairment affect their own and the patient's daily life (Vergara et al. 2002). Treatment for IBD focuses on managing symptoms with medication, but there are two circumstances under which physicians may recommend colectomy instead. The first is when medications cannot adequately control symptoms. The second is related to IBD patients' high risk for colorectal cancer (*CRC*). Namely, their CRC risk surpasses the general population's risk 8–10 years after symptom onset and continues to rise steadily thereafter (Ransohoff 1988; Ullman 2003). Patients with longstanding disease undergo frequent surveillance colonoscopies (Itzkowitz and Harpaz 2004; Itzkowitz and Present 2005), and physicians may recommend colectomy if a colonoscopy detects precancerous cell change (*dysplasia*).

Thus, colectomy is an important treatment modality in IBD. Yet most patients strongly prefer to avoid it. Removing the entire colon (and often the rectum) usually necessitates creation of a temporary or permanent opening in the abdominal wall (a *stoma*) through which waste empties into an external bag (an *ostomy* bag). Many patients are fearful of needing an ostomy (Hjortswang et al. 1998) and of suffering surgical complications such as functional bowel problems, infertility, and sexual dysfunction (Cornish et al. 2007). Some refuse colectomy, opting instead to try different approaches for managing symptoms or dysplasia. Their choice is complicated by risks of refusing colectomy. Patients with uncontrolled symptoms risk life-threatening complications or emergency surgery, whereas patients with dysplasia risk CRC (Bernstein et al. 1994; Ullman et al. 2003). In sum, these patients are in an extremely difficult position with uncertain outcomes no matter what their choice.

Interpersonal influences on the surgical decision: the role of close others

Once a surgical referral occurs, social support theory and a large body of evidence suggest that patients are likely to turn to their partner, family, and friends for advice and comfort. Even if patients do not actively mobilize assistance, these individuals may spontaneously attempt to assist with or influence the decision. In particular, the partner is likely to get involved. Partners are a primary source of support for people who are married or in a relationship (Beach et al. 1996), providing information and guidance, practical assistance, and emotional support. Partners also have their own opinions about colectomy and will be personally affected by the patient's decision (Vergara et al. 2002). These factors further enhance the probability they will get involved.

No research has examined partners' attempts to influence decisions involving IBD or colectomy. However, studies of other patient populations suggest that such influence is plausible and takes a variety of forms. For example, breast cancer patients who report influences on their cancer-related decisions have been shown to rank their partner's influence as second only to the influence of medical professionals (Coyne and Anderson 1999; Smitt and Heltzel 1997). Furthermore, breast cancer patients who place greater importance on their partner's opinion about surgical treatment options are more likely to be guided by their partner's opinion when making their surgical decision (Hawley et al. 2009). In a study of partners of prostate cancer patients, Srirangam et al. (2003) found that nearly all (93%) had been consulted by the patient during treatment decision making. Most partners had a definite treatment preference and, on average, they reported having had moderate influence on the patient's final treatment decision (although self-reported influence ranged from "none" to "major," demonstrating substantial variation across couples). These partners reported reading informational materials and gathering information; however, other decision-related behaviors were not specified. The potential for negative influence tactics was shown by another study of men with prostate cancer (Chapple et al. 2002), which revealed that some patients reported feeling pressured by their partner to choose a particular treatment.

Of course, the social context in which patients make their surgical decision also includes other family members and friends. There is growing evidence that family and friends are a source of influence on patients' decision making, although the specific ways in which they exert influence are rarely specified (e.g., Orsino et al. 2003) and their influence is generally not as great as the influence of partners (e.g., Davison et al. 2009). These findings are consistent with research on subjective norms (Fishbein and Ajzen 1975), which suggests that perceived pressure or support from people who are important to patients can influence their health decisions (Armitage and Conner 2001). For example, Michie et al. (2004) investigated subjective norms in the context of prenatal screening for Down's syndrome and found that women's intention to undergo testing and their uptake of testing were predicted by their perception that their partner and friends endorsed it.

Understanding how close others influence behaviors

Social control theory provides a useful foundation for clarifying ways in which close others may influence patients' decision to have a colectomy because it focuses on strategies people use to influence others' health decisions. However, the theory was developed in reference to ongoing health decisions that involve beginning and continuing (or discontinuing) a health behavior that must be maintained over time (often, but not always, in healthy individuals, e.g., exercise or dietary change). These decisions differ from less frequently studied discrete health decisions that are common in healthcare environments. In practice, discrete health decisions encompass situations that tend to have more profound short-term implications for life expectancy and quality of life. For instance, cancer patients are increasingly asked to play an active role in treatment decisions, and people at high familial risk for various serious diseases can opt to be tested for risk-conferring mutations that have grave implications for future health. Similarly, IBD patients' surgical decision has profound short-term implications. Discrete decisions are also more likely to involve uncertainty regarding the "best" choice, a relatively limited timeframe in which interpersonal influence can occur, and the inability for close others to join in the behavior they are trying to influence.1

Because of these differences, some social control strategies are less relevant to discrete health decisions than to ongoing health decisions. These differences necessitate reconsideration of interpersonal influences in light of the unique features of discrete health decisions. For instance, strategies such as social modeling (e.g., close others engaging in regular exercise as a way of supporting change) and altering the environment (e.g., close

others purchasing nutritious snacks to facilitate the patients' dietary change)—although useful for influencing ongoing health decisions—are not highly relevant to discrete health decisions.

In light of these differences, we distinguish our approach from social control by referring to it *decision influence*. Consistent with social control theory, we conceptualized potential forms of decision influence along two dimensions: direct versus indirect and negative versus positive (Hughes and Gove 1981; Lewis and Butterfield 2005; Lewis and Rook 1999; Tucker 2002; Tucker et al. 2006; Umberson 1987). Direct influence occurs when close others communicate their preference, as when they request that the patient choose a specific option, whereas indirect influence occurs when patients' decisions are guided by their perceived obligations toward people who are important to them or their beliefs about the choice most likely to enable them to meet their role responsibilities. Positive social control includes behaviors such as discussion, positive reinforcement, and (if not aversive) persuasion, whereas negative social control involves behaviors likely to be perceived as coercive, such as expression of disapproval or attempts to induce guilt (Lewis and Butterfield 2005).

Overview of study

A sample of 91 men and women with IBD who had been referred for colectomy by a physician as the result of a specific medical event (e.g., diagnosis of dysplasia) participated in this cross-sectional study investigating the role of close other decision influence in patients' surgical decision (i.e., whether they chose to have a colectomy) and the difficulty they experienced as they made their decision (*decisional conflict*; O'Connor 1995). We investigated the role of the patient's partner or, for unpartnered patients, the family member or friend they perceived to have been involved in their decision. Our goals were twofold. First, we sought to identify distinct forms of decision influence used by these close others. We predicted that they would vary with respect to being direct versus indirect and positive versus negative, consistent with research on social control. Second, we investigated factors hypothesized to be associated with the influence that close others had on patients' decision outcomes. We took a conservative approach by investigating effects of close other decision influence after considering effects of sociodemographic and medical characteristics and two key variables with potential influence on patients' colectomy decision making: their trust in their physician and their perceived risk for CRC. Numerous studies have shown greater compliance among patients who trust their physician more (Hall et al. 2001; Safran et al. 1998; Thom et al. 1999), and perceived risk is a primary feature of many theoretical models of health decision making (e.g., Fishbein et al. 2001; Weinstein 1993). We hypothesized that close other decision influence would explain variance in patients' surgical decision and decisional conflict over and above the effects of potential sociodemographic and medical confounds, physician trust, and perceived risk.

[1]In differentiating between discrete and ongoing health decisions, we should note that it is not necessarily the case that discrete decisions will never be faced more than once: Some choices are irreversible whereas others may have to be revisited in the future, with additional opportunities for close others' involvement. For instance, IBD patients who undergo colectomy will never again face the same surgical decision, whereas those who refuse it may need to revisit their decision if they experience another health event that signals a potential need for surgery. Rather, the hallmark of a discrete decision is that it is made at a specific point in time in response to a specific health threat, as when IBD patients are faced with the decision to have or refuse colectomy given their current health status.

Method

Participants and procedure

Participants were recruited through advertisements, IBD patient groups, and physicians at an urban hospital in the northeastern United States. Individuals who expressed interest were screened for eligibility in a phone interview. They had to be English-speaking adults (aged 18 or older) with a formal diagnosis of IBD who had been referred for colectomy by a physician in the prior 3 years (based on pilot research suggesting patients were able to recall their decision making in this timeframe). They were excluded if they had undergone emergency colectomy, had a diagnosis of CRC prior to surgery, or had an inherited syndrome related to CRC risk. All 119 eligible patients agreed to participate and were mailed consent and HIPAA forms, the study questionnaire, and an envelope for returning materials. Twenty-eight (24%) did not complete the materials. Although non-completers were less likely than participants to have had a colectomy ($P = .003$), they did not differ with respect to sex, diagnosis, relationship status, or having dysplasia (all ps > .10). The most common reasons for non-completion involved the questionnaire (e.g., feeling the questions were too personal; 18%) and lack of time (11%). Patients who completed the study received $30 for their time. Procedures were approved by the hospital's institutional review board.

Measures

The *surgical decision* was assessed by asking patients whether they had undergone colectomy and by assessing their plans for colectomy if they had not already had one. Patients were categorized as having decided in favor of colectomy if they had undergone the surgery or had definite plans to have it (i.e., it was scheduled). They were categorized as having decided against colectomy if they had not undergone the surgery and had no plan to do so in response to the specific health threat that precipitated the surgical referral. None were undecided, and all were outside the window time in which they reported having made a final decision. Thus, there was a clear conceptual and methodological distinction between patients who had decided in favor of versus against colectomy.

Decisional conflict was measured with the Decisional Conflict Scale (O'Connor 1995), which assesses uncertainty about a decision; feeling uninformed and unsupported in decision making, and unclear about values; and the perceived quality of the decision they had made. As recommended (O'Connor 1999), the measure was adapted to refer to the decision under investigation (e.g., "I felt I knew the benefits of having a colectomy"), resulting in a measure with 18 items. Respondents reported their agreement on a scale from 1 (*strongly agree*) to 5 (*strongly disagree*). Responses were averaged, and higher scores indicated higher decisional conflict (Cronbach's $\alpha = .93$).

Close other decision influence was assessed using items developed for this study, drawing research on social control (e.g., Lewis and Rook 1999) and qualitative pilot research in which we content analyzed responses of IBD patients asked to describe the role their close others had played in their surgical decision, including their influence-related behaviors. We also consulted research that informed development of social control theory, namely classic research on power and influence in close relationships (Falbo and Peplau 1980; French and Raven 1959; Poppe et al. 1999; Raven 2008). This work helped us identify additional influence tactics potentially relevant to discrete health decisions. The initial pool of 23 items included behaviors relevant to discrete health decisions that varied along two dimensions: direct versus indirect and positive versus negative. Participants answered the questions with respect to their partner's behaviors if they were married or in a committed romantic relationship at the time of their decision or, if they were unpartnered at that time, to think of the person who was most involved in their decision and to answer with respect to that

person's behaviors. Responses were made on the following scale: 0 = *not at all true*; 1 = *slightly true*; 2 = mo*derately true*; 3 = *very true*; 4 = *extremely true*.

Of the initial pool of 23 items, two were excluded from further consideration because ≤5% of participants endorsed them as ever having occurred. The factor structure of the remaining 21 items was examined with exploratory principle axis factor analysis with oblique rotation. The number of factors was determined by examining the scree plot, eigenvalues, and the interpretability of rotated factors. Three additional items were dropped because of low factor loadings or high cross loadings, leaving 18 items loading on four factors. Each item loaded highly on its own factor (ranging from .53 to .97) and had small loadings on other factors (<. 25). Given the high loadings and strongly determined factors, our sample size was sufficient to yield a stable solution for these analyses (MacCallum et al. 1999).

The first factor included four affectively neutral items representing *indirect influence* (e.g., "I thought about my obligations toward my partner/this person as I made my decision"; alpha = .73). The second factor included six direct types of *negative influence* (e.g., "nagged or hassled me about this decision"; alpha = .92). The third and fourth factors represented two distinct types of direct, positive influence: *assistance with understanding* (five items, e.g., "helped me think through the consequences of each choice," alpha = .86) and *persuasion* (three items, e.g., "came right out and told me what decision he/she thought I should make" and "convinced me that a particular decision was the right thing to do"; alpha = .83). A score for each factor was created by computing the mean of relevant items. Possible scores ranged from 0 to 4, with higher scores indicating greater use of a given form of decision influence. The negative influence subscale was non-normally distributed (77% of patients reported no negative influence); it was recoded to represent *no negative influence* versus *any negative influence*. This dichotomous variable was used in all analyses. Inter correlations among the factors averaged $r = .18$ and ranged from−.11 (n.s., between assistance with understanding and negative influence) to .43 ($P < .001$; between assistance with understanding and persuasion).

Perceived extent of close other and physician decision influence was assessed for descriptive purposes by asking patients to rate the influence their close other and, separately, their referring physician had on their decision, using a scale from 0 (*no influence*) to 100 (*completely determined your decision*).

Physician trust was assessed with an 8-item subscale of the Primary Care Assessment Survey (Safran et al. 1998). Seven items (e.g., "I completely trust my doctor's judgments about my medical care") were rated on a scale from 1 (*strongly agree*) to 5 (*strongly disagree*), with positively worded items reverse scored. The eighth item ("All things considered, how much do you trust your doctor?") was rated on a scale from 1 (*not at all*) to 5 (*completely*). An additional colectomy-specific item ("How much did you trust this doctor's opinion that you should have a colectomy?") also used this response scale. Items were summed; higher scores indicated greater trust (alpha = .93).

Perceived risk for CRC was assessed with a single question adapted from a question commonly used to assess perceived risk for cancer (Katapodi et al. 2004), "In your opinion, how likely is it that you will develop colorectal cancer?" (Or, "If you have had a colectomy, how likely did you think it was before you had your colectomy?"). Participants responded using a scale from 1 (*not at all likely*) to 5 (*definitely*).

Sociodemographic characteristics were self-reported and included patient sex, marital/ relationship status, date of birth, years of education, annual household income, work status, and race/ethnicity. Patients also provided sociodemographic information about their close other, including their relationship, sex, and date of birth.

Medical variables were self-reported and included type of IBD (ulcerative colitis versus Crohn's disease or indeterminate IBD), dysplasia (yes/no), and number of IBD-related hospitalizations (to indicate the difficulty of the pre-referral disease course). Pre-referral IBD-related health quality of life was assessed with the Inflammatory Bowel Disease Questionnaire (IBDQ; Guyatt et al. 1989), a well-validated 32-item measure of bowel and systemic symptoms, emotional status, and social functioning. Responses are made on a 7-point scale and scores are summed so that higher scores indicate better quality of life (alpha = .98). Participants in this study responded with respect to the year prior to their surgical referral.

Data analysis

First, descriptive statistics were computed and the few missing values were mean or mode replaced (for continuous and categorical variables, respectively). No variable was missing more than three cases. Principal axis factor analysis and reliability analysis were used to create subscales representing distinct forms of close other decision influence. Next, hypotheses were tested with multiple logistic regression analyses (with the surgical decision as the outcome) and hierarchical multiple regression analyses (with decisional conflict as the outcome). The need to control for sociodemographic and medical variables, physician trust, and perceived risk for CRC was evaluated by examining bivariate associations between each outcome and each potential control variable using one-way Analysis of Variance or chi-square analysis. Variables associated with an outcome at a conservative level of $P < .10$ in bivariate analyses were controlled in the model for that outcome. We also explored whether the effect of close other decision influence on each outcome was moderated by patient sex, close other sex, and close other type (partner versus other). All continuous variables were mean centered and interactions terms involving continuous variables were calculated using mean-centered variables.

Results

As shown in Table 1, participants were primarily non-Hispanic White, partnered, moderate to high income, and college-educated. Just over half were women. Forty percent of participants had dysplasia, indicating very high risk for CRC. Seventy-four precent of participants had decided in favor of colectomy. All had undergone the surgery; we did not recruit anyone in the relatively brief period of time in which they had decided to have the surgery but had not yet had it. The average decisional conflict score was 1.92 (SD = .70), and observed scores ranged from 1 to 3.85 (out of a possible range of 1–5).

Almost three-quarters of close others were partners and the rest were parents, children, siblings, or non-relatives (e.g., friends). All unpartnered participants were able to name a close other who was not a physician who was most involved with their decision and answer study questions about this individual. To explore the relative perceived influence of different groups of people, we examined patients' perceptions of the extent to which their close other (their partner or, for unpartnered patients, their selected close other) and their referring physician influenced their surgical decision. A paired samples *t*-test revealed that, on average, the perceived influence of referring physicians ($M = 63.09$, SD = 30.66; range 0–100) was greater than the perceived influence of close others ($M = 49.78$; SD = 31.24; range 0–100), $t(90) = 3.94$, $P < .001$. In contrast, a one-way analysis of variance investigating whether perceived decision influence differed depending on type of close other (partner versus other) revealed no significant difference, $F(1,89) = .97$, $P = .33$. Similarly, close other decision influence did not differ depending on patient sex or close other sex (*p*s > .25).

Most patients perceived that their close other influenced their surgical decision in multiple ways: 76% reported having experienced three or four forms of decision influence and an

additional 18% endorsed two forms. The most frequently endorsed form of close other decision influence was assistance with understanding (97% of patients), followed by persuasion (83%), indirect influence (80%), and negative influence (23%).

The surgical decision

A model of patients' surgical decision was tested using logistic regression analysis with patients' decision for or against surgery as the outcome (with the latter as the comparison group). No demographic or medical variables were associated with this outcome at $P < .10$ in bivariate analyses, nor was physician trust. However, greater perceived risk for CRC was positively associated with having surgery, $F(1,89) = 6.81$, $P = .01$, and was therefore controlled in the model by entering it in Step 1. In light of the modest sample size, only forms of close other influence that were associated with patients' surgical decision at $P < .10$ in bivariate analyses were tested in Step 2 of the logistic regression model. Two of them met this criterion: close other persuasion, $F(1,89) = 7.27$, $P = .01$, and close other negative influence, $\chi^2(1) = 3.67$, $P = .06$.

As shown in Table 2, the final model revealed that patients with greater perceived risk for CRC were more likely to have decided to have colectomy (Step 1 Odds ratio = 1.86; 95% CI 1.13, 3.04). In addition, close other persuasion was associated with a greater likelihood that the patient chose surgery (Step 2 Odds ratio = 1.97; 95% CI 1.21, 3.21). Conversely, close other negative influence was associated with lower likelihood that the patient chose surgery (Step 2 Odds ratio = .26; 95% CI .07, .92). Perceived risk for CRC became non-significant after close other decision influence variables were added to the model. Exploratory post hoc analyses showed that this effect could be traced to the addition of close other persuasion, but not the addition of close other negative influence. Exploratory analyses investigating potential moderators suggested that effects of close other persuasion and negative influence were not moderated by patient or close other sex or by close other type (partner versus other).

Decisional conflict

Variables investigated as potential confounds to be controlled in the model for decisional conflict included income, $r = -.22$, $P = .04$, presence of dysplasia, $F(1,89) = 3.95$, $P = .05$ (associated with greater decisional conflict), number of IBD-related hospitalizations prior to referral, $r = .30$, $P = .004$, diagnosis of UC, $F(1,89) = 3.07$, $P = .08$ (associated with lower decisional conflict), perceived risk for CRC, $r = -.26$, $P = .01$, close other type, $F(1,89) = 5.57$, $P = .02$, close other sex, $F(1,89) = 3.33$, $P = .07$ (female close others associated with greater decisional conflict), and trust in the physician, $r = -.41$, $P < .001$. Of the close other decision influence variables, only close other negative influence, $F(1, 89) = 10.14$, $P = .002$, and assistance with understanding the decision, $r = -.32$, $P = .002$, were associated with decision conflict at $P < .10$ in bivariate analyses.

Next we conducted a hierarchical multiple regression analysis in which decisional conflict was regressed on control variables in Step 1 and close other decision influence variables in Step 2. In light of the high number of potential control variables and the modest sample size, we further trimmed the control variables by dropping from this multivariate model any that were not associated with the outcome at $P < .10$. This strategy also resulted in a more parsimonious model. As shown in Table 3, Step 1, in the final model greater decisional conflict was associated with having a close other who was a woman, $\beta = .27$, $t = 2.95$, $P = .004$,2 having a greater number of IBD-related hospitalizations prior to the surgical referral, $\beta = .23$, $t = 2.46$, $P = .02$, and lower physician trust, $\beta = -.42$, $t = -4.49$, $P < .001$. As shown in Table 3, Step 2, after controlling these variables, findings indicated that patients reported less decisional conflict if their close other provided more assistance with understanding the

decision, β = −.21, *t* = −2.22, *P* = .03, and more decisional conflict if their close other used any negative influence, β = .21, *t* = 2.39, *P* = .02. The close other decision influence variables together explained 8% of the variance in decisional conflict over and above the effects of the control variables, and the total model explained 37% of the variance in decisional conflict. Exploratory analyses did not provide evidence that the effects of assistance with understanding or negative influence were moderated by patient sex, close other sex, or close other type, except that there was a marginally significant interaction between patient sex and assistance with understanding, β = .29, *t* = 1.76, *P* = .08, suggesting that assistance with understanding was not associated with decisional conflict for women (simple slope b = −.07, SE = .07, *t* = −1.00, *P* = .32, 95% CI −.21, .07) whereas this type of close other decision influence was inversely associated with decisional conflict for men (simple slope b = −.29, SE = .11, *t* = −2.70, *P* = .01, 95% CI −.50, −.08).

Discussion

Patients make difficult medical decisions in the context of people close to them, and these individuals become involved in the decision in various ways that are not well understood with respect to discrete health decisions that are common in healthcare. In this study we investigated ways in which IBD patients' close others influenced their decision to have a colectomy after a physician referred them for surgery. Findings demonstrate that various behaviors enacted by close others influence patients' decision and the difficulty of their decision making, providing insights useful for guiding further research and managing these patients in the clinical environment.

We identified four distinct forms of close other decision influence. As expected, they varied with respect to whether they were direct versus indirect and positive versus negative. Specifically, close others influenced the decision by (1) assisting with understanding the decision and its consequences (direct, positive) and by (2) directly expressing their preferences about colectomy and attempting to persuade patients (direct, positive). They also influenced the decision in ways that were (3) negative (direct, negative) and (4) indirect (indirect, affectively neutral). Nearly all patients in the study reported that their close other influenced their surgical decision through multiple forms of decision influence.

The most common form of close other decision influence was assistance with understanding the decision and its consequences. For instance, close others helped patients gather information, identify pros and cons of each choice, and understand consequences for the future. This form of close other decision influence was not associated with patients' surgical decision in multivariate analyses. Rather, findings suggest it facilitated the decision making process. Viewed in light of the components of decisional conflict (as represented by the measure's subscales), this facilitation appears to have involved helping patients feel less uncertain, more informed, more supported in decision making, more clear about their decision-related values, and more confident they had made a high quality decision. The potential clinical implications of this finding are highlighted by the fact that elevated decisional conflict has been associated with delaying or avoiding important health decisions (O'Connor 1995, 1999). Delays or avoidance could have serious repercussions for IBD patients referred for colectomy because of their high risk for medical complications and/or CRC.

[2]The effect of close other sex remained significant even when we controlled for patient sex in this model. Because patient sex was not significantly or marginally significantly associated with decisional conflict, we trimmed it from the model in the interest of parsimony (a procedure also used for other control variables).

Moderation analyses suggested that benefits of close other assistance with understanding did not depend on whether the close other was a partner or another relation, a man or a woman. Although a trend suggested that close other assistance with understanding may be more likely to reduce decisional conflict for men than for women with IBD, this finding should be viewed with caution until confirmed with additional research. Overall, our findings suggest that assistance with understanding the decision was a constructive way for partners, family members, and friends to facilitate patient decision making. Insofar as this is the case, it may be useful to encourage patients to seek this type of help from close others who are able and willing to provide this assistance.

The fact that close other assistance with understanding did not explain a significant amount of variance in patients' surgical decision begs the question of whether these findings reflect the effects of informational social support rather than decision influence. In theory, decision influence can be distinguished from social support, in that decision influence encompasses behaviors intended to influence and regulate another person's decision-related behavior (or mental representations of other people's preferences and needs that influence decision-related behavior) whereas social support encompasses behaviors that are intended to offer assistance and support to a person who is perceived to be in need (Lewis and Rook 1999). Thus, support provider intentions are a key difference. In practice, decision influence and social support are difficult to distinguish. We note that patients' decision outcomes are likely to be more strongly related to their perceptions of their close others' intentions than to close others' actual intentions; however, we view this as an empirical question worthy of further research. Such research would need to investigate close other's intentions as they engage in these behaviors (e.g., to assist versus to influence), patients' understanding of those intentions, and their effects on outcomes. Observational methods in which the patient and the close other discuss the decision and use video-mediated thought recall to report their intentions, perceptions, and reactions could provide a useful approach (Welsh and Dickson 2005).

Most patients also said that their close other directly communicated an opinion about surgery and attempted to persuade them. This form of close other decision influence was associated with patients' surgical decision but not their decisional conflict, suggesting the potential for a causal association whereby close others moved patients toward the surgery without affecting the ease or difficulty of their decision making. Although plausible, the present study was correlational and further research is needed to investigate whether a causal relation exists. It is notable that patients generally perceived their close other to prefer colectomy over its alternatives. Although patients are quite fearful of the effects of having a colectomy, close others may be more fearful of the effects of *not* having it, consistent with research in other patient populations (e.g., Volk et al. 2004). Research is warranted to understand circumstances under which persuasion attempts are experienced as positive versus negative by patients. It would also be useful to understand the effects on patients, close others, and their relationship if the option advocated by the close other has negative versus positive effects on patients' health and quality of life.

The next most common form of decision influence was indirect influence. For instance, patients thought about what their close other wanted as they made their decision, were affected by feelings of responsibility toward their close other, and were concerned about letting the close other down. Our findings provided little evidence that this form of decision influence was associated with patients' surgical decision or the difficulty of their decision making. The lack of findings may indicate that concerns about close others do not have as strong an effect on discrete health decisions as indirect social control has on the ongoing health decisions studied in the social control literature (e.g., Tucker 2002). Compared to the surgical decision, decisions about healthy lifestyle behaviors are reversible and less

consequential in the short term than colectomy, and these types of considerations may attenuate the effects of indirect influence. Alternatively, the association between indirect decision influence and discrete health decisions may be subtle and/or complex, affected by characteristics of the patient, the close other, and their relationship (e.g., commitment). Interestingly, indirect influence was positively associated with close others' use of negative influence tactics, suggesting that indirect influence may be in part motivated by a desire to avoid conflict with the close other or to avoid damaging the relationship.

Finally, close others influenced the decision in ways that were negative, although this type of influence was relatively rare. Research on social control in the context of ongoing health behaviors has also found that positive forms of social control are more common than negative forms (e.g., Butterfield and Lewis 2002). In the present study, negative influence included behaviors such as nagging, trying to take control of the decision, or acting angry or disapproving. Although reported by only a quarter of patients, negative decision influence was associated with higher decisional conflict and lower likelihood that patients chose surgery.

The finding that negative decision influence predicted lower likelihood that patients chose surgery is striking in light of the fact that most patients perceived their close preferred surgery over its alternatives. Similar unintended effects of negative social control have been identified in research on ongoing health behaviors in chronically ill populations (e.g., Franks et al. 2006; Helgeson et al. 2004). One potential explanation for these findings implicates psychological reactance theory (Brehm and Brehm 1981). According to reactance theory, situations that threaten or eliminate individuals' freedom of choice cause negative thoughts and emotions that lead them to act to restore their freedom, often by responding in opposition to the advocated behavior. Use of forceful or dogmatic language (Quick and Stephenson 2008) can lead to psychological reactance and negative arousal, and communications using such language are perceived as less persuasive (see Quick and Considine 2008). Whether guided by reactance theory or another process, research is needed to identify circumstances under which negative influence is most likely to occur and to explore benefits of reducing close others' use of negative influence tactics (or patients' potentially maladaptive responses to them).

We found it interesting that our results showed that the extent to which patients trusted their referring physician was associated with their decisional conflict but not their actual surgical decision. Yet, participants' ratings of close other and physician influence suggested that their referring physician's influence was greater than their close other's influence on their decision. This pattern of findings suggests a need for future research that expands investigation of physician factors and considers them in conjunction with close others' decision-related behaviors. The present study may not have investigated physician factors most likely to influence patients' surgical decision making. One factor of likely importance is physicians' communication style. For instance, a recent study of newly diagnosed lung cancer patients found that although physician trust did not predict which patients chose to have recommended surgery to treat their cancer, the extent to which physicians were perceived to engage in shared communication did predict this decision (Cykert et al. 2010).

There are several limitations of this research. First, it used a retrospective design. We limited the study to patients who had made their decision relatively recently and within a timeframe during which patients perceived they could recall their decision making. Nonetheless, post-decisional processes may have influenced the results. For instance, a study of women who had undergone breast reconstruction following mastectomy for breast cancer found that women with greater depression and anxiety reported greater decision regret (Sheehan et al. 2007). To help rule out the possibility that our findings could be attributed to current

negative mood we re-ran the model for decisional conflict, adding indicators of current depressed mood and anxiety (measured with the well-validated Brief Symptom Inventory; Derogatis and Spencer 1982). Controlling for current negative mood did not alter the association between close other decision influence and decisional conflict. In addition, cognitive biases that serve to decrease post-decision negative emotions (Shamoun and Svenson 2002, Simon et al. 2004) could have influenced patients' recollection and reporting of their decision and the role played by close others. However, the fact that our findings are consistent with theory and existing research suggests our approach offered a useful and feasible starting point to guide further research. We note it also follows in the footsteps of early social control research, which also used a retrospective approach (e.g., Lewis and Rook 1999). However, experimental research and/or longitudinal field research beginning prior to decision making is an important next step in investigating how close others influence patients' decisional conflict and decision.

Another limitation is that the majority of our sample was White, educated, and financially well-off. Generalization to more diverse populations will require future research. It seems likely that cultural and socioeconomic differences may affect close other decision influence processes given research on related interpersonal processes. For instance, race/ethnicity and socioeconomic status have been found to influence preferences related to decision making and interpersonal communication in healthcare (Shrank et al. 2005).

Finally, the fact that we relied on patient reports rather than observation or assessment of close others' behaviors may be viewed as a limitation. The extent to which patients' reports are accurate reflections of close others' responses to the surgical referral is unclear. Even if not accurate, we would argue that patients' perceptions of their close other's behaviors are an important determinant of their responses to them. Focusing on patients represents a valuable first step in this line of research. Future research that investigates the perspectives of both patients and close others would be valuable extension of this work, as would observational approaches.

Despite these limitations this study makes several important contributions. First, it provides guidance for further research on how close others influence discrete health decisions, an important topic given the increasing expectation that patients will play an active role in their health care. This extension addresses a gap in the research literature that is relevant not only to IBD patients referred for colectomy but potentially to patients facing treatment decisions (e.g., in breast or prostate cancer) or decisions about preventive or prophylactic measures to protect against high risk for disease (e.g., prophylactic mastectomy or oophorectomy). Further, we investigated the roles of various types of close others. Although many studies focus on partners (and therefore on partnered patients), those studies ignore the many patients who face important medical decisions without an intimate partner. The results of such studies do not provide clear guidance for efforts to involve non-partner close others in medical decisions.

In addition, we studied a decision faced by both men and women. Men and women did not differ in the extent to which they perceived having experienced the four types of decision influence. However, there was evidence for some gender differences in the decision making process that should be followed up in future research. Particularly interesting was the finding that decisional conflict was higher among patients whose close other was a woman. In the present study women were not significantly more likely than their male counterparts to engage in assistance with understanding (which could potentially complicate decision making by introducing new information) or any of the other forms of decision influence. Further research will need to replicate and clarify this result.

Finally, we studied decision making in a sample of patients who had made a real and highly consequential medical decision. Although studies investigating decision making in hypothetical situations can be useful, only studies of real world decisions can reveal patients' actual behaviors when faced with a decision with important consequences for their future goals, relationships, and—in some cases—survival. These strengths add to the value of this study for providing valuable information for the development of decision aids and interventions for IBD patients and their close others in addition to laying the groundwork for additional research on patient decision making in the context of highly consequential, discrete health decisions.

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Table 1

Descriptive statistics (N = 91)

Variable	*n* (%)	*M* (SD)	Observed range
Sex (female)	51 (56%)		
Married	59 (65%)		
Age (years)		47.85 (13.97)	20–78
Education (years)		16.15 (2.56)	10–20
Annual household income (median)	$80,000–$100,000	<$20,000–>$140,000	
Working full- or part-time	56 (62%)		
Type of close other			
Partner	66 (73%)		
Other relation	25 (27%)		
Colectomy (yes)	67 (74%)		
IBD diagnosis			
Ulcerative colitis	68 (75%)		
Crohn's disease	14 (15%)		
Undetermined IBD	9 (10%)		
Diagnosis of dysplasia	36 (40%)		
Number of IBD-related hospitalizations	2.78 (2.93)		0–13
Pre-referral IBD-related health QOL[a]	114.91 (47.06)		44–221
Decisional conflict		1.91 (.68)	1–3.65
Trust in the physician		37.44 (7.17)	16–45
Decision influence			
Understanding		2.03 (1.07)	0–4
Persuasion		1.70 (1.27)	0–4
Indirect		1.07 (.84)	0–3.40
Negative (any)	28 (31%)		0–2.44

[a]Assessed using the IBD-Q

Table 2

Logistic regression analysis with patients' surgical decision as the outcome (N = 91)

Variable	Step 1			Step 2		
	B	SE	Odds ratio	B	SE	Odds ratio
Perceived risk for CRC	.62	.25	1.86*	.43	.27	1.54
Decision influence–persuasion	–	–	–	.68	.25	1.97**
Decision influence–negative[a]	–	–	–	−1.35	.65	.26*
Hosmer–Lemeshow χ^2 (df)	6.68 (4)			6.62 (8)		
Nagelkerke R^2	.10			.25		

Coded 1 = *decided for colectomy*, 0 = *decided against colectomy*

[a] Coded 1 = *any*, 0 = *none*

† $P < .10$,

* $P < .05$,

** $P < .01$

Table 3

Multiple regression analysis with patient decisional conflict as the outcome (N = 91)

Variable	Step 1		Step 2	
	B	SE	B	SE
Intercept	1.71	.09***	1.61	.09***
Close other sex—female	.37	.13**	.40	.12***
Number of IBD-related hospitalizations	.05	.02*	.04	.02†
Trust in physician	−.04	.01***	−.03	.01***
Decision influence–Understanding	–	–	−.13	.06*
Decision influence–Negative	–	–	.34	.14*
ΔF for step	11.93***		5.51**	
R^2 for step	.29		.08	
F or full model			10.10***	
R^2 for full model			.37	

† $P < .10$,

* $P < .05$,

** $P < .01$,

*** $P < .001$