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Modeling patient-centered communication: Oncologist relational communication and patient communication involvement in breast cancer adjuvant therapy decision-making

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Abstract

Objective—Relational communication refers to those messages communicators naturally express that carry meaning about the type and quality of relationship they share. It is expected that patients of oncologists who express positive relational communication will be more communicatively involved in their office visits, and regret their decision for adjuvant therapy following surgery less.

Methods—One hundred eighty (180) audio-recorded discussions between oncologists ($n = 40$) and early stage (I–III) breast cancer patients were coded with the Siminoff Communication Content and Affect Program (SCCAP). The data were used to test the relationships between patient demographics, oncologist relational communication, patient communication involvement and self-reported patient decision regret.

Results—After controlling for clinician clusters, oncologists' verbal (i.e., confirming messages) and nonverbal (i.e., direct and inclusive speech) relational communication is indirectly associated with lower patient decision regret via the mediating effect of greater patient communication involvement.

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Conflict of interest

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Conclusion—Clinician relational communication provides an influential affective climate for decision-making that appears to have important effects on patients' decision confidence.

Practice Implications—Clinicians should recognize the potential of their own relational messages to facilitate patients' communication involvement in decision-making during cancer care.

Keywords

relational communication; decision-making; involvement; patient participation

1. Introduction

Patient-centered care offers a striking contrast to traditional biomedical models for communication between participants in medical care [1–3]. Accordingly, Epstein & Street's recent NCI supported monograph position communication at the core of patient-centered cancer care, and provide a useful conceptual map for describing this multi-faceted construct [4]. These authors identify several communication behaviors that support the core attributes of patient-centered care, and produce desirable cancer care outcomes. Many of these behaviors (e.g., enhancing participation, validating experience) can be considered relational in the sense that they offer implicit, and often explicit messages of *mutuality* between the interactants [5]. Mutual communication, that is, a nonjudgmental, inclusive orientation toward the other person, has been described as a central feature of therapeutic relationships [6]. Mutuality reflects the basic assumption that communication functions to meet both informational and relational needs [7–9].

In correspondence with this idea, oncologist-patient communication has been shown to serve both instrumental (i.e., information exchange) and relational needs of patients. [10–14] This dual function of communication serves as a useful perspective for examining the psychological impact of communication behavior in cancer care [15]. Relational needs are strongly experienced in cancer settings where patients may experience great distress, and view oncologists as an important source of hope. [16–18] The cancer experience also often involves complex decision-making that requires explanation and synthesis of scientific information. Yet these clinical decisions provide patients the chance to become more involved and make meaningful contributions to their care (See Figure 1). As such, cancer treatment decision-making offers an important opportunity for understanding how clinician's communication may affect patients' involvement and decision-making during visits and beyond. The purpose of this study is to test a model of communication that features both instrumental and relational functions, on the intermediate outcome of patient communication involvement, as well as the longer term health related outcome of decision regret.

1.1 Cancer Communication

Early cancer communication research described patterns of information exchange, revealing clear dominance of talk by physicians, and also showing some physician communication variability toward different demographic groups, particularly age and education [11,19–22]. Broad study of the relationship function of communication is more recent, and conceptualized in a variety of ways including empathy [23,24], affect [25,26], finding common ground [27], and affiliation [8]. Each of these constructs can be considered within the larger theoretical perspective of relational communication because they point to behaviors or perceptions that reflect the transactional nature of communication. The *transactional* perspective assumes that one communicator's actions do not cause another, rather, communication unfolds spontaneously as a function of the ongoing and mutual perceptions of interactants [28]. Relationship development depends on these interpersonal perceptions, but is also guided by

social context (e.g., professional vs. friendship) rules. Importantly, various forms of relational communication serve as the guiding force for ongoing interaction.

1.2 Relational Communication

Communication theorists have long held that talk is the substance of relationships. Relationships form from emerging patterns of communication created by and responded to by the interactants.[29] Relational communication then can be described as those *identifiable verbal and nonverbal behaviors that carry message value about the type of relationship the communicators share* [30,31]. Relational messages occur in tandem with information exchange, but function to cue interactants to the affective qualities of the relationship (e.g., friendly, formal). Consideration of both informational meaning and relational cues enable communicators to better interpret ongoing messages as they occur. In this way, relational communication contributes to a *climate* for interaction that can facilitate or inhibit effective communication outcomes. This jointly created social environment is the basis for such important patient-centered communication goals as mutual influence, alignment and adaptability [4,32–35].

At the most basic level, clinician-patient communication relationships reflect greater clinician contributions.[36] Clinicians' expertise and medical routines naturally place patients in a less dominant position. This is particularly true for cancer care, which is characterized by large amounts of unfamiliar medical information as well as strong emotional responses [37,38]. Positive relational communication offers the clinician a means of infusing mutuality in the interaction, and creating an open adaptable climate for interaction [36,39]. Physician relational communication has been associated with several desirable outcomes including lower patient anxiety and depression [16,40,41], fostering hope [42], improved treatment adherence [43, 44], and greater patient satisfaction [24,44]. Conversely, patients have also reported that poor clinician communication can lead to feeling dehumanized and increased psychological distress [45]. Comprehensive study of how clinicians' may create a communication climate that leads to desired outcomes is necessary. One way to do this is to consider factors that influence patient's participation and communication involvement.

1.3 Patient Participation, Communication Involvement, and Decision-making

Generally, patient participation reflects an overall orientation to active and engaged communication in a medical setting.[35] Asking questions, bringing up concerns, and offering opinions all indicate higher levels of patient participation. Patient participation has also been used more specifically to refer to the amount of information a patient provides to a decision-making event. Both conceptualizations provide a potential starting point for enhancing the clinician-patient therapeutic relationship [46–48]. However, patient participation conceptualized solely as patient verbal contributions to the communication process leaves out important relational and affective dimensions of interaction. The communication involvement construct may provide this expanded base.

Communication involvement has traditionally been considered in terms of topic relevance, or ego-involvement with a particular message.[49] These studies showed that communication involvement facilitates deeper message processing and message acceptance [50,51]. Other views of involvement reflect an overall interaction *engagement* that includes an affective connection to social interaction that influences both instrumental and relational communication goals.[52] This conceptualization of involvement can be considered as the expression of two basic social processes, affect (positive/negative) and affiliation (high/low). A useful typology emerges if these two constructs are considered as intersecting continuums. For example, positive affect and high affiliation produces involvement. Conversely, negative affect combined with low affiliation produces withdrawal or avoidance.[53,54] In either case,

involvement provides an overall orientation to social interaction that has meaningful implications for clinician-patient communication. For example, Duggan & Parrot (2001) found that patients disclosed more about their illness experience (greater involvement) if their physicians showed more relational rapport.[55] In this way, communication involvement is marked by both participatory (i.e., asking questions) and affective (i.e., affiliation) behavioral cues.[56–59] Communication involvement is particularly relevant to the complexities of medical decision-making.

Decision-making is central to treating and living with cancer. Unfortunately, sometimes decisions that felt appropriate when made appear unjustified later. These decision-related emotions can be distinctly uncomfortable and negatively impact quality of life.[60,61] By participating in decision-making communication, patients can regain control lost to physical illness and potentially improve satisfaction and compliance.[62–64] Equally, through careful communication, clinicians may increase their awareness of patient participation preferences, and gain valuable diagnostic data.[65] In fact, the match between a patient's preferred participation and actual participation is a strong predictor of later decision regret.[66] However, there is little evidence that clinicians can solicit, or reliably predict their patient's preferred level of participation.[67–69] Not only is their wide variability in patients' decision participation preferences, but physicians tend to define patient decision participation more as *agreement* rather than *engagement*. [70–72] In sum, this work has shown, that patients expect understandable information provided in an open and supportive way.[63,73] However, findings further suggest that clinician-patient communication expectations may be related to role perceptions of what shared decision-making entails. [74,75]

Yet, participation in decision-making remains an important linkage to decision regret. A recent study of men choosing radical prostatectomy to treat localized prostate cancer showed that greater patient participation in treatment decision-making was associated with lower regret scores and less change in quality of life.[76] Importantly, the match between preferred level of participation and actual level of participation was found to be a strong indicator of decision regret.[76] A more comprehensive conceptualization of the communication process may enable researchers to better understand the role of clinician-patient communication in creating or avoiding these outcomes.

This study explores the direct effects of oncologist relational communication on an important aspect of patient-centered care, patient communication involvement, and indirectly on decision regret for adjuvant therapy following early stage breast cancer surgery. Better understanding of the behavioral components of clinician-patient relationships, above and beyond individual differences, will provide new insights and methods for improving patient-centered cancer care. After controlling for the effects of age and education, we expect patients of oncologists who express positive relational communication to be more communicatively involved in their office visits, and regret their decision less. We utilized a path model of communication variables that reflects these relationships.

Hypotheses and research questions for this study are as follows:

- H1: Patient age and education is directly associated with clinician instrumental and relational communication.
- H2: Clinician relational communication is directly associated with patient communication involvement, controlling for clinicians' instrumental communication.
- H3: Patient communication involvement is directly associated with less decision regret.
- H4: The effects of clinician relational communication on patient decision regret are mediated by patient communication involvement.

RQ1: What proportion of effect of clinician relational communication on patient decision regret is mediated by patient communication involvement?

2. Methods

2.1 Study design and participants

This study is a cross-sectional design that features observation of audio recorded oncologist-patient visits following breast cancer surgery. The *Siminoff Communication Content and Affect Program* (SCCAP) was used to observe communication in visits randomly selected from a large sample created for a randomized control trial (RCT) study that tested an adjuvant therapy decision-making intervention.[77]

The parent study incorporated a longitudinal randomized control trial (RCT) design, with intervention and control arms, that included a pre-visit patient questionnaire, visit intervention (i.e., control condition), and three month post visit patient questionnaire.[78] Measures that inform the current study include demographic information provided by the patients in the pre-visit questionnaire, and three month post visit self reports of patient decision regret. Audio recordings made during RCT oncologist-patient adjuvant therapy decision discussions were analyzed with the SCCAP.

The SCCAP enables coding of a broad range of interaction behavior at both the content (i.e., topics) and relational (i.e., verbal messages, nonverbal impressions) levels. The sample for this analysis was randomly selected from a pool that consisted of 405 female patients with breast cancer (stages I–III), and no prior history of cancer treatment. All were candidates for adjuvant therapyⁱ. Two hundred (200) patients were randomly selected from predefined age (45–64, 65 & up) and study intervention status (yes/no) to ensure even distribution of these variables. At the end of the designated coding period the sample included 180 usable consults between patients and one of 24 oncologists from the sample pool. Oncologists ($n = 24$) in the study represented 14 practices in two states. Although the number of patient visits included in this study range from 1–26, the median number of patients seen by each oncologist is two.

Following extensive training and development of a codebook, two coders were trained to recognize and assess instrumental and relational communication content via the SCCAP program. Initial coder agreement across the communication content categories was good, averaging 86% agreement across instrumental communication categories (range: .73–1.00). Coding agreement for relational message categories (acknowledgement, reassurance, shared laughter, disapproval, disconnection, and disparagement) was fair to good ranging from .65 (disconnection) to .97 (shared laughter).

2.2 Measures

Decision Regret has been defined as “a negative emotion associated with thinking about a past or future choice” (p. S29). [61] Regret can be a significant consequence of decision-making and may not emerge until well after the decision is made [60,79]. Regret is also important to understanding cancer decisions because it is correlated with patient distress, trust in physicians, and other quality of life measures [61,80,81]. This study utilizes decision regret as an important decision outcome of receiving adjuvant therapy following surgical intervention in breast cancer. We used the five item Decision Regret Scale (DRS) to measure the decision regret outcome [82]. This scale has shown excellent reliability (Cronbach $\alpha = .81-.92$) and correlates well with decision satisfaction and overall quality of life [66,76,80,81]. The DRS items are

ⁱReaders are encouraged to consult Siminoff et al., (2006) in *Psycho-Oncology* for a complete description of the parent study and additional participant characteristics.

Likert type, scaled 1–5, with higher score representing greater decision regret. Data from this study showed a distribution slightly skewed toward lower regret ($m = 1.64$; $sd = .49$), and good internal consistency ($\alpha = .83$).

Instrumental Communication—Instrumental communication refers to that communication necessary to complete the basic functions of the medical interview. First, coding required two (2) SCCAP coders to be trained to recognize a speech utterance, which we defined as *a speech unit of any size that conveys a single idea*. Utterances could be as small as a single word or as large as several sentences. Next, coders were trained to recognize functions and parts of a medical interview through the use of a comprehensive codebook and regular assessments of coding skill. Medical interview categories of instrumental content include: 1) introduction, 2) purpose, 3) logistics, 4) disease, 5) medical history, 6) disease treatment, 6) psychosocial, 7) emotional, 8) clinical trials, 9) clinicians' recommendations, 10) prognosis (see Table 1). Coders assigned a speaker code (i.e., clinician, patient or companion), to each utterance, then the instrumental content (i.e., topic) code, and, if warranted, a relational message code.

A total of 7,999 content codes were assigned to clinician and patient utterances in this sample. Table 2 shows proportions of talk assigned to each category. As expected, medical management content, represented by medical history, treatment, care logistics, and disease domains were the most frequent communication topics in these visits. Clinicians talked more than patients on most of these topics, with the exception of care logistics (i.e., how to get care). Psychosocial topics concerning the patient's lifestyle received some attention, but are heavily dominated by clinician talk. Notably, although these conversations are intended to explore the impact of adjuvant treatment on prognosis, this topic receives very little discussion, and is the only other topic dominated by patient rather than clinician talk. cursory review of content category distributions across clinicians who consulted with more than one patient in the sample were variable, suggesting that clinicians showed some communication differences across their own patients.

Relational Communication—Relational communication is observed here in verbal and nonverbal message forms. First, verbal positive relational message categories were grouped as confirming messages and verbal negative messages as disconfirming messages.[15] Confirming messages are other-oriented responses that offer reassurance, acknowledgement, or shared humor. Disconfirming messages are responses that convey disapproval, disconnection, or disparagement of the other's communication. Confirming message forms have been associated with several health related outcomes such as positive self perceptions, greater well-being, and more openness in communication.[83,84] Disconfirmation has been shown to predict more negative relational outcomes such as communication apprehension and withdrawal [85]. As described above, relational messages were categorized and counted for each speaker as they occurred.

Clinician verbal relational messages were tagged to 22.1% of their total coded utterances, showing confirming messages (95%) to far outnumber disconfirming (5%). Most clinician confirmation ($n = 1245$) occurred in the form of reassurance ($n = 491$), followed by acknowledgement ($n = 460$) and shared laughter ($n = 294$). There was some disconfirmation ($n = 70$) but not much. Message disconnects ($n = 35$), such as irrelevant or tangential comments, was most common in this category were followed by disapproval ($n = 28$) and, infrequently, disparagement ($n=7$).

Nonverbal relational communication was assessed globally through coder ratings of *immediacy*. Immediacy is defined as behaviors that express interpersonal closeness or warmth. [86] It is considered by nonverbal communication theorists to be one communication variable

of several (e.g., self disclosure, responsiveness) that indicate intimacy.[87] The immediacy construct has been useful in predicting relational and cognitive outcomes in both interpersonal and task based relationships.[88–90] For example, Witt et al. reported results of a meta-analysis that showed a strong association between instructors' immediacy and student learning.[91] Although immediacy may be communicated through facial expressions or touching behavior, we have focused on vocal cues, which were shown to be superior for interpreting relational affect. [92,93]

The immediacy principle asserts that immediacy behaviors produce liking, leading to stronger preferences for such communicators, and resulting in increased social influence [89]. Communication researchers have produced strong evidence of this effect.[94] We identified 10 measurement items from a set of published immediacy scales and descriptions, and selected those congruent with vocal interaction in healthcare contexts.[83,95–97] Items were adapted to observed measurement, and set to a (0–7) bipolar scale. Coders were trained to consider how moments of sarcasm, irony, or emphasis sounded in speech (e.g., speech rate, fluency, and intonation) as well as how the voice might carry affect such as compassion or irritation. Oncologists' average immediacy level for each patient is calculated and considered a measure of nonverbal relational communication.

Because this a new immediacy scale is based on vocalic behavior only, items (i.e., monotone, speech rate, spontaneity, clarity, conversational style, vocal control, hesitant, direct, encourages talk, inclusive pronoun use, vocal fillers) were submitted to principal axis factor analysis with oblique rotation. This yielded a three-dimensional structure for immediacy ratings that reflect the qualities of fluency ($m = 6.15$, $sd = .50$, $\alpha = .67$) directness ($m = 5.22$, $sd = .48$, $\alpha = .42$), and inclusion ($m = 4.33$, $sd = .89$, $\alpha = .71$). We chose to examine these dimensions separately to explore their individual contributions to the model.

Patient Communication Involvement—Patient communication involvement has been measured in the past as proportions of talk, number of questions asked, or expressed concerns. [21,35,98] However, laboratory studies show that expressed relational information, regardless of quality, moderates interactants' sense of involvement in that relationship.[99,100], We wished to produce a measure of patient involvement that indicated the degree of affective engagement between the interactants,[100,101] Therefore we conceptualized patient communication involvement nonverbally, as affective activity, evidenced in assertive or passive vocal cues.

The SCCAP also offers coders the opportunity to rate the immediacy of patients and other contributors to the medical discussion. However, unlike clinician immediacy ratings, factor analyzed patient immediacy items clustered clearly along general assertive or passive communication orientations. The resulting five-item scale operationalized greater patient communication involvement as faster speech rate, more inclusive, greater vocal clarity, more control of the conversation, and more direct (i.e., focused). This approach is consistent with nonverbal theorists' conceptualization of an interaction-based model of expressed relational intimacy.[102] Likert type Item scores ranged from 1–7, and were summed and averaged ($m = 3.78$, $sd = .51$, $\alpha = .61$). Although the Cronbach alpha score is questionable, we elected to utilize this measure in order to assess its performance with other known co-variables.ⁱⁱ

ⁱⁱPost hoc Rasch analysis tests of the observed immediacy measure have show overall, the scale-data fit was excellent and all 10 items had acceptable fit statistics ($n=169$). Rasch results showed a wide spread of item difficulties with a good match to people's ability level, meaning the scale items effectively and accurately measure people's ability to observe immediacy.

2.3 Statistical Analysis

Descriptive statistics are presented in Table 3 to display characteristics of the sample. This sample is predominantly Caucasian, fairly well educated, and on the average, in late midlife.

Prior to multivariate analysis, we examined bivariate relationships between variables in the model. These are presented in Table 4. As evidenced by this table, we expected significant multivariate patterns across our variable sets.

A primary purpose of this study is to explore the multivariate relationships between communicator characteristics, oncologist relational communication, patient communication involvement and decision-making regret. The hypothesized path model shows observed variables grouped into four sets: 1) patient demographics (i.e., education, age), 2) oncologist instrumental and relational communication, 3) patient communication involvement, and 4) patient's self-reported decision regret (See Figure 2). We included all direct effects in the model to allow for possible pathways other than those represented by our observed mediating variables. The path model was fit using maximum likelihood estimation, assuming independence of patients and normal distributions, and unstandardized estimates of regression coefficients obtained.

Because some oncologists in the sample saw multiple patients, we accounted for potential oncologist clustering by calculating an intra-cluster correlation based on a separate mixed effects model for each response in the path model. In each mixed effects model, 'oncologist' was included as a random effect, and the antecedent (i.e., predictor) variables for each response, according to the path model, were included as fixed effect covariates. An advantage of this approach (over a simple hierarchical model for SEM) is that it allows for different intra-cluster correlations for different responses. The estimated intra-cluster correlation was used to calculate a variance-inflation factor, which was in turn used to adjust the standard errors and p-values of the effect of each predictor variable on the given response variable. Almost all intraclass correlations between oncologists are less than .05, with the exception of clinician's inclusion (as measured in the clinician's immediacy scale) (.18) and patient's observed immediacy (.24). The model was fit and coefficients estimated using AMOS Version 16. The Mixed Procedure in SAS (Version 9.1) was used to calculate estimated intra-cluster correlations.

Estimated standardized indirect effects were calculated as products of the standardized path regression coefficients. Z-statistics for non-zero indirect effects (thus, non-zero mediation proportions) were obtained by dividing the estimated indirect effect by the estimated standard error, where the latter was obtained using the approximation formula [103]. P-values were then obtained based on a normal approximation under the null hypothesis for the z statistics [104].

We controlled family-wise error rates by using a two-step approach. The individual sub-hypotheses comprising each 'overall' hypothesis (1–4, above), which were thus scientifically related, were considered as a family, while different overall hypotheses were considered as scientifically distinct and thus marginally interpretable [105].

For each 'overall' hypothesis, the first step involved a global test of the sub-hypotheses. Upon rejection of the global null hypothesis, the second step proceeded with the testing of each sub-hypothesis. For Hypotheses 1 and 2, global tests were conducted using a (likelihood ratio) chi-squared test comparing the full model to the reduced model under the global null hypothesis. Hypothesis 3 is comprised of a single univariate test, so no separate global test was needed. As a conservative approach to Hypothesis 4 we required, in the first step, significant results for two global tests: the first is the same as that used for Hypothesis 2 and the second is a likelihood ratio chi-squared test for any association between patient communication

involvement and decision regret. Statistical significance was evaluated using the 0.05 alpha-level criterion for each test.

3. Results

Global chi-squared tests supported Hypothesis one and two. Specifically, hypothesis one showed a significant association between the demographic variables (age and education) and oncologist instrumental and relational communication ($p=0.041$). Oncologists communicated differently with patients of different ages and education levels. Hypothesis two was also supported, showing a significant association between oncologist relational communication and patient communication involvement ($p=0.001$). More positive oncologist relational communication predicted greater patient communication involvement. Hypothesis three was also supported, showing a significant association between patient communication involvement and patient decision regret ($p=.025$). The p-value suggests marginal evidence for Hypothesis four, but it did not meet our criteria for significance.

Table 5 provides the estimated path model coefficients and corresponding p-values for patient characteristics (age, education), oncologist instrumental (i.e., content categories) and relational communication (confirmation, immediacy), patient communication involvement, and patient decision regret. The p-values are adjusted for clustering by oncologist as described above. Using a 0.05 nominal alpha-level criterion, we find the following statistically significant effects. First, significant predictors of greater patient communication involvement include slightly higher patient education, more oncologist confirmation, less oncologist directness, and greater oncologist inclusion. Significant path relationships between oncologist instrumental communication and patient communication involvement included more talk about treatment and prognosis. Concerning the decision regret outcome, a small effect was found for the influence of patient age and education on decision regret, but a larger effect evidenced for patient communication involvement. Patients who were more communicatively involved in adjuvant therapy discussions reported significantly less decision regret three months later. With the exception of a direct effect for oncologist confirmation, there were no additional significant paths linking oncologist communication to the decision outcome. Oncologist relational communication, in the form of confirmation appears to have an effect on patient's decision regret, but not in the expected direction. Finally, although our research question was intended to explore the extent of the mediation effects of oncologist relational communication on patient decision regret, but because these data did not support the mediation hypothesis, we declined to present these data.

4. Discussion and conclusion

4.1 Discussion

This study identifies communication behaviors that can create a positive social climate for interaction and encourage patient participation in adjuvant therapy decision-making. Increases in oncologists confirmation and nonverbal vocal immediacy predicted greater patient communication involvement during a decision-making consult. In turn, greater patient communication involvement predicted less patient decision regret. Our next step is to refine our measures and validate these findings with other samples such as primary care and adherence to cancer screening. We also hope to use the relational communication involvement model to predict disparities in health outcomes, such as adherence, or perceptions of quality of care. Understanding how these relational constructs may predict intermediate and long term health outcomes is crucial to providing patient-centered care. The study findings reported here have implications for communication measurement and training, and will be discussed in turn.

First, the study demonstrates that relational constructs grounded in observable behavior can be measured in both verbal and nonverbal health communication. Nonverbal cues in particular have been less attended to the favor of discussion topics. It is imperative to find ways to better integrate the rich bank of available relational communication constructs into observational studies of health communication. Communication theorists recommend that verbal and nonverbal communication not be analyzed in isolation from one another.[106] Variables composed of multiple behavioral cues, such as involvement or immediacy lend themselves well to both self report or observer measures. Social scientists have provided compelling, theoretically grounded explanations, for these variables, which offer useful empirical frameworks for forming hypotheses.[99,107,108] Studies that integrate affective processes, even indirectly as with relational communication, can benefit much from theories of emotion and affect.

Communication involvement, the core construct of this study, was shown to be significantly and inversely associated with decision regret. This was our first step in differentiating, communication involvement from similar constructs such as patient participation or shared decision-making. Future research will benefit from a more comprehensive conceptualization. It is important for cancer communication researchers to consider patient communication involvement as the link between clinician communication and desired health outcomes. Street makes an interesting distinction between prompted and self-initiated participation in communication by patients [35]. Distinguishing types of involvement may be useful in predicting certain kinds of study models, such as investigating individual differences or certain clinical settings. We plan to expand our own conceptualization of involvement to include additional verbal and nonverbal indicators drawn from communication research.

The current study has several limitations. First, the clinician immediacy scale may best be utilized in health contexts as a unidimensional scale. Our assessment using multiple dimensions produced divergent results for the directness and inclusion subscales. This is not an unusual challenge for measures of nonverbal behavior that may change meaning from context to context.[109] Post hoc analysis showed different patterns of nonverbal speech across older and middle age patients, with older patients receiving less inclusion and more directness than their middle age counterparts.[110] We are currently re-examining our visit audio and scale items in terms of both item representativeness and fit to the oncology setting. Although the results we present here must be taken tentatively, we maintain that nonverbal vocal immediacy promises to be a potent indicator of the affective-relational style of clinicians and patients, and significant link to desirable outcomes.

Second, although researchers were careful in follow-up interviews, decision regret may reflect a variety of affective reactions. Connolly and Reb identified three possible targets of regret, including the decision outcome, decision options, and the decision process [61]. Future research should be mindful of these distinctions and modify or design new scales with multiple targets in mind. It is not unrealistic for cancer patients to be influenced by thoughts or feelings generated by post operative complications or unmet reconstruction expectations. Although we specified the object of the decision measure, patients may not easily separate their feelings for different aspects of the treatment experience. Second, the SCCAP is a new coding scheme that has evolved since its first use. Although this scheme produces a comprehensive description of communication content and relational messages, a future version is underway that develops these constructs further, and we expect even more precise measurement.

Despite these limitations, data clearly support the associative links between clinician relational communication and patient communication involvement. Confirming communication, that is, reassurance, acknowledgement, and shared laughter, appear to be useful communication skills for increasing female patients' communication involvement in decision-making situations.

These communication skills, similar to empathy, can be taught, reinforced, and valued as an integral part of patient-centered care. [111–114] It is important to note that a clinician's relational communication may also disconfirm a patient's experience. Although we identified few examples of disconfirmation in this sample, it was present, primarily in the form of disapproval. Negative relational messages may play a more significant role in other, more routine, high volume health contexts, such as primary care. It is important to increase clinicians' awareness of both positive and negative message forms and their potential impact on interaction.

Future research is necessary to assess clinicians' motives, and patients' perceptions of relational messages, perhaps in stimulated recall procedures following a clinical visit. This kind of data would tell us much about how communication prompts or inhibits involvement. It is also possible to explore the contributions of family members or companions in this way. Reviewing consult audio with the participants may reveal important data about communication expectations in medical settings.

Developing interventions to produce positive communication behaviors is indeed challenging. These findings suggest a move toward interventions tailored to clinicians' individual style as well as tools for communicating preferences for decision involvement. It may be interesting to introduce structured interactive exercises that enable clinicians and patients to simultaneously engage in positive relational communication and involvement. Recent research shows that patients vary in their preference for communication involvement, sometimes as a function of disagreement with the clinician.[115] It is crucial to further understand how clinician communication may influence patient preferences or communication involvement. Although preferences may be rooted in developmental differences, information processing style, personality traits, or communication skill, it remains a significant explanatory variable for understanding clinician-patient communication process.

4.2 Conclusion

Patient-centered care is premised on the idea that clinicians and patients share a common human experience, even though their roles may exaggerate the distance in their positions. This study demonstrates that relational communication from clinicians can minimize that distance. Patient-centered care can only be achieved if patients rise up to the sometimes daunting opportunity to discuss *how* they want to work together with clinicians. These ideas are negotiated and renegotiated by the interactants, creating a relationship in the process. By exploring the affective components and functions of oncologist-patient communication we can illuminate a rich therapeutic process that reflects patient-centered ideas.

4.3 Practice Implications

Patient-centered communication is dependent on both the clinician's expressed recognition of the patient's needs, as well as communication of complex medical information. When the patient is involved in this process, better outcomes may result. Although this research is preliminary, and conclusions limited to this sample, we believe, that clinicians can and should recognize the potential of their own relational messages to facilitate patients' communication involvement in decision-making during cancer care. A confirming social climate has potential to span role related differences, and enhance mutuality in medical encounters.

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Figure 1.
Oncologist-patient relational communication involvement (RCI) conceptual model

Figure 2.
Oncologist-patient relational communication involvement path model

Table 1**Instrumental Content Domains measured in SCCAP**

Domain	Coding Definition
Medical Management	
Medical History	Review of past/current medical problems, family history, or co-morbidities
Disease	Talk of patient's current disease, including side effects
Treatment	Any aspect/type of disease treatment, including side effects, CAM, or no treatment
Recommendations/Preferences	Expression of opinions or attitudes about medical care
Prognosis	Discussion of future disease state or outcomes
Clinical Trials	Describe, offer, or discuss aspects of clinical trials
Psychosocial	
Psychosocial	Talk about lifestyle, work, cultural, spiritual, or economic issues
Emotional	Specific discussion of emotional state, anxiety, gratitude, fears, depression
Practical	
Introduction	Non-medical talk in first moments of consult, light chat, introductions
Procedures	Directives for progressing through consult (e.g., physical exam)
Purpose	Stated or implied objectives, aims, or goals for the consult.
Care Logistics	How tasks (e.g. treatment, imaging) will unfold, be performed, or take place

Table 2

Raw frequencies of instrumental content codes applied to speaker utterances (N = 7,999)*

Instrumental Content Domains	Clinician (n = 39)		Patient (n = 180)		Total	
	Freq	%	Freq	%	Freq	% [†]
Medical Management						
Medical History	2616	44.15	159	7.67	2775	34.69
Disease	672	11.34	307	14.80	979	12.24
Treatment	569	9.60	509	24.54	1078	13.48
Recommendation/Preference	270	4.56	133	6.41	403	5.04
Prognosis	121	2.04	165	7.96	286	3.57
Clinical Trials	21	.35	34	1.64	55	.69
Psychosocial						
Psychosocial	803	13.55	98	4.73	901	11.26
Emotion	189	3.19	17	.82	206	2.58
Functional						
Care Logistics	314	5.30	579	27.92	893	11.16
Introduction	306	5.17	59	2.84	365	4.56
Procedures	27	.46	5	.24	32	.40
Purpose	17	.29	9	.43	26	.33

* Unadjusted for clustering effects

% Percentage of total for speaker

[†] Percentage of all utterances

Table 3

Sample Characteristics (N = 179)

Demographics

Age (yrs), mean (SD)	64 (8.9)
Education (yrs), mean (SD)	13.3 (3.1)
Ethnicity, <i>n</i> (%)	
White	148 (82.7)
African American	10 (5.6)
Hispanic	18 (10.1)
Other	3 (1.6)
Marital Status, <i>n</i> (%)	
Married	115 (64.3)
Never married	2 (1.1)
Divorced/Separated	22 (12.3)
Widowed	38 (21.2)

Table 4

Bivariate correlations between variables in the RCI model.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. PT Age-years	—												
2. PT Decision Regret	0.30 <0.01	—											
3. PT Communication Involvement	0.05 175	0.14 169	0.18 163	—									
4. MD Disease talk	0.04 169	0.12 175	0.19 163	—									
5. MD Treatment talk	0.02 179	0.08 175	0.07 169	0.60 179	—								
6. MD Prognosis talk	0.37 179	0.28 175	0.01 169	0.36 179	0.48 179	—							
7. MD Psychosocial talk	0.03 179	0.10 175	0.06 169	0.30 179	0.22 179	0.14 179	—						
8. MD Emotional talk	0.63 179	0.16 175	0.40 169	0.01 179	0.05 179	0.05 179	0.19 179	—					
9. MD Pref's & Values	0.08 179	0.09 175	0.01 169	0.21 179	0.43 179	0.42 179	0.23 179	0.07 179	—				
10. MD Confirmation	0.27 179	0.19 175	0.89 169	0.01 179	0.01 179	0.01 179	0.32 179	0.11 179	0.13 179	—			
11. MD Disconfirmation	0.05 179	0.15 175	0.32 169	0.39 179	0.38 179	0.22 179	0.12 179	0.29 179	0.17 179	0.08 179	—		
12. MD directness	0.94 179	0.08 175	0.69 169	0.11 179	0.13 179	0.20 179	0.01 179	0.01 179	0.27 179	0.02 179	0.17 179	—	
13. MD fluency	0.17 170	0.04 166	0.25 169	0.14 170	0.12 170	0.04 170	0.02 170	0.07 170	0.00 170	0.16 170	0.13 170	0.14 170	—
14. MD inclusion	0.14 167	0.09 163	0.13 166	0.17 167	0.09 167	0.24 167	0.16 167	0.13 167	0.15 167	0.14 167	0.02 167	0.31 167	0.26 167
	0.06 167	0.20 163	0.09 166	0.02 167	0.20 167	0.01 167	0.03 167	0.08 167	0.03 167	0.06 167	0.75 167	0.01 167	0.91 167
	0.21 169	0.85 165	0.01 168	0.01 169	0.01 169	0.05 169	0.01 169	0.01 169	0.66 169	0.01 169	0.91 169	0.06 169	0.06 169

Table 5

Estimated coefficients and p-values (adjusted for MD clustering) of predictors of patient communication involvement and decision regret.

Predictors	Pt communication involvement		Decision regret	
	estimate	p	estimate	p
<i>Pt Characteristics</i>				
age	0.00	0.55	0.01	<0.01
education	0.04	<0.01	-0.03	<0.01
<i>Pt communication involvement</i>			-0.19	0.02
<i>MD relational communication</i>				
confirm	0.82	<0.01	0.48	0.07
disconfirm	-1.20	0.39	0.94	0.50
Immediacy: direct	-0.30	<0.01	-0.13	0.13
Immediacy: fluency	-0.14	0.04	0.03	0.73
Immediacy: inclusion	0.20	<0.01	0.04	0.37
<i>MD Instrumental Communication</i>				
disease	0.15	0.18	0.12	0.33
treatment	-0.22	<0.01	-0.13	0.17
prognosis	0.38	0.04	0.19	0.35
recommendations	-0.13	0.57	-0.09	0.72
psychosocial	-0.24	0.54	-0.07	0.87