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Perceptions of Health Information Seeking and Partner Advocacy in the Context of a Cardiology Office Visit: Connections with Health Outcomes

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ABSTRACT

This paper explores perceived active health information seeking, informal advocacy by a partner or other, cardiac efficacy, and cardiovascular health indicators for patients surveyed while visiting their cardiologist. Participants include 208 patients with a diagnosed heart condition. Variables include predisposing characteristics (e.g., illness severity, demographics), perceived active health information seeking during an office visit, informal advocacy by partner or other, cardiac efficacy, and cardiovascular health indicators (i.e., basal metabolic index (BMI), total cholesterol, high-density lipoprotein (HDL), low-density lipoprotein (LDL), triglycerides). Data were analyzed using correlations, *t*-tests, and structural equation modeling. As hypothesized, perceived active health information seeking during an office visit (positively) and informal advocacy by partner or other (negatively) predicted cardiac efficacy. One path was added from active information seeking to BMI. Cardiac efficacy, in turn, significantly predicted total cholesterol and BMI. The model was also replicated for LDLs but not for HDLs or triglycerides. We discuss implications for cardiac disease management.

There is increasing interest in health information seeking (Brashers, Goldsmith, & Hsieh, 2002; Galarce, Ramanadhan, & Viswanath, 2011) and health management (Afifi & Morse, 2009; Barbour, Rintamaki, Ramsay, & Brashers, 2012; Greene, 2009), especially relating to how people manage uncertainties surrounding their health (Babrow & Matthias, 2009; Checton & Greene, 2012; Hogan & Brashers, 2009; Mishel & Clayton, 2003). Health information seeking is a purposive act intended to satisfy a perceived need for health information (Galarce et al., 2011). Both seeking and avoiding health information are responses to managing illness-related uncertainty (e.g., Afifi & Weiner, 2004; Babrow & Matthias, 2009; Barbour et al., 2012).

A recent review of health information seeking measures (Anker, Reinhart, & Feeley, 2011) reported that researchers are measuring health information seeking in various ways (e.g., whether a patient engaged in health information seeking, outcomes of health information seeking processes). Anker et al. (2011) argued that continued research is needed on how health information seeking influences health management, as well as the social and relational functions of health information seeking. For example, we know less about patients' (and partners'/others') information seeking involvement *during* visits with health care providers and how information preferences influence patients' perceived ability to manage their health condition. Existing research also lacks explicit outcomes such as overt (e.g., height/weight) and covert behavioral markers(e.g., blood pressure, total cholesterol, triglycerides) of patients' actual health condition management. Thus, the purpose of this study is to explore patients' perceived active information seeking, informal advocacy by partner or other, ability to manage their health condition, and cardiovascular health indicators in the context of a cardiology office visit.

Health Information Seeking During an Office Visit

The ways in which people consume medical and health information are changing, with more patients looking for information online (Ayers & Kronenfeld, 2007; Sundar, Rice, Kim, & Sciamanna, 2011), especially before talking with their physicians (Ramirez et al., 2013). People seek health information from multiple sources in preparing for health care provider visits (Hesse et al., 2005; Murray et al., 2003; Ruppel & Rains, 2012) and in coping with received diagnoses (Barbour et al., 2012). Patients with multiple risk factors for cardiovascular disease and varying health literacies overwhelmingly prefer to receive health information during face-to-face conversations with their health care provider (Gaglio, Glasgow, & Bull, 2012). In addition, despite the numerous available information sources, health care providers such as physicians are perceived to be more important, trustworthy, and credible, and to provide more useful medical information compared to other sources such as the Internet, friends and family, or mass media (see Ramirez et al., 2013).

Health information seeking behaviors in medical encounters are often triggered by external stimuli such as receiving a

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new diagnosis, experiencing new or unusual symptoms, or uncertainty about a health prognosis (Afifi & Weiner, 2004; Mishel & Clayton, 2003). Patients' health information seeking behaviors are also influenced by predisposing demographic (e.g., age, sex, education) and other factors such as illness uncertainty and severity, and length of time since diagnosis (e.g., Babrow & Matthias, 2009; Galarce et al., 2011; Hogan & Brashers, 2009). For example, Kaplan, Gandek, Greenfield, Rogers, and Ware (1995) found that patients who were older (≥ age 75), younger (≤ age 30), minority, male, and with a high school education or less participated *least* in their health care provider visits. Older adults, however, are more likely to trust a person with whom they are able to actively discuss their health versus a nonliving source such as the Internet (Chaudhuri, Le, White, Thompson, & Demiris, 2013).

Active Information Seeking

Patients' desire for information about their medical condition does not necessarily translate into more frequent engagement in information seeking behaviors (Beisecker & Beisecker, 1990). However, research has demonstrated that more active participation (e.g., asking questions) in interactions with health care providers results in patients who are more satisfied with their health care, receive more patient-centered care from providers, are more committed to treatment regimens, have a stronger sense of control over health, and experience better health following the visit compared to more passive participation (Politi & Street, 2011; Roter & Hall, 2011). Greater engagement with health care providers about cancer-related information improved colorectal cancer patients' subsequent adherence to recommended guidelines (e.g., continued checkups, blood tests, or colonoscopy) (Tan et al., 2012). Moreover, high-participation patients elicited (from their primary care physicians) significantly more information overall and more information in response to questions, compared to low-participation patients (Cegala, Street, & Clinch, 2007). Thus, we expect that more active information seeking (e.g., asking questions) during an office visit will positively influence patients' perceived ability to manage their heart condition (cardiac efficacy).

Informal Advocacy

Interpersonal communication plays an important role in health care provider–patient interactions; yet, illness occurs within the context of family and social relationships as well (Duggan & Thompson, 2011). Patients are often accompanied to medical appointments by other people (known variously as companions, caregivers, and informal advocates)[1] such as a spouse/partner, child, hired caregiver, or friend (Clayman, Roter, Wissow, & Bandeen-Roche, 2005; Hall, Sanford, & Demi, 2008; Petronio, Sargent, Andea, Reganis, & Cichocki, 2004; Venetis, Robinson, & Kearney, 2013). Such individuals assume important roles in enhancing patient and physician understanding (Schilling et al., 2002), and may help (or hinder) patients' chronic illness management (Gallant, Spitze, & Prohaska, 2007). Clayman et al. (2005) found that companions were active participants in geriatric medical visits and engaged in more autonomy enhancing behaviors (i.e., facilitating patient understanding, patient involvement, and doctor understanding) than detracting behaviors (i.e., controlling the patient and building alliances with the physician). For breast cancer patients, Venetis et al. (2013) found that when companions (e.g., sister, spouse) asked more questions, patients experienced decreases in their anxious preoccupation, suggesting that companions asking questions may improve patients' psychosocial health outcomes. However, when a health care advocate (family member or friend) was present, physicians sometimes directed their information seeking away from the patient and more toward the advocate, rendering the patient superfluous to the dialogue (see also Petronio et al., 2004).

Patients do not always experience family/others' involvement positively. Patients with heart disease were glad their family members were involved with their care, but some family attempts to support were perceived in negative ways (Clarke, Walker, & Cuddy, 1996; Franks et al., 2006). For some patients, family involvement may result in frustration or confusion about care (Rosland, Heisler, Choi, Silveira, & Piette, 2010). In a study of patients engaging in cardiac rehabilitation after a heart attack, Franks et al. (2006) found that when partners engaged in more social control (e.g., reminding patient to do things, influencing patient's choices, preventing patient from doing things considered not good for her/his health), patients engaged in fewer healthy behaviors and were more distressed. Less research, however, has explored patients' perceptions of others' role in managing their health condition (e.g., managing health information, keeping track of appointments, accompanying to medical appointments). We propose that informal advocacy by a partner or other will negatively influence patients' perceived ability to manage their heart condition (i.e., cardiac efficacy).

Cardiac Efficacy

A common underlying theme of health information seeking and management is self-efficacy or people's confidence in their ability to exert personal control over specific behaviors (Bandura, 1986). Perceived ability to manage a chronic illness results in better health outcomes (Bodenheimer, Lorig, Holman, & Grumbach, 2002; Leventhal, Halm, Horowitz, Leventhal, & Ozakinci, 2004). Evidence also links specific forms of efficacy with people's confidence in finding health information on the Internet (Rains, 2008), likelihood of disclosing health information (Greene et al., 2012), intentions to seek sexual health information from partners (Afifi & Weiner, 2006), sharing heart-related information (Checton & Greene, 2012), and both patients' and partners' perceptions of better management of chronic health conditions (Checton, Greene, Magsamen-Conrad, & Venetis, 2012) and cancer (Magsamen-Conrad, Checton, Venetis, & Greene, 2014).

More specifically, patients' perceptions of their ability to manage their cardiovascular disease improve health behaviors

[1]We use the term *informal advocacy by partner or other* throughout the paper to refer to an individual who accompanies a patient to a medical appointment and helps patients manage their health condition (also known as companions or caregivers).

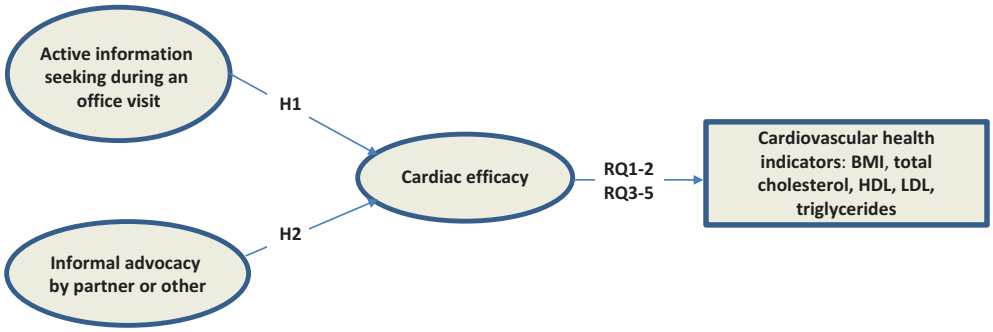

Figure 1. Proposed model for active information seeking, informal advocacy, cardiac efficacy, and health indicators.

and clinical outcomes (Blustein, Valentine, Mead, & Regenstein, 2008; Sarkar, Ali, & Whooley, 2007). Sullivan, LaCroix, Russo, and Katon (1998) found that cardiac self-efficacy significantly predicted physical function, social function, and family function for patients following open heart surgery. In subsequent research, self-efficacy improved during cardiac rehabilitation across gender and diagnoses (Gardner et al., 2003) and was significantly related to physical functioning among patients with chronic obstructive pulmonary disease and chronic heart failure (Arnold et al., 2005). However, no known studies have explored whether cardiac efficacy predicts cardiovascular health indicators such as BMI,[2] total cholesterol, high-density lipoproteins (HDLs), low-density lipoproteins (LDLs), or triglycerides for patients with various heart-related conditions.[3] Recent cardiovascular prevention guidelines recommend that health care providers focus on cholesterol, life style, obesity, and risk assessment (e.g., family history) (American Heart Association, n.d.-a).

Proposed Model

We proposed a model (see Figure 1) hypothesizing that active information seeking during an office visit positively influences perceived cardiac efficacy (H1). Informal advocacy by partner or other negatively influences perceived cardiac efficacy (H2). We asked whether perceived cardiac efficacy, in turn, significantly influences BMI (RQ1) and total cholesterol (RQ2). Finally, we asked whether the proposed model replicates for other indicators including HDL, LDL, and triglycerides (RQ3–5).

Method

Participants (N = 210) were recruited from a private medical office in a suburban area of the northeastern United States. The 22-physician practice specializes in cardiovascular diseases with physicians board certified in internal medicine and cardiology. Participants were age 18 or older and had a previously diagnosed heart-related condition.[4] The recruitment and screening process, for example, excluded patients at initial consultation or cardiac preoperative clearance for an unrelated condition.

Participants

Of the participants, 129 (62%) were male and 79 (38%) were female. Individuals ranged in age from 47 to 89 years (M = 68.49, SD = 9.33), after removing two outliers (age = 21 years) from additional analyses. Participants were predominantly Caucasian (n = 182, 87%), African-American (n = 6, 3%), other (n = 8, 3.8%), Hispanic/Latino (n = 2, 0.1%), Middle Eastern/Arab (n = 2, 0.1%), and Bi/multi-racial (n = 2, 0.1%); five did not report race/ethnicity. The highest level of education attained included high school (n = 60, 29%), some college/trade school (n = 27, 13%), college (n = 76, 36%), and postgraduate/professional (n = 41, 20%); four did not report education. Time since diagnosis ranged from one year to 44 years (M = 11.91, SD = 9.47). Participants reported sharing information about their heart condition with a spouse/partner (n = 155, 74%), daughter (n = 31, 14.7%), friend (n = 11, n = 5.2%), son (n = 9, 4.3%), or sister (n = 4, 1.9%) (one did not report relationship type).

Procedure

A researcher approached patients as they arrived to the medical office waiting area and asked if they would agree to complete an anonymous questionnaire (~15 minutes) about managing their heart-related condition. Patients completed surveys in relation to a spouse/partner. Patients who reported

[2]Basal metabolic index (BMI) is calculated from a person's weight and height. Normal BMI is 18.5–24.9 and overweight is 25–29.9 (National Heart, Lung, and Blood Institute, n.d.-a).

[3]Cholesterol is a waxy, fat-like substance found in all cells of the body. Triglycerides are a type of fat. Two kinds of lipoproteins (HDLs and LDLs) carry cholesterol throughout the body. Total cholesterol score is calculated using the following equation: HDL + LDL + 20% of triglyceride level. Total blood cholesterol level <200mg/dl is desirable; HDL ≥ 60 mg/dl is desirable; LDL <100 mg/dl is optimal; and triglycerides <150mg/dl are considered normal (National Heart, Lung, and Blood Institute, n.d.-b).

[4]Primary diagnoses were coronary artery disease (n = 65, 31%), arrhythmias (n = 52, 25%), hypercholesteremia (n = 33, 16%), hypertension (n = 26, 12%), heart failure (n = 6, 3%), congenital heart disease (n = 2, 0.9%), and cerebrovascular disease (e.g., stroke) (n = 2, 0.9%). Secondary diagnoses were hypertension (n = 57, 27%), hypercholesteremia (n = 50, 24%), arrhythmias (n = 9, 4%), coronary artery disease (n = 9, 4%), heart failure (n = 4, 2%), valvular heart disease (n = 3, 1.4%), and cerebrovascular disease (e.g., stroke) (n = 1, 0.5%).

that they did not have a spouse/partner were asked to complete the survey in relation to another person (e.g., child or friend) with whom they share information about their heart condition. A second researcher was present in the waiting area for obtain consent and to distribute/collect surveys. Participants also consented to allow medical staff to provide basic health information such as height, weight, blood pressure, heart rate, blood test results, and diagnoses. The health information was paired with survey data. A university institutional review board (IRB) approved all study procedures.

Measures

The focus of the questionnaire was about patients' perceptions of managing their heart condition. The introduction asked participants to "think about your visit with your cardiologist." Variables measured included demographics, predisposing characteristics, perceived active information seeking during an office visit, informal advocacy by a partner or other, cardiac efficacy, and cardiovascular health indicators. We developed two of the scales and adapted another for this context. The measures were pilot-tested and underwent several revisions prior to use. We conducted exploratory factor analysis using principal axis analysis (direct oblimin) to evaluate the dimensionality of the measures. Criteria for factor retention included eigenvalues >1 and scree plot examination. Items with factor loadings below 0.57 were deleted; only factors with three or more items were retained. We created composite scores by averaging responses to individual items and estimated reliability using Cronbach's alphas.

Illness Severity

We measured how individuals viewed their heart condition with seven items created by the authors based on the health belief model (Janz & Becker, 1984) with responses ranged from one (*Strongly disagree*) to five (*Strongly agree*). Principal axis analysis and scree plot indicated a single factor (eigenvalue = 4.74, 79% var., all items loading above 0.73, after discarding one item). A sample item included "Left untreated, my heart condition could worsen." Higher scores indicated greater perceived severity (α = 0.94, M = 3.73, SD = 0.91).

Active Information Seeking During an Office Visit

We measured participants' perceptions of actively seeking health information during their office visit with seven items adapted from Krantz, Baum, and Wideman (1980; see also Anker et al., 2011) using 5-point Likert items with responses ranging from one (*Strongly disagree*) to five (*Strongly agree*). Principal axis analysis and scree plot indicated a single factor (eigenvalue = 2.56, 55% var., all items loading above 0.60, after discarding three items). A sample item included "I usually ask the doctors or nurses lots of questions about the procedures during the medical exam." Higher scores indicated greater information seeking during the office visit. Reliability was good (α = 0.76, M = 3.34, SD = 0.75).

Informal Advocacy by Partner or Other

We measured the extent to which participants agreed or disagreed that a partner or other (e.g., daughter, son, or friend) managed the patients' health condition with 10 items created by the authors based on prior research on health care advocates (Petronio et al., 2004). Responses ranged from one (*Strongly disagree*) to five (*Strongly agree*). Principal axis analysis and scree plot indicated a single factor (eigenvalue = 4.05, 40.46% var., all items loading above 0.57, after discarding three items). A sample item included "My spouse (or other) keeps track of my health records." Higher scores indicated greater advocacy by partner or other (α = 0.73, M = 2.84, SD = 1.00).

Cardiac Efficacy

We measured participants' perceived confidence in managing their heart-related condition with eight 5-point Likert items adapted from the cardiac efficacy scale (Sullivan et al., 1998) with responses ranging from one (*Not at all confident*) to five (*Completely confident*). Participants could also rate an item as "Not applicable." Two items were rated as "Not applicable" by > 20% of the sample and were subsequently eliminated from additional analyses (items asked about confidence in maintaining work and sexual activities). Principal axis analysis and scree plot indicated a single factor (eigenvalue = 5.33, 66.61% var., all items loading above 0.72). A sample item included "How confident are you about … how to take your heart medication." Higher scores indicated greater perceived confidence in managing one's their heart condition (α = 0.85, M = 4.11, SD = 0.72).

Cardiovascular Health Indicators

Participants' health information was obtained from health records available in the medical office including total cholesterol (M = 167.77, SD = 37.24), HDL (M = 54.01, SD = 15.96), LDL (M = 93.97, SD = 32.19), and triglycerides (M = 124.20, SD = 86.40). Height and weight were used to calculate patients' basal metabolic index (BMI; M = 28.86, SD = 5.77). Medical staff provided data to pair with the surveys.

Results

This section describes results of the predicted associations. Table 1 presents zero-order bivariate correlations for all variables in the model. We conducted independent-samples t-tests using a modified Bonferroni adjustment to evaluate sex, relationship type, and education level differences for study variables. [5] Next, we tested hypotheses using maximum likelihood structural equation modeling (AMOS 23). The strategy accounts for measurement error and makes it possible to assess hypothesized associations. Three goodness-of-fit indices were used to evaluate the models. We determined that the model fit the data if the relative χ^2 (χ^2/df) was less than 3, comparative fit index (CFI) was 0.93 or greater, and root mean square error of approximation (RMSEA) was less than 0.08 (Browne & Cudeck, 1993; Kline, 2011; see also West, Taylor, & Wu, 2012).

[5]Results of independent-sample t-tests evaluating sex and relationship type differences for study variables, and one-way analyses of variance testing for differences in education level are available from the first author.

Table 1. Bivariate zero-order correlation matrix for study variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Health information seeking	1.00										
2. Health information advocacy	−0.05	1.00									
3. Perceived cardiac efficacy	-0.25**	-0.25**	1.00								
4. Total cholesterol	−0.01	−0.17	0.18	1.00							
5. BMI	0.16	−0.07	−0.11	0.07	1.00						
6. HDL	0.02	0.03	0.05	0.37**	−0.30**	1.00					
7. LDL	0.01	−0.21**	0.18	0.75**	0.08	−0.08	1.00				
8. Triglycerides	0.08	−0.03	0.09	0.10	0.21**	−0.26**	0.32*	1.00			
9. Years since diagnosis	0.16	0.05	−0.13	−0.13	0.16	0.05	−0.08	0.13	1.00		
10. Perceived illness severity	0.07	0.13	−0.08	−0.04	0.06	−0.14	0.04	0.13	0.01	1.00	
11. Age	−0.08	0.03	−0.11	−0.06	0.01	0.28**	−0.16	−0.10	0.13	−0.07	1.00

Note. *$p \leq 0.05$, **$p \leq 0.01$, two-tailed

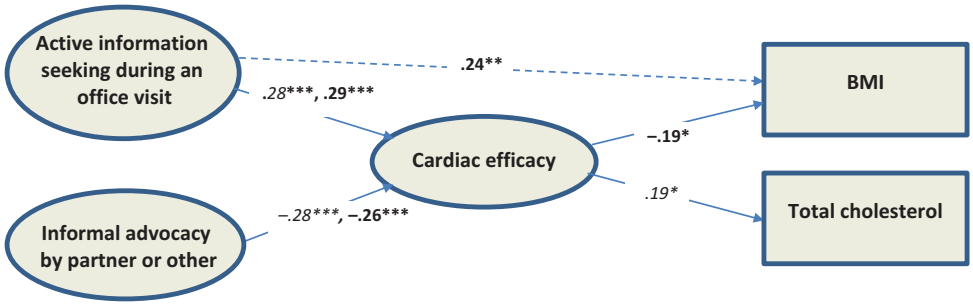

Figure 2. Final model for BMI and total cholesterol.
Note. *$p < .05$, ***$p \leq .001$; *Total cholesterol*, **BMI** ——————————> **Path added**

Preliminary Analyses

We explored bivariate associations between predisposing characteristics (years since diagnosis, age, and illness severity) and active information seeking during an office visit, information advocacy by partner or other, cardiac efficacy, and cardiovascular health indicators. Years since diagnosis and illness severity were not significantly associated with any of the study variables. Age was significantly associated with information advocacy by partner or other ($r = 0.14$, $p \leq 0.01$), cardiac efficacy ($r = 0.19$, $p \leq 0.01$), and HDL ($r = 0.30$, $p \leq 0.01$).

Structural Equation Model Results

The first step required calculation of the error variance (1—α) (σ^2) to account for measurement error (Bollen, 1989; Stephenson & Holbert, 2003). Results for BMI indicated the hypothesized model (see Figure 1) did not adequately fit the data, $\chi 2 = 10.66$, relative $\chi 2/df = 3.56$, $p < 0.02$, $CFI = 0.67$, and $RMSEA = 0.11$. After adding one path from active information seeking during an office visit to BMI (based on modification indices and theory), the model achieved adequate fit, $\chi 2 = 3.67$, relative $\chi 2/df = 1.83$, $p > 0.16$, $CFI = 0.93$, and $RMSEA = 0.06$. As hypothesized, active information seeking during an office visit positively influenced cardiac efficacy (H1 supported). Informal advocacy by partner or other negatively influenced cardiac efficacy (H2 supported). Cardiac efficacy negatively influenced BMI (RQ1; see Figure 2).

Results for total cholesterol indicated the hypothesized model (see Figure 1) adequately fit the data, $\chi^2 = 3.99$, relative $\chi^2/df = 1.33$, $p = 0.26$, $CFI = 0.95$, and $RMSEA = 0.04$. As hypothesized, active information seeking during an office visit positively influenced cardiac efficacy (H1 supported). Informal advocacy by partner or other negatively influenced cardiac efficacy (H2 supported). Cardiac efficacy negatively influenced BMI (RQ1) and positively influenced total cholesterol (R2; see Figure 2). Next, the proposed model (Figure 1) was replicated for HDL, LDL, and triglycerides to answer RQs 3–5 (see Figure 3). Although all three models achieved good fit,[6] perceived cardiac efficacy significantly predicted LDL, but not HDL or triglycerides.

Discussion

As Anker et al. (2011) argued, research is needed on how health information seeking influences health management. Thus, rather than examining patients' health information seeking behaviors (e.g., whether patients engage in information seeking), *per se*, or outcomes of the information seeking process (e.g., satisfaction, better health management), this study examined the effects of active information seeking and informal advocacy on cardiac efficacy and cardiovascular health indicators.

Role of Information Seeking and Informal Advocacy on Cardiac Efficacy

As hypothesized, more active information seeking during their office visit (e.g., asking questions) positively influenced

[6]SEM results for HDL, LDL, and triglycerides are available from the first author.

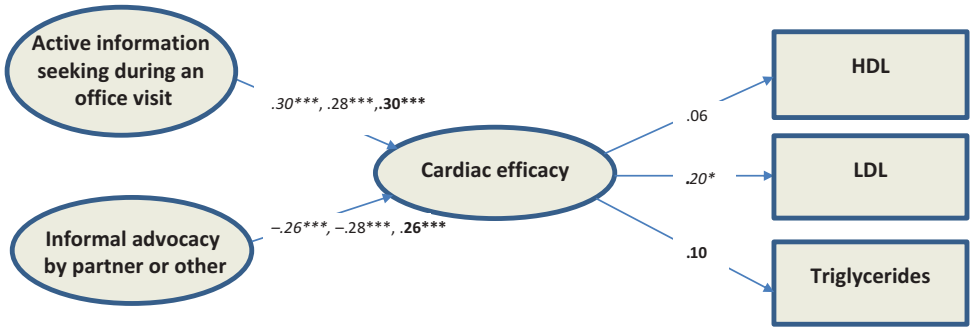

Figure 3. Final models for HDL, LDL, and triglycerides.
Note. *$p < 0.05$, ***$p \leq 0.001$; *HDL*, LDL, **triglycerides**

patients' cardiac efficacy for all models (BMI, total cholesterol, and replicated models) suggesting that active participation may empower patients to feel more confident in their ability to manage their condition. Although we acknowledge that active information seeking is just one part of a total disease management approach, the findings are consistent with prior research linking patients' active participation in medical encounters to more satisfaction with their health care, more commitment to treatment regimens, a stronger sense of control over their health, and better health following the visit (Cegala et al., 2007). Interestingly, although not hypothesized, a path was added from active information seeking during an office visit directly to BMI, but not for total cholesterol, HDL, LDL, or triglyceride models. The finding may suggest that people may be more comfortable discussing their weight (e.g., asking about diet, exercise) than their other cardiovascular health indicators, regardless of the perceived ability to manage their heart condition.

Our hypothesis that the more a partner or other manages patients' health information, the lower patients' perceived cardiac efficacy was also supported for all models (BMI, total cholesterol, and replicated models). The findings contribute to the growing body of research on family and friends as health care advocates by examining patients' perspectives in the context of an office visit. Patients' responses regarding the extent to which partners or others managed their health information were fairly neutral ($M = 2.84$), suggesting that patients perceive that they *themselves* are managing their heart condition. We know that family involvement is not always positive for patients (Clarke et al., 1996; Franks et al., 2006) and may foster frustration or confusion about care (Rosland et al., 2010). It may be that a fine line exists between health care advocate support and perceived control. For example, Franks et al. (2006) found that for patients participating in cardiac rehabilitation, spouses' support predicted increased patient mental health, whereas spouses' control predicted decreased patient health behavior and mental health. Our findings show that greater advocating by a partner or other diminishes patients' perceived cardiac efficacy. Thus, future research should explore the dialectical nature of these effects.

Results for both active information seeking and informal advocacy are also consistent with previous literature linking perceptions about a health condition with various types of efficacy. For example, partners' support positively predicted heart patients' communication efficacy (Checton & Greene, 2012); perceived illness severity negatively predicted disclosure efficacy (Greene et al., 2012); illness interference negatively influenced both patients' and partners' communication efficacy (Checton et al., 2012); and prognosis uncertainty negatively influenced cancer patients' perceptions of their own and their partner's communication efficacy (Magsamen-Conrad et al., 2014).

Role of Cardiac Efficacy on Cardiovascular Health Indicators

The negative path from cardiac efficacy to BMI suggests that the higher patients' perceived ability to manage their heart condition, the lower their BMI (BMI < 25 kg/m^2 is desirable). However, average BMI for patients in this study placed them in the "overweight" category (i.e., a BMI of 25–29.9 kg/m^2), suggesting that patients may be overconfident in their perceived management of their heart condition as indicated by their BMI. The finding is consistent with prior research that half of all US adults with cardiovascular disease are obese (Go et al., 2013). More importantly, the findings support the concept that engaging patients in their disease management and increasing self-efficacy are critical in linking disease management to improved clinical outcomes (Katch & Mead, 2010; Lorig & Holman, 2003).

Cardiac efficacy positively predicted patients' total cholesterol levels. That is, the more patients perceived that they could manage their heart condition (e.g., follow the plan developed by the health care provider), the higher their blood cholesterol levels. Although this finding may seem counterintuitive, average total cholesterol for patients in this study was within normal limits suggesting that their cholesterol levels *are* well-managed (i.e., total cholesterol level < 200 mg/dl). However, it is likely that medications (and minimally life style changes) influence total cholesterol and not solely a patient's belief that the disease can be managed.

Regarding the replicated models, cardiac efficacy positively predicted LDL such that the higher patients' perceived ability to manage their heart condition, the higher their LDL levels. Again, although *low* LDLs are desirable (i.e., < 100 mg/dl), average LDL levels for patients in this study were within normal limits suggesting that consistent with total cholesterol levels, patients' LDL levels are well-managed. Findings for HDL and triglycerides

were also positive, but not significant. As with BMI and total cholesterol, however, patients' mean HDL and triglyceride levels were within normal limits. In summary, patients are confident about managing their heart condition, and despite being considered "overweight," on average their cholesterol, HDL, LDL, and triglycerides levels are well-managed in these data.

Limitations

As with any research study, there are limitations of this study that must be considered. First, these data were collected in one state in the northeastern United States. Similarly, the data were collected in a suburban community from one cardiology office, and therefore the results may not generalize to either urban or rural populations. The predominantly Caucasian sample limits generalization to other groups. For example, black men and women have higher death rates from cardiovascular disease than white men and women, and men have higher overall rates of mortality from the disease regardless of race (Go et al., 2013). Participants in this study were well-educated (> 50% were college graduates), limiting generalization to less educated groups. Patient comprehension and health literacy are two obstacles that impede patients' ability to effectively manage their heart disease (Katch & Mead, 2010). Future research should strive for more racial/ethnic, education, and health literacy diversity.

The data presented here are cross-sectional (yet blood values are not static), limiting some conclusions. An improved study tracking patients across time is necessary to correctly interpret values, which may provide a more complete picture of how communicative and relational functions of health information seeking influence patients' perceived and actual (e.g., BMI, total cholesterol) heart condition management. Other confounding behaviors (e.g., previous heart attacks, smoking, medication adherence, exercise and dietary regimes) influence cardiac disease management and should be considered. An additional limitation is not asking about current medications patients are taking. Finally, limiting measurement of health information seeking to *active information seeking* and *informal advocacy* is a limitation. There are further variables to consider as health information seeking has been measured in numerous ways.

Implications and Future Research

Our findings indicate that patients' active involvement in their office visit may "help," while informal advocacy by partner or other may "hinder" perceived ability to manage their heart condition. Perceived management, in turn, influenced total cholesterol, BMI, and LDL (but not HDL, or triglycerides). The study provides several implications for patients, and their health care advocates and health care providers.

First, patients in this study were confident in their ability to manage their heart condition and—except for BMI—cardiovascular indicators suggest that they *are* managing well. One caveat is that the portion of adults using cholesterol-lowering medication increased from 5% to 23% from the late 1980s through 2010 (Kuklina, Carroll, Shaw, & Hirsch, 2013), meaning that many Americans are taking medications (e.g., aspirin, Angiotensin Converting Enzyme inhibitors, statins) to help control their cholesterol and lipid levels. Additionally, cholesterol and lipid levels are covert indicators of cardiovascular health in that patients cannot know their levels without having their blood checked.

Individuals' weight (a component of BMI calculation), on the other hand, is an overt indicator of cardiovascular health that patients can monitor themselves (i.e., look in a mirror or step on a scale). Nearly 70% of American adults are either overweight or obese. Being obese puts individuals at a higher risk for health problems such as heart disease, stroke, high blood pressure, and diabetes (American Heart Association, n.d.-b). Although patients in the current study reported high confidence in their perceived ability to manage their heart condition, their BMIs illustrate a different picture. Although there are comorbid conditions such as arthritis, thyroid disease, cultural habits that influence dietary choices, and exercise habits associated with obesity, most people know they are overweight and have sought information about how to lose weight. Doing it, however, is another thing entirely. Efficacy is a necessary component for improving health behaviors and clinical outcomes (Blustein et al., 2008; Sarkar et al., 2007); however, patients' confidence may be overinflated (e.g., masking a need to take action related to diet/exercise). Future research should explore the role of efficacy in managing a heart condition.

Regarding informal advocates, the findings underscore the notion that family members and friends can help or hinder patients' ability to manage their health (Gallant et al., 2007; Rosland et al., 2010). Interventions should be ongoing to assist health care advocates in using positive, helpful behaviors (e.g., buying healthful foods, encouraging daily exercise) and avoiding negative ones (e.g., nagging, impeding patients' exercise routines) when helping patients manage their heart condition. The notion that "we're in this together" can be a powerful perspective for patients and advocates managing a chronic heart condition (Goldsmith, 2009; Rohrbaugh, Mehl, Shoham, Reilly, & Ewy, 2008), but only if the impact on the patient is productive. Future research should also explore patients' satisfaction with health care advocates' management of their health condition versus managing their *own* health condition.

Finally, an implication for health care providers is that communication behaviors influence cardiac disease management. Patient engagement such as information seeking is one part of a comprehensive disease management approach. Continued research is necessary as patients (and their advocates) have varied health information seeking preferences that may influence their perceived ability to manage their health in both positive and negative ways.

References

Afifi, W. A., & Morse, C. R. (2009). Expanding the role of emotion in the theory of motivated information management. In T. D. Afifi & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions: Theories and applications* (pp. 87–105). New York, NY: Routledge.

Afifi, W. A., & Weiner, J. L. (2004). Toward a theory of motivated information management. *Communication Theory*, *14*, 167–190. doi:10.1111/comt.2004.14.issue-2

Afifi, W. A., & Weiner, J. L. (2006). Seeking information about sexual health: Applying the theory of motivated information management. *Human Communication Research*, *32*, 35–57. doi:10.1111/j.1468-2958.2006.00002.x

American Heart Association. (n.d.-a). Getting healthy: Weight management. *Obesity*. Retrieved from http://www.heart.org/HEARTORG/GettingHealthy/WeightManagement/Obesity/Obesity-Information_UCM_307908_Article.jsp

American Heart Association. (n.d.-b). Understanding new guidelines Retrieved from http://www.heart.org/HEARTORG/Conditions/Understanding-the-New-Guidelines_UCM_458155_Article.jsp

Anker, A. E., Reinhart, A. M., & Feeley, T. H. (2011). Health information seeking: A review of measures and methods. *Patient Education & Counseling*, *82*, 346–354. doi:10.1016/j.pec.2010.12.008

Arnold, R., Ranchor, A. V., DeJongste, M. J. L., Koeter, G. H., Ten Hacken, N. H. T., Aalbers, R., & Sanderman, R. (2005). The relationship between self-efficacy and self-reported physical functioning in chronic obstructive pulmonary disease and chronic heart failure. *Behavioral Medicine*, *31*, 107–115. doi:10.3200/BMED.31.3.107-115

Ayers, S. L., & Kronenfeld, J. J. (2007). Chronic illness and health-seeking information on the Internet. *Health*, *11*, 327–347. doi:10.1177/1363459307077547

Babrow, A. S., & Matthias, M. S. (2009). Generally unseen challenges in uncertainty management: An application of problematic integration theory. In T. D. Afifi & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions: Theories and applications* (pp. 9–25). New York, NY: Routledge.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Barbour, J. B., Rintamaki, L. S., Ramsay, J. A., & Brashers, D. E. (2012). Avoiding health information. *Journal of Health Communication*, *17*, 212–229. doi:10.1080/10810730.2011.585691

Beisecker, A. E., & Beisecker, T. (1990). Patient information-seeking behaviors when communicating with doctors. *Medical Care*, *28*, 19–28. doi:10.1097/00005650-199001000-00004

Blustein, J., Valentine, M., Mead, H., & Regenstein, M. (2008). Race/ethnicity and patient confidence to self-manage cardiovascular disease. *Medical Care*, *46*, 924–929. doi:10.1097/MLR.0b013e3181792589

Bodenheimer, T., Lorig, K., Holman, H., & Grumbach, K. (2002). Patient self-management of chronic disease in primary care. *Journal of the American Medical Association*, *288*, 2469–2475. doi:10.1001/jama.288.19.2469

Bollen, K. A. (1989). *Structural equations with latent variables*. New York, NY: Wiley.

Brashers, D. E., Goldsmith, D. J., & Hsieh, E. I. (2002). Information seeking and avoiding in health contexts. *Communication Research*, *28*, 258–271. doi:10.1111/j.1468-2958.2002.tb00807.x

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.

Cegala, D. J., Street, R. L., & Clinch, C. R. (2007). The impact of patient participation on physicians' information provision during a primary care medical interview. *Health Communication*, *21*, 177–185. doi:10.1080/10410230701307824

Chaudhari, S., Le, T., White, C., Thompson, H., & Demiris, G. (2013). Examining health information–seeking behaviors of older adults. *Computers, Informatics, Nursing*, *31*, 547–553. doi:10.1097/01.NCN.0000432131.92020.42

Checton, M. G., & Greene, K. (2012). Beyond initial disclosure: The role of prognosis and symptom uncertainty in patterns of disclosure in relationships. *Health Communication*, *27*, 145–157. doi:10.1080/10410236.2011.571755

Checton, M. G., Greene, K., Magsamen-Conrad, K., & Venetis, M. K. (2012). Patients' and partners' perspectives of chronic illness and its management. *Families, Systems, & Health*, *30*, 114–129. doi:10.1037/a0028598

Clarke, D. E., Walker, J. R., & Cuddy, T. E. (1996). The role of perceived overprotectiveness in recovery three months after myocardial infarction. *Journal of Cardiopulmonary Rehabilitation*, *16*, 372–377. doi:10.1097/00008483-199611000-00006

Clayman, M. L., Roter, D., Wissow, L. S., & Bandeen-Roche, K. (2005). Autonomy-related behaviors of patient companions and their effect on decision-making activity in geriatric primary care visits. *Social Science & Medicine*, *60*, 1583–1591. doi:10.1016/j.socscimed.2004.08.004

Duggan, A. P., & Thompson, T. L. (2011). Patient-provider interaction and related outcomes. In T. L. Thompson, R. L. Parrott, & J. F. Nussbaum (Eds.), *Routledge handbook of health communication* (2nd ed., pp. 414–427). New York, NY: Routledge.

Franks, M. M., Stephens, M. A., Rook, K. S., Franklin, B. A., Keteyian, S. J., & Artinian, N. T. (2006). Spouses' provision of health-related support and control to patients participating in cardiac rehabilitation. *Journal of Family Psychology*, *20*, 311–318. doi:10.1037/0893-3200.20.2.311

Gaglio, B., Glasgow, R. E., & Bull, S. S. (2012). Do patient preferences for health information vary by health literacy or numeracy? A qualitative assessment. *Journal of Health Communication*, *17*, 109–121. doi:10.1080/10810730.2012.712616

Galarce, E. M., Ramanadhan, S., & Viswanath, K. (2011). Health information seeking. In T. L. Thompson, R. L. Parrott, & J. F. Nussbaum (Eds.), *Routledge handbook of health communication* (2nd ed., pp. 167–180). New York, NY: Routledge.

Gallant, M., Spitze, G. D., & Prohaska, T. R. (2007). Help or hindrance? How family and friends influence chronic illness self-management among older adults. *Research on Aging*, *29*, 375–409. doi:10.1177/0164027507303169

Gardner, J. K., McConnell, T. R., Klinger, T. A., Herman, C. P., Hauck, C. A., & Laubach, C. A. (2003). Quality of life and self-efficacy: Gender and diagnoses considerations for management during cardiac rehabilitation. *Journal of Cardiopulmonary Rehabilitation*, *23*, 299–306. doi:10.1097/00008483-200307000-00007

Go, A. S., Mozaffarian, D., Roger, V. L., Benjamin, E. J., Berry, J. D., Blaha, M. J., & Turner, M. B. (2013). Heart disease and stroke statistics 2014 update: A report from the American heart association statistics committee and stroke statistics subcommittee. *Circulation*, *129*, e28–e292. doi: 10.1161/01.cir.0000441139.02102.80

Goldsmith, D. J. (2009). Uncertainty and communication in couples coping with serious illness. In T. D. Afifi & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions: Theories and applications* (pp. 204–225). New York, NY: Routledge.

Greene, K. (2009). An integrated model of health disclosure decision-making. In T. D. Afifi & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions: Theories and applications* (pp. 226–253). New York, NY: Routledge.

Greene, K., Magsamen-Conrad, K., Venetis, M., Checton, M. G., Bagdasarov, Z., & Banerjee, S. (2012). Assessing health information disclosure decisions in relationships: Testing the disclosure decision-making model. *Health Communication*, *27*, 356–368. doi:10.1080/10410236.2011.586988

Hall, P., Sanford, J. T., & Demi, A. S. (2008). Patterns of decision making by wives of patients with life-threatening cardiac disease. *Journal of Family Nursing*, *14*, 347–362. doi:10.1177/1074840708322235

Hesse, B. W., Nelson, D. E., Kreps, G. L., Croyle, R. T., Arora, N. J., Rimer, B. K., & Viswanath, K. (2005). Trust and sources of health information. The impact of the internet and its implications for health care providers: Findings from the first health information national trends survey. *Archives of Internal Medicine*, *165*, 2618–2624. doi:10.1001/archinte.165.22.2618

Hogan, T. P., & Brashers, D. E. (2009). The theory of communication and uncertainty management: Implications for the wider realm of information behavior. In T. D. Afifi & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions: Theories and applications* (pp. 45–66). New York, NY: Routledge.

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly*, *11*, 1–47. doi:10.1177/109019818401100101

Kaplan, S. H., Gandek, B., Greenfield, S., Rogers, W., & Ware, J. E. (1995). Patient and visit characteristics related to physicians??? Participatory decision-making style. *Medical Care*, *33*, 1176–1187. doi:10.1097/00005650-199512000-00002

Katch, H., & Mead, H. (2010). The role of self-efficacy in cardiovascular disease self-management: A review of effective programs. *Patient Intelligence*, *2*, 33–44. doi:10.2147/PI.S12624

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford.

Krantz, D. S., Baum, A., & Wideman, M. V. (1980). Assessment of preferences for self-treatment and information in healthcare. *Journal of Personality & Social Psychology*, *39*, 977–990. doi:10.1037/0022-3514.39.5.977

Kuklina, E. V., Carroll, M. D., Shaw, K. M., & Hirsch, R. (2013). Trends in high LDL cholesterol, cholesterol-lowering medication use, and dietary saturated-fat intake: United States, 1976–2010. *National Center for Health Statistics (NCHS) Data Brief*, *117*. Retrieved from http://www.cdc.gov/nchs/data/databriefs/db117.htm

Leventhal, H., Halm, E., Horowitz, C., Leventhal, E. A., & Ozakinci, G. (2004). Living with chronic illness: A contextualized, self-regulation approach. In S. Sutton, A. Baum, & M. Johnston (Eds.), *Handbook of health psychology* (pp. 197–240). London, England: Sage.

Lorig, K. R., & Holman, H. R. (2003). Self-management education: History, definition, outcomes, and mechanisms. *Annals of Behavioral Medicine*, *26*, 1–7. doi:10.1207/S15324796ABM2601_01

Magsamen-Conrad, K., Checton, M. G., Venetis, M. K., & Greene, K. (2014). Communication efficacy and couples' cancer management: Applying a dyadic appraisal model. *Communication Monographs*, *82*, 179–200. doi:10.1080/03637751.2014.971415

Mishel, M. H., & Clayton, M. F. (2003). Uncertainty in illness theories. In M. J. Smith & P. Liehr (Eds.), *Middle range theory in advanced practice nursing* (pp. 25–48). New York, NY: Springer.

Murray, E., Lo, B., Pollack, L., Donelan, K., Catania, J., White, M., & Turner, R. (2003). The impact of health information on the Internet on physician-patient relationship: Patient perceptions. *Archives of Internal Medicine*, *163*, 1727–1734. doi:10.1001/archinte.163.14.1727

National Heart, Lung, and Blood Institute. (n.d.-a). What is cholesterol? Retrieved from http://www.nhlbi.nih.gov/health/health-topics/topics/hbc/

National Heart, Lung, and Blood Institute. (n.d.-b). How are overweight and obesity diagnosed? Retrieved from http://www.nhlbi.nih.gov/health/health-topics/topics/obe/diagnosis

Petronio, S., Sargent, S., Andea, L., Reganis, P., & Cichocki, D. (2004). Family and friends as healthcare advocates: Dilemmas of confidentiality. *Journal of Social & Personal Relationships*, *21*, 33–52. doi:10.1177/0265407504039838

Politi, M., & Street, R. L. (2011). Patient centered communication during collaborative decision making. In T. L. Thompson, R. L. Parrott, & J. F. Nussbaum (Eds.), *Routledge handbook of health communication* (2nd ed., pp. 399–413). New York, NY: Routledge.

Rains, S. A. (2008). Seeking health information in the information age: The role of Internet self-efficacy. *Western Journal of Communication*, *72*, 1–18. doi:10.1080/10570310701827612

Ramirez, A. S., Freres, D., Martinez, L. S., Lewis, N., Bourgoin, A., Kelly, B., & Hornik, R. (2013). Information seeking from media and family/friends increases the likelihood of engaging in healthy lifestyle behaviors. *Journal of Health Communication*, *18*, 527–542. doi:10.1080/10810730.2012.743632

Rohrbaugh, M. J., Mehl, M. R., Shoham, V., Reilly, E. S., & Ewy, G. A. (2008). Prognostic significance of spouse *we* talk in couples coping with heart failure. *Journal of Consulting and Clinical Psychology*, *76*, 781–789. doi:10.1037/a0013238

Rosland, A. M., Heisler, M., Choi, H., Silveira, M., & Piette, J. D. (2010). Family influences on self management among functionally independent adults with diabetes or heart failure: Do family members hinder as much as they help? *Chronic Illness*, *6*, 22–33. doi:10.1177/1742395309354608

Roter, D. L., & Hall, J. A. (2011). How medical interaction shapes and reflects the physician-patient relationship. In T. L. Thompson, R. L. Parrott, & J. F. Nussbaum (Eds.), *Routledge handbook of health communication* (2nd ed., pp. 55–68). New York, NY: Routledge.

Ruppel, E. K., & Rains, S. A. (2012). Information sources and the health information-seeking process: An application and extension of channel complementarity theory. *Communication Monographs*, *79*, 385–405. doi:10.1080/03637751.2012.697627

Sarkar, U., Ali, S., & Whooley, M. A. (2007). Self-efficacy and health status in patients with coronary heart disease: Findings from the heart and soul study. *Psychosomatic Medicine*, *69*, 306–312. doi:10.1097/PSY.0b013e3180514d57

Schilling, L. M., Scatena, L., Steiner, J. F., Albertson, G. A., Lin, C. T., & Anderson, G. I. (2002). The third person in the room: Frequency, role, and influence of companions during primary care medical encounters. *Journal of Family Practice*, *51*, 685–690.

Stephenson, M. T., & Holbert, R. L. (2003). A Monte Carlo simulation of observable-versus latent-variable structural equation modeling techniques. *Communication Research*, *30*, 332–354. doi:10.1177/0093650203030003004

Sullivan, M. D., LaCroix, A. Z., Russo, J. E., & Katon, W. J. (1998). Self-efficacy and self-reported functional status in coronary heart disease: A six-month prospective study. *Psychosomatic Medicine*, *60*, 473–478. doi:10.1097/00006842-199807000-00014

Sundar, S. S., Rice, R. E., Kim, H. S., & Sciamanna, C. N. (2011). Online health information: Conceptual challenges and theoretical opportunities. In T. L. Thompson, R. L. Parrott, & J. F. Nussbaum (Eds.), *Routledge handbook of health communication* (2nd ed., pp. 181–202). New York, NY: Routledge.

Tan, S. L. A., Moldovan-Johnson, M. A., Parvanta, S., Gray, S. W., Armstrong, K., & Hornik, R. C. (2012). Patient–clinician information engagement improves adherence to colorectal cancer surveillance after curative treatment: Results from a longitudinal study. *The Oncologist*, *7*, 1155–1162. doi:10.1634/theoncologist.2012-0173

Venetis, M. K., Robinson, J. D., & Kearney, T. (2013). Consulting with a surgeon before breast cancer surgery: Patient question asking and satisfaction. *Journal of Health Communication*, *18*, 943–959. doi:10.1080/10810730.2012.757391

West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 209–231). New York, NY: Guilford Press.