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The Role of Health Care Provider and Partner Decisional Support in Patients' Cancer Treatment Decision-Making Satisfaction

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Abstract

Cancer patients rely on multiple sources of support when making treatment decisions; however, most research studies examine the influence of health care provider support while the influence of family member support is understudied. The current study fills this gap by examining the influence of health care providers and partners on decision-making satisfaction. In a cross-sectional study via an online Qualtrics panel, we surveyed cancer patients who reported that they had a spouse or romantic partner when making cancer treatment decisions ($n = 479$). Decisional support was measured using 5-point, single-item scales for emotional support, informational support, informational-advice support, and appraisal support. Decision-making satisfaction was measured using Holmes-Rovner and colleagues' (1996) Satisfaction With Decision Scale. We conducted a mediated

regression analysis to examine treatment decision-making satisfaction for all participants and a moderated mediation analysis to examine treatment satisfaction among those patients offered a clinical trial. Results indicated that partner support significantly and partially mediated the relationship between health care provider support and patients' decision-making satisfaction but that results did not vary by enrollment in a clinical trial. This study shows how and why decisional support from partners affects communication between health care providers and cancer patients.

In the United States, cancer is the second leading cause of death (American Cancer Society, 2015), with 40% of adults estimated to develop cancer in their lifetime (National Cancer Institute, 2014). Cancer is considered both a life crisis and an illness that affects patients' family and friends (National Cancer Institute, 2014). To cope with cancer and receive assistance with treatment decision making (DM), patients turn to health care providers (HCPs) and loved ones as sources of support when considering information about their diagnosis and treatment options (Arora, Finney Rutten, Gustafson, Moser, & Hawkins, 2007; Siminoff, Zyzanski, Rose, & Zhang, 2008). The DM process is stressful for patients and their families as they consider types of available treatment, weigh treatment benefits and risks, cope with uncertainty, and manage the additional burden on themselves and their families (e.g., treatment side effects, transportation costs, financial concerns; Siminoff, 2013).

Despite the team-centered nature of cancer care communication, however, medical DM research has historically focused on communication between the patient and HCP (Street, 2013), with less DM research focused on the patient and family (Krieger et al., 2015). Furthermore, as scholars have noted, the role of communication from *both* family members and HCPs during this DM process is understudied (Albrecht, Penner, Cline, Eggly, & Ruckdeschel, 2009; Arora, Street, Epstein, & Butow, 2009; Krieger, 2014; Quaschnig, Körner, & Wirtz, 2013). In addition, treatment decisions that involve scientific or medical uncertainty (i.e., unknown effectiveness of treatment) or risk (i.e., unknown side effects), such as clinical trials (CTs), can be especially problematic for patients' DM satisfaction (Politi, Clark, Ombao, Dizon, & Elwyn, 2011). Thus, the current article examines patients' DM satisfaction in relation to (a) support from HCPs and partners (i.e., significant others) and (b) patients' specific CT decision.

Decisional Support

One way to examine others' influence on patients' treatment DM is to consider enacted social support, or *how* supportive messages are communicated (Goldsmith, 2004). This definition of support is different from other definitions of social support that focus on the quantity, frequency, structure, and availability of perceived social support, which, unlike enacted support, do not consider the quality and appropriateness of support (Goldsmith, 2004). Enacted social support primarily includes four dimensions: emotional support (i.e., expressions of caring, concern, and empathy), informational support (i.e., information and advice), tangible support (i.e., offers of goods and services), and appraisal support (i.e., providing new perspectives on problems; Goldsmith & Albrecht, 2011).

Social support given and received during a DM context has been defined as *decisional support* (Krieger, 2014). Decisional support varies according to individual preferences of patients and families and ranges from patient autonomy (the patient assumes/controls all decisional rights and responsibilities) to patient interdependence (the patient gives some/all decisional rights and responsibilities to family members; for a review, see Krieger, 2014). When aligned between patients and family members, decisional support can result in positive health outcomes (e.g., less distress for the patient); however, it can also increase patients' distress if this support leads to conflict between decisional partners about treatment preferences (Siminoff, Rose, Zhang, & Zyzanski, 2006).

HCP and Partner Decisional Support

In recent decades, HCPs have increasingly focused on the treatment goals of patients through patient-centered communication (PCC), which includes fostering healing relationships, exchanging information, responding to emotions, making decisions, and managing uncertainty (Arora et al., 2009). A core tenet of PCC is the belief that HCPs should support the needs of the whole person, which includes considering the influence of family members in the DM process (Epstein & Street, 2007). Family members provide decisional support to patients by assisting patients in seeking, organizing, and processing information for health decisions, including finding an HCP, receiving

advice about cancer treatment, and describing symptoms to providers (Krieger et al., 2015; Siminoff et al., 2006). However, family members have also been shown to pressure patients to choose treatments that are less burdensome to the family and adhere to patients' family's values instead of HCP recommendations (Siminoff, 2013). In cancer DM, spouses are often the primary source of support (Miller & Caughlin, 2013), and extant research associates spousal communication with psychosocial outcomes, such as distress and adjustment to diagnosis (Harris et al., 2009). Thus, scholars have called for more research determining the role of family support in (a) patient-provider communication and (b) patients' psychosocial outcomes (e.g., Albrecht et al., 2009; Ballard-Reisch & Letner, 2003; Harris et al., 2009; Street, 2013). Given that patients may differ in their perceived decisional support from HCPs and partners (Siminoff, 2013), we examine how partner support is related to the relationship between HCP support and patient DM satisfaction.

One possibility is that partner support may partially mediate the relationship between HCP support and patient DM satisfaction for three reasons. First, some patients, even if they have supportive family members, prefer to rely primarily on HCP support to make their treatment decision (Krieger, 2014). Thus, we expect a direct relationship to exist between HCP support and patient DM satisfaction. Second, in a clinical interaction, HCPs typically first initiate conversations about treatment with patients and supportive others who may be attending the appointment (Street, 2013). Third, although patient conversations with supportive others often continue beyond the clinical interaction before a decision is made by patients, HCPs have the ability to improve family support by encouraging patients to talk to family members to ask for the emotional, informational, and tangible help they need (Street, 2013; Street, Makoul, Arora, & Epstein, 2009). Building on this past research, we conceptualize HCP support as occurring *before* partner support in patients' DM process (see **Figure 1**).

Clinical Trial Decision-Making

CTs are viewed as a critical resource for improving cancer care through treatment advances (Baquet, Commiskey, Mullins, & Mishra, 2006); however, fewer than 5% of cancer patients enroll in CTs (Umutyan et al., 2008). Research has primarily focused on identifying

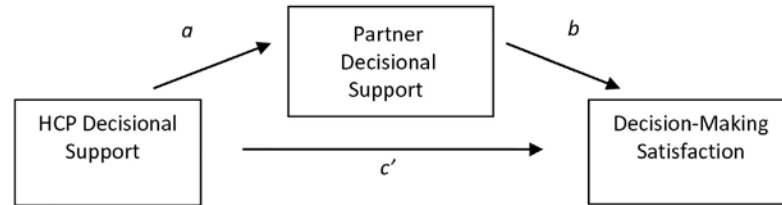


Fig. 1. Theoretical model of mediation of social support and decision-making satisfaction (PROCESS Model 4). Indirect effect = $(a \times b)$. Total effect (c) = $c' + (a \times b)$. HCP = health care provider.

enrollment barriers, yet scholars agree that more research should focus on patients' quality of DM and family and HCP support for those decisions (Stepan et al., 2011; Yang et al., 2010). One study found that patients felt more confident about their CT decision when they had more information and alliance with HCPs *and* family members (Albrecht et al., 2008). As a result, patients who enroll in a CT might have higher DM satisfaction when they view members of their decisional support team (i.e., family and HCPs) as participating in their treatment decisions (i.e., giving support).

Based on the literature discussed previously, we present the following hypotheses and research questions. Where we know the direction of relationships based on extant research, we hypothesize the predicted relationships between variables. Where relationships are not established in the literature, we present research questions to explore the connections between variables. Thus, we present the hypotheses and research questions in the order that the tested relationships appear in the models (see Figures 1 and 2):

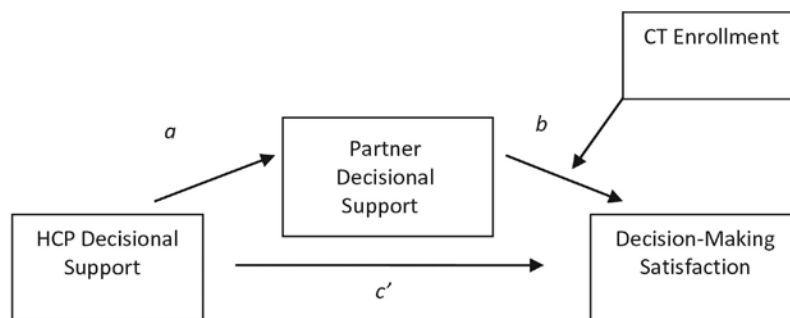


Fig. 2. Theoretical model of moderated mediation of CT enrollment on social support and decision-making satisfaction (PROCESS Model 14). Indirect effect = $(a \times b)$. Total effect (c) = $c' + (a \times b)$. HCP = health care provider; CT = clinical trial.

Hypothesis 1: Patients' perceived decisional support from HCPs will relate positively to patients' cancer treatment DM satisfaction.

Research Question 1: How will patients' perceived decisional support from partners relate to patients' DM satisfaction?

Research Question 2: How will patients' perceived decisional support from HCPs relate to patients' perceived decisional support from partners?

Hypothesis 2: Patients' perceived partner support will partially mediate the effects of patients' perceived HCP support on patient DM satisfaction.

In addition, we examine whether the relationship between decisional support and patient DM satisfaction varies with whether patients enroll in a CT (see Figure 2). Thus, we present the final research question:

Research Question 3: Does the decision to enroll in a CT moderate the effects of patients' perceived partner and HCP support on patients' DM satisfaction?

Method

Sample and Recruitment

Participants ($N = 667$) included patients ages 18 years or older who had received a cancer diagnosis within the past 2 years. Ages ranged from 18 to 89 ($M = 48.9$, $SD = 17.0$). A subsample of participants ($n = 481$) responded "yes" to the question "At the time you were making decisions about your cancer treatment, did you have a significant other (spouse, partner, etc.)?" However, two participants in this subset were removed from final analyses because of missing data on HCP support and income measures. Thus, analyses were subsequently

restricted to a subsample of 479 participants. The majority of these participants were female and White, with ages ranging from 20 to 89 years old ($M = 48.1$, $SD = 16.5$). Participant characteristics are reported in Table 1.

Table 1. Participant statistics

<i>Characteristic</i>	<i>Total sample (N = 667)</i>	<i>Partner and HCP support (n = 479)</i>	<i>CT offer (n = 104)</i>
<i>Age</i>			
18–24	38 (5.7)	15 (8.1)	2 (1.9)
25–34	144 (21.6)	32 (17.3)	31 (29.8)
35–44	114 (17.1)	23 (12.4)	31 (29.8)
45–54	96 (14.4)	29 (15.7)	18 (17.3)
55–64	122 (18.3)	36 (19.5)	12 (11.5)
65–74	108 (16.2)	36 (19.5)	9 (8.7)
75+	45 (6.7)	14 (7.6)	1 (1.0)
<i>Sex</i>			
Female	416 (62.4)	293 (61.2)	71 (68.3)
Male	251 (37.6)	186 (38.8)	33 (31.7)
<i>Race</i>			
White	568 (85.2)	408 (85.2)	75 (72.1)
African American	50 (7.5)	34 (7.1)	12 (11.5)
Asian/Asian American/Pacific Islander	35 (5.2)	26 (5.4)	14 (13.5)
Native American/Eskimo	4 (0.6)	3 (0.6)	0 (0)
Other	10 (1.5)	8 (1.7)	3 (2.9)
<i>Education</i>			
HS incomplete	12 (1.8)	6 (1.3)	0 (0)
HS graduate	93 (13.9)	67 (14.0)	10 (9.6)
Technical/trade/vocational after HS	55 (8.2)	40 (8.4)	11 (10.6)
Some college	192 (28.8)	141 (29.4)	30 (28.8)
College graduate (4-year degree)	233 (34.9)	171 (35.7)	38 (36.5)
Postgraduate	82 (12.3)	54 (11.3)	15 (14.4)
<i>U.S. annual income</i>			
Less than \$10,000	18 (2.7)	9 (1.9)	2 (1.9)
\$10,000 to less than \$20,000	47 (7.0)	15 (3.1)	4 (3.8)
\$20,000 to less than \$30,000	73 (10.9)	44 (9.2)	4 (3.8)
\$30,000 to less than \$40,000	87 (13.0)	59 (12.3)	17 (16.3)
\$40,000 to less than \$50,000	64 (9.6)	46 (9.6)	7 (6.7)
\$50,000 to less than \$75,000	160 (24.0)	123 (25.7)	27 (26.0)
\$75,000 to less than \$100,000	113 (16.9)	92 (19.2)	22 (21.2)
\$100,000 to less than \$150,000	80 (12.0)	70 (14.6)	16 (15.4)
\$150,000+	24 (3.6)	21 (4.4)	5 (4.8)

Data are n (%). HCP = health care provider; CT = clinical trial; HS = high school.

As for CT offers, approximately 20% ($n = 133$) of the original sample of patients ($N = 667$) responded “yes” to the question “Were you offered an opportunity to participate in a cancer research study as part of your treatment?” Likewise, within the subsample of 479 participants with partner support, only 104 (21.7%) of these participants were offered a CT (see Table 2). Among these 104 participants, ages ranged from 23 to 78 ($M = 42.9$, $SD = 12.9$). The most common types of cancer were breast and prostate, with more than a third of participants having received a cancer diagnosis in the 6 months prior to participating in our study (see Table 2 for participants’ clinical cancer information, such as diagnosis and CT enrollment).

Table 2. Participant clinical information

<i>Characteristic</i>	<i>Total sample (N = 667)</i>	<i>Partner and HCP support (n = 479)</i>	<i>CT offer (n = 104)</i>
CT offer			
Yes	133 (19.9)	104 (21.7)	104 (100.0)
No	534 (80.1)	375 (78.3)	0 (0.0)
CT enrollment			
Yes	78 (11.7)	66 (13.8)	66 (63.5)
No	589 (88.3)	413 (86.2)	38 (36.5)
Time since most recent cancer diagnosis			
Less than 3 months ago	92 (13.8)	69 (14.4)	17 (16.3)
3–6 months ago	134 (20.1)	93 (19.4)	21 (20.2)
7–12 months ago	195 (29.2)	141 (29.4)	40 (38.5)
13–24 months ago	246 (36.9)	176 (36.7)	26 (25.0)
Most recent cancer type			
Breast	195 (29.2)	152 (31.7)	48 (46.2)
Prostate	86 (12.9)	67 (14.0)	16 (15.4)
Colon or rectal	39 (5.8)	28 (5.8)	10 (9.6)
Lung	70 (10.5)	43 (9.0)	11 (10.6)
Melanoma	88 (13.2)	62 (12.9)	13 (12.5)
Bladder	19 (2.8)	14 (2.9)	2 (1.9)
Other	198 (29.7)	137 (28.6)	18 (17.3)
Chances cancer is/will be cured			
90% or better	270 (40.5)	191 (39.9)	20 (19.2)
About 75%	152 (22.8)	116 (24.2)	34 (32.7)
About 50%–50%	143 (21.4)	97 (20.3)	28 (26.9)
About 25%	29 (4.3)	24 (5.0)	10 (9.6)
10% or less	24 (3.6)	17 (3.5)	7 (6.7)
I don’t know	49 (7.3)	34 (7.1)	5 (4.8)

Data are n (%). HCP = health care provider; CT = clinical trial.

For 1 week in May 2014, participants were recruited from an on-line Qualtrics panel (i.e., a pool of U.S. adults who have volunteered to participate in online survey research via Qualtrics). Participants were randomly selected to participate in this institutional review board–approved study through an e-mail invitation with an embedded secure, individualized link to the survey. Survey questions focused on the attitudes and experiences of cancer survivors. Responses were anonymous and confidential, and no personal identifiers were linked to participants.

Participants who chose to opt in to the study read an introductory page that described the study and its purpose and requested their consent to participate. Once they gave their consent, participants completed the survey. After survey completion, participants received a debriefing statement, which provided contact information for the principal investigators if they had any questions about the survey or their participation. All study participants received a cash value reward that was credited to their member account on the site and could be redeemed for a gift card (e.g., Amazon.com, Paycomer prepaid debit, restaurants.com). The reward amount was based on recruiting incentives, which were adjusted for survey length and target audience.

Questionnaire

Decisional Support Measures

Decisional support measures were adapted from established definitions of enacted support (Goldsmith, 2004) and based on the social support dimensions reported by patients to be the most important types of decisional support in their cancer CT treatment DM in a previous study (Krieger, Palmer-Wackerly, Dailey, & Krok, 2013). Because this was the first time this scale was being used, we also wanted to test the feasibility of using a shortened decisional support scale. Decisional support was measured using a 5-point Likert scale asking whether patients had received any treatment DM help by others (a) “showing care and concern for me” (i.e., emotional support), (b) “giving me valuable information about my treatment options” (i.e., informational support), (c) “giving me advice about which treatment option would be better for me” (i.e., informational advice support), and (d) “giving me a different point of view” (i.e., appraisal support).

Responses ranged from *strongly disagree* (1) to *strongly agree* (5), and the scale was repeated across two separate support sources: HCP (i.e., oncologist) and partner (i.e., significant other). Scale items resulted in reliability for partner support ($\alpha = .84$) and HCP support ($\alpha = .85$).

A principal component analysis (PCA) was conducted on the decisional support items. We wanted to examine whether the scale reported that participants recognized support types as separate and distinct subconcepts or whether participants viewed support types as belonging to only one concept. For each support source, a PCA was conducted for decisional support survey items. All coefficients in the correlation matrix were 0.3 and above. Kaiser–Meyer–Olkin values were 0.781 (HCP) and 0.775 (partner), and Bartlett’s test of sphericity was significant for both sources, thus making factor analysis appropriate for both of these source scales (Pallant, 2013). Analysis of both scales resulted in one component with eigenvalues exceeding 1: 2.848 (HCP) and 2.726 (partner), which explained 71% (HCP) and 68% (partner) of the variance. Thus, we combined scale items for each source separately into two variables (HCP and partner) by using the mean score across each case for each support source.

CT Participation Measure

CT participation was measured by asking patients who were offered a CT the following: “Did you agree to participate in the cancer research study you were offered?” Responses were “yes” and “no.”

DM Satisfaction Measures

DM satisfaction was measured using a 5-point Likert scale created from four questions from the Satisfaction With Decision Scale (Holmes-Rovner et al., 1996): (a) “I am satisfied that I was adequately informed about the issues important to my decision,” (b) “The treatment decision I made was the best decision possible for me personally,” (c) “I am satisfied with the outcome of my decision,” and (d) “I am satisfied that my decision was consistent with my personal values.” Possible responses ranged from *strongly disagree* (1) to *strongly agree* (5). Scale reliability was high ($\alpha = .88$). Using the guidelines above for PCA (Pallant, 2013), results showed that the test was appropriate and that one component was present with an eigenvalue exceeding 1: 2.968, which explained 74% of the variance. Thus, scale items were combined into one variable by using the mean score of scale items for each case.

Some researchers claim that quality DM is more important than satisfaction with DM in determining patients' well-being. These reasons include the need to accurately assess patients' knowledge about options, patients' understanding of risk involved with treatments, and/or how well the DM process matches patients' value system (Politi et al., 2011). In consideration of these reasons, we chose Holmes-Rovner and colleagues' (1996) satisfaction with DM scale because it privileges patients' perspective in asking patients to evaluate how informed they believed they were, how good the decision was for them, how satisfied they were with the outcome, and how consistent the decision was with their personal values. Likewise, patients do not always engage in systematic processing when making treatment decisions and instead engage in naturalistic (i.e., intuition-based) and/or heuristic processing (Epstein, 2013). Patients desire different levels of information depending on where they are located in the illness trajectory (Marcus et al., 2013). In the cancer context specifically, patients have initially reported feeling overwhelmed and experiencing difficulty processing information after their diagnosis. However, it is precisely at this moment that treatment options are often discussed because of medical concerns about cancer progression, and this is why it is often suggested that patients bring loved ones to their appointments (Krieger, 2014). These appointments can also be overwhelming for caregivers, and factors such as motivation, knowledge, and communication skills have been shown to influence how well people understand and communicate with HCPs about health information (Epstein & Street, 2007). Thus, satisfaction with DM, although not the only measure for quality of DM, is an important indicator of decisional quality because it indicates that patients have met their goals and considered their values (i.e., PCC), which have been linked to less decisional conflict and increased well-being (Glass et al., 2012).

Data Analysis

All analyses of survey information about cancer treatment attitudes were conducted in SPSS (Version 22; IBM, New York, NY). Frequencies and distributions of demographic and behavioral variables (see Table 1) and the reliability of scale items were assessed. Three key variables (i.e., HCP support, partner support, and DM satisfaction) were negatively skewed; thus, they were transformed by reflecting and inverting the scores to allow for more normally distributed

responses in order to meet the statistical assumptions of the techniques below (Tabachnick & Fidell, 2014, p. 87).

Using the PROCESS macro in SPSS, we tested the hypothesized partial mediation model (see Figure 1; Model 4 in PROCESS) and moderated mediation model (see Figure 2; Model 14 in PROCESS; Hayes, 2013; Preacher & Hayes, 2004; Preacher, Rucker, & Hayes, 2007). Within the PROCESS macro of SPSS, Model 4 tests a simple mediation model, whereas Model 14 tests a moderated mediation model with the moderation occurring between the mediating and dependent variables (see Figures 1 and 2; Hayes, 2013; Preacher & Hayes, 2004). Through these analyses, the relationships between all variables were estimated. In PROCESS Model 4, the mediation model's test of significance for the indirect effect was conducted to estimate path *a* from the predictor variable (i.e., HCP support) to the mediating variable (i.e., partner support), path *b* from the mediating variable to the outcome variable (i.e., DM satisfaction), and path *c'* from the predictor variable to the outcome variable (see Figure 1). The indirect effect was quantified as the product of the direct effect of HCP support on partner support and the direct effect of HCP support on DM satisfaction. The total effect of HCP support on DM satisfaction (path *c*) was estimated by adding the direct effect (path *c'*) and indirect effect (paths $a \times b$; Hayes, 2013; Preacher & Hayes, 2004). Bootstrapping (i.e., indirect effects estimated from repeated sampling) was conducted in order to generate a valid 95% confidence interval for statistical inference (Hayes, 2013; Preacher & Hayes, 2004). All analyses controlled for sex, age, education, ethnicity, and income (see Table 1 for frequencies).

A moderated mediation analysis was conducted using participants who had been offered the opportunity to participate in a CT and reported a romantic partner ($n = 104$). Using the PROCESS macro in SPSS, we used Model 14 (see Figure 2) to conduct a test of significance for the indirect and conditional effects to estimate path *a* from the predictor variable (i.e., HCP support) to the mediating variable (i.e., partner support), path *b* from the mediating variable to the outcome variable (i.e., DM satisfaction), path *c'* from the predictor variable to the outcome variable, and the conditional effect of a CT decision (yes/no) on DM satisfaction. Indirect and direct effects were estimated using the same procedures detailed in the previous paragraph. Bootstrapping was conducted with 5,000 samples to test significance and obtain a valid 95% confidence interval (Hayes, 2013; Preacher & Hayes, 2004; Preacher et al., 2007).

Results

HCP Support and DM Satisfaction (Hypothesis 1)

Descriptive statistics and Pearson's correlation test results are reported in Table 3. Hypothesis 1 predicted that HCP support would be positively associated with patients' DM satisfaction. After we controlled for demographic variables, results from a mediated regression model show a significant direct effect of HCP support on the likelihood of DM satisfaction (path c' in Hayes, 2013; Preacher & Hayes, 2004; $b = 0.420$, $p < .001$; see Table 4). Thus, independent of partner support, a direct effect existed between HCP support and the likelihood of reporting patient DM satisfaction. Thus, Hypothesis 1 was supported.

Partner Support and DM Satisfaction (Research Question 1)

Research Question 1 explored the association between partner support and patients' DM satisfaction. After we controlled for demographic variables, the mediation model found that the direct effect of partner support on DM satisfaction (path b in Hayes, 2013) was positive and significant ($b = 0.090$, $p < .001$; see Table 4).

Table 3. Descriptive statistics and Pearson's correlations between variables

Variable	M	SD	Range	Pearson's r			
				1	2	3	4
1. Partner support	3.9	0.9	1.0-5.0	—	.481**	.156†	.213**
2. HCP support	4.1	0.8	1.0-5.0		—	.064	.429**
3. Clinical trial decision						—	.08
4. DM satisfaction	4.4	0.7	1.0-5.0				—
Age	48.2	16.6	20.0-89.0	-.32**	-.12**	-.01	.19**
Sex (1 = male, 2 = female)				.11*	.11*	-.18*	.09†
Education				.02	-.06	.01	-.05
Ethnicity				.06	.03	-.01	-.08†
Income				.04	.01	.03	.03

HCP = health care provider; DM = decision making.

† $p < .10$; * $p < .05$; ** $p < .001$

Table 4. Regression results for mediation

<i>Panel A: Variable</i>	<i>Coefficient</i>	<i>t</i>	<i>p</i>	<i>CI</i>
DM satisfaction regressed on HCP support (<i>c</i>)	0.463	11.125	<.001	[0.382, 0.545]
Partner support regressed on HCP support (<i>a</i>)	0.483	11.434	<.001	[0.400, 0.566]
DM satisfaction regressed on partner support controlling for HCP support (<i>b</i>)	0.090	1.990	<.05	[0.001, 0.179]
DM satisfaction regressed on HCP support controlling for partner support (<i>c'</i>)	0.420	8.950	<.001	[0.328, 0.512]

CI = confidence interval; DM = decision making; HCP = health care provider

HCP Support and Partner Support (Research Question 2)

Research Question 2 explored the association between HCP support and partner support. After we controlled for demographic variables, results from a mediated regression test found that the direct effect of HCP support on partner support (path *a* in Hayes, 2013; Preacher & Hayes, 2004) was positive and significant ($b = 0.483$, $p < .001$; see Table 4).

Mediation of Partner Support on HCP Support and Patient DM Satisfaction (Hypothesis 2)

Hypothesis 2 predicted that partner support would indirectly mediate the relationship between HCP support and patient DM satisfaction (see Figure 1). Results from the model indicated a partial mediation with both an indirect and direct effect of HCP support on patients' DM satisfaction (see Table 4). The indirect effect of HCP support on DM satisfaction through partner support was the product of paths *a* and *b*: $0.483 \times 0.090 = 0.044$. This means that a patient who reported 1 unit higher on the HCP support scale was estimated to report 0.044 units higher in DM satisfaction through the effect of partner support. The indirect effect was statistically different from zero, as evidenced by the 95% confidence interval for the indirect effect created by the 5,000 bootstrap samples [0.001, 0.089]. We estimated the total effect of HCP support on DM satisfaction (path *c* in Hayes, 2013; Preacher & Hayes, 2004) by adding the direct effect and indirect effect: $0.420 + 0.044 = 0.463$ ($p < .001$). Thus, Hypothesis 2 was supported through a partial and significant mediation effect of partner support on the relationship between HCP support and patient DM satisfaction.

CT Enrollment Interaction Effect (Research Question 3)

Research Question 3 examined whether the relationship between decisional support from HCPs and partners and DM satisfaction varied with CT enrollment. A correlation matrix indicated the strength and significance of support source on CT decision (see Table 3). Both HCP and partner support were positively correlated with CT decision, though the relationships were not significant. A moderated mediation regression analysis (see Figure 2) showed that HCP support was positively and significantly associated with patients' DM satisfaction ($b = 0.370, p < .001$) and that no other relationships were significant. Specifically, the interaction between partner support and CT decision was positive though not significantly different from zero ($b = 0.038, p = .78$; see Table 5). Thus, the results did not support the moderated effect of CT enrollment on the mediation of partner support on the relationship between HCP support and patient DM satisfaction.

Discussion

Scholars have called for more research that identifies factors, such as family social support, that affect the relationship between HCP communication and treatment outcomes (Epstein, 2013; Krieger, 2014; Street, 2013). Our results demonstrate that partner support partially mediates the relationship between HCP support and patients' DM satisfaction within the cancer treatment context. In addition, our results showed that both HCP and partner support were significant, independent, and positive predictors of patient DM satisfaction, even after we controlled for demographic characteristics (e.g.,

Table 5. Regression results for moderated mediation

<i>Panel A: Variable</i>	<i>Coefficient</i>	<i>t</i>	<i>p</i>	<i>CI</i>
Decision-making satisfaction regressed on				
HCP support	0.370	4.409	<.001	[0.204, 0.537]
Partner support	0.075	0.662	.51	[-0.148, 0.297]
CT enrollment	-0.020	-0.220	.83	[-0.198, 0.158]
Interaction (Partner Support × CT)	0.038	0.277	.78	[-0.236, 0.313]

CI = confidence interval; HCP = health care provider; CT = clinical trial

gender, race). Our results confirm that HCP support is a stronger predictor of DM satisfaction than partner support but that higher HCP support also encourages more partner support, which influences patients' decision satisfaction. Results, however, did not vary with CT enrollment.

HCP and Partner Support

We found that most patients reported that HCP support was highly influential in their DM satisfaction. This finding for HCP support is encouraging given the focus on patient-centered care in medical DM and patient perceptions of HCP credibility and knowledge (e.g., Street, 2013). This finding shows that for cancer treatment DM, patients value the support their HCP gives them, and, when effective, this support influences patient satisfaction. These findings also showed that CT enrollment did not affect the relationship between decisional support and patient decisional satisfaction. This result is promising for patient well-being in that it may suggest that patients are feeling supported in their treatment decision from both partners and HCPs, no matter their CT decision.

Partner support was shown to be positively associated with patients' medical DM; however, variability existed among patients in the extent to which this support influenced their decision. In addition, the direct effect on DM satisfaction was small, which supports previous cancer DM research in that patients do not always seek and/or value support from their family and that, conversely, families do not always give the support that a patient desires from them (e.g., Krieger, 2014). Patients also viewed *types* of support (e.g., emotional, informational, advice, and appraisal) as similarly influential to their treatment decision for both support sources. Although some scholars (e.g., Arora et al., 2007) have suggested using separate dimensions of social support, the PCA indicated that decisional support types blended together for the patients even though support sources (i.e., HCP vs. partner) had different associations with decisional satisfaction. A variety of mechanisms could explain this finding: (a) Patients may have wanted to receive both information and emotional care from their HCP; (b) by communicating information, HCPs were also communicating their concern for patients; and/or (c) single-item measures are not distinct enough to identify unique

differences among types of decisional support (Arora et al., 2007). However, for the purposes of this study, we wanted to explore the influence of support *source* more than support *type* as well as explore the utility of a shortened decisional support scale; thus, the current scale was appropriate for our analysis.

These results also suggest that in addition to PCC with HCPs, patients could also benefit from PCC with family members—focusing on patient goals and values for treatment. Just as shared DM models between HCPs and patients have moved to a mutually influential style of communicating—one that respects patients' goals and level of involvement (Arora et al., 2009)—so too could shared DM models with family members incorporate respect for patients' goals and their level of involvement. Of course, PCC may be more emotionally difficult for caregivers (as opposed to HCPs), who are personally and relationally invested and perceive cancer to be affecting the entire family (Krieger et al., 2015; Hasson-Ohayon, Goldzweig, Braun, & Galinsky, 2010). Thus, future family cancer communication interventions could explore how to educate *both* patients and caregivers on the importance of PCC in shared illness identity and its personal and relational implications, such as identifying and respecting patients' desire for the family's level of involvement in DM in order to increase patient well-being and decrease decisional conflict for families.

Strengths and Limitations

As other researchers have noted, many relational influences (e.g., friends, siblings, children) influence the clinical encounter both before and after these visits (Harris et al., 2009). Strengths of our study include a large sample of cancer patients with partners ($n = 479$), a large subsample of patients who were offered a cancer CT and had partners ($n = 104$), and the combined consideration of two relational influences (i.e., HCPs and partners) on patients' DM satisfaction. Although a minority of adult cancer patients (fewer than 5%) enroll in a CT (Umutyan et al., 2008), approximately 12% of our total sample enrolled in a CT, and 14% of the patients who had partners enrolled in a CT. Although our sample participated in CTs at a higher rate than the general population, CT participants are often difficult to recruit given their small percentages of enrollment. Thus, the current

analyses remain informative in examining the relationship between CT decisional support and decisional satisfaction, and the higher percentage of CT enrollees is a strength of the study.

One limitation of our study is that we did not ask about length of time since treatment or current cancer diagnosis; thus, we are unsure how many patients still had cancer versus how many were in remission. Because CT participants are difficult to recruit, we asked participants to enroll in our study if they had received a cancer diagnosis within 2 years (instead of a shorter time frame). It is possible that patients in remission may have biased recall around DM indicating a more positive experience; however, we believe this limitation to be of little concern because participants' clinical information showed that 35% of the 479 cancer participants and 48% of the 104 CT participants in our sample reported that they thought their chances of having their cancer cured were 50% or less.

An additional limitation is that our findings only represent cancer patients who have significant others. The current study specifically looked at partner support because partners and HCPs have been shown to be the most influential sources of support for cancer patients (e.g., Miller & Caughlin, 2013). However, the findings cannot be generalized to cancer patients who rely on other caregivers, such as a close friend, sibling, or child because they either are not married, have lost a partner, or find more support in other relationships. Future studies should instead consider the combined influence of a primary support network source (as opposed to a significant other) to account for these differences and increase generalizability among cancer patients. This may especially be true for young adult cancer patients who may rely more heavily on their parents rather than a significant other.

Finally, we tested our models assuming a temporal relationship between HCP support, partner support, and patients' DM satisfaction. This assumption was made based on three extant findings in the literature: (a) Sometimes patients prefer to confer only with HCPs in medical DM, (b) HCPs typically initiate treatment conversations in a cancer context, and (c) HCPs encourage family/friend support in cancer DM (Krieger, 2014; Street, 2013; Street et al., 2009). Though a causal relationship cannot be inferred from the cross-sectional data provided in this study, the results suggest an explanation for a

process (MacKinnon, 2008) through which HCPs influence patients' DM satisfaction (i.e., HCP support leads to partner support, which leads to DM satisfaction). Future studies should consider temporal study designs to appropriately test causal linkages. Finally, patients surveyed through a Qualtrics Web survey present a selection bias in any sample because they likely (a) have an interest in research, (b) are motivated to participate to receive monetary remuneration, and/or (c) have more advanced technological skills than the average cancer patient.

Conclusions and Implications

The goal of this study was to examine the dual influences of both HCPs and partners in patients' medical DM satisfaction. This study furthers knowledge of social support by showing how and why support from partners affects communication between HCPs and patients within the cancer clinical DM context. Likewise, support from both HCPs and family members did not vary with CT enrollment, which shows that patients were satisfied with decisional support *and* their treatment decision no matter if they accepted or declined a CT. With continued theoretical development, interventions can be developed and tested to ensure that patients' decisional needs for support are met from all medical and social network members.

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