"My Doctor Says the Cancer is Worse, But I Believe in Miracles" — When Religious Belief in Miracles Diminishes the Impact of News of Cancer Progression on Prognostic Understanding Change

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Abstract

Background: News of cancer progression is critical to setting accurate prognostic understanding, which guides patients' treatment decision-making. We examine if religious belief in miracles modifies the effect of receiving news of cancer progression on prognostic understanding change.

Methods: In a multi-site prospective cohort study, 158 advanced cancer patients, whom oncologists expected to die within 6 months, were assessed pre- and post-visit in which scan results were discussed. At pre-visit, religious belief in miracles was assessed; post-visit, patients indicated what scan results they received (cancer is worse vs. cancer is stable, better, or other). At pre- and post-visit, prognostic understanding were assessed, and a change score was computed.

Results: Approximately 78% ($n = 123$) of participants reported at least some belief in miracles, with almost half ($n = 73$) endorsing the strongest possible belief. A significant interaction effect emerged between receiving news of cancer progression and belief in miracles in predicting prognostic understanding change ($b = -.18$, $p = .04$). Receiving news of cancer progression was associated with improvement in accuracy of prognostic understanding, among patients with weak belief in miracles ($b = .67$, $p = .007$); however, among patients with moderate to strong belief in miracles, news of cancer progression was unrelated to prognostic understanding change ($b = .08$, $p = .64$).

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Conclusion: Religious belief in miracles was highly prevalent and diminished the impact of receiving news of cancer progression on prognostic understanding. Assessing patient belief in miracles may help optimize the effectiveness of "bad news" test result discussions.

Precis:

Religious belief in miracles was highly prevalent among advanced cancer patients and diminished the impact of receiving news of cancer progression on prognostic understanding. Assessing patient belief in miracles may therefore help optimize the effectiveness of "bad news" test result discussions.

Keywords

communication; prognosis; comprehension; life expectancy; spirituality

Introduction

Advanced cancer patients' understanding of prognosis drive their treatment decision-making and care planning.[1–3] Prognostic discussions, including discussions of cancer restaging results, are an important way prognostic understanding can be adjusted to reflect changing disease status.[1,3,4] Especially important is being informed of news of cancer progression, as patients may have to make decisions regarding whether to stop or change anti-cancer treatments, and/or pursue comfort-focused care.

Identifying factors that modify the impact of receiving news of cancer progression on prognostic understanding is therefore important.[5,6] One such factor may be patients' belief in the potential for a miracle, whereby through some divine intervention, the natural order of their disease is defied for a more favorable prognosis.[7–9] Much has been written about how belief in miracles may hinder prognostic discussions, including development of communication protocols to manage challenges raised by such beliefs.[10,11] This work has been largely based on anecdotal evidence that belief in miracles may impede discussions, with little research directly documenting the prevalence of belief in miracles, and testing if it impairs patients' processing of received prognostic information and accordingly changing their prognostic understanding. Such research would help identify the necessity of trainings that teach clinicians how to interface with patient beliefs to potentially improve the impact of cancer progression discussions on prognostic understanding.

The present study examines the prevalence of religious belief in miracles, and tests whether the impact of receiving news of cancer progression on prognostic understanding change is dependent on patients' belief in miracles.[10,11] Specifically, we examine, using patient-report assessment, whether receiving cancer progression news is associated with pre- to post-prognostic understanding change, contingent on patients' baseline level of religious belief in miracles. Using patient-report assessment of what was heard during the discussion, and examining *change* in prognostic understanding from pre to post discussion, has notable advantages, including elimination of alternate explanations related to inadequate communication (e.g., patient did not understand cancer progression information; was not paying attention).[12–14] The present approach therefore homes in on whether receiving news

of cancer progression from one's provider translates to change in prognostic understanding, as a function of religious belief in miracles.

Methods

Data for this study came from the Coping with Cancer-II study (CA106370; PI: Prigerson), a multi-institution, longitudinal, observational study conducted from 2010 to 2015 to examine end-of-life communication among advanced cancer patients. Participating sites included: Weill Cornell Medicine Meyer Cancer Center (New York, NY); Memorial Sloan Kettering Cancer Center (New York, NY); Dana-Farber/Harvard Cancer Center (Brigham and Women's Hospital, Dana-Farber Cancer Institute, and Massachusetts General Hospital, Boston, MA); Yale Cancer Center (New Haven, CT); Virginia Commonwealth University Massey Cancer Center (Richmond, VA); Simmons Comprehensive Cancer Center (Dallas, TX); Parkland Hospital (Dallas, TX); University of New Mexico Cancer Center (Albuquerque, NM); and Pomona Valley Hospital Medical Center (Pomona, CA). Institutional Review Boards at the participating sites approved the study protocol. Participants provided written informed consent before participating.

Eligibility criteria for the study were as follows: being of black or white race; being 21 years of age or older; having locally advanced and/or metastatic gastrointestinal, lung, or gynecologic cancer; disease progression after one or more chemotherapy regimens; and oncologist-estimated life-expectancy of six or fewer months. Patients who were cognitively impaired, too weak to participate in study interviews, or receiving hospice or palliative care, were considered ineligible for the study.

The analytic sample consisted of 158 patients with valid data on the three primary study variables: religious belief in miracles, receipt of cancer progression news, and pre- and post-visit assessment of prognostic understanding. Comparison of the analytic sample to those patients enrolled in the parent study but not included in the present analyses showed no statistically significant differences in age, gender, education, marital status, race, ethnicity, or cancer diagnosis.

At study entry, patient demographics and disease characteristics were recorded. Before and after clinic visits wherein cancer restaging scan results were discussed, trained interviewers assessed patients using structured interviews. At pre-visit assessment, religious belief in miracles was measured; at post-visit assessment, receipt of cancer progression news was measured; at pre and post-visit assessment, prognostic understanding were measured. The median time between pre and post-visit assessment was 35 days (interquartile range: 16 to 70).

Religious belief in miracles was assessed using an item from the Religious Beliefs in End-of-Life Medical Care scale (RBEC),[15] a measure of different types of religious beliefs thought to impact patients' end-of-life care decisions (e.g., belief that some end-of-life decisions violate sanctity of life; necessity of pursuing life-extending treatments due to sanctity of life). The only item from the RBEC assessing miracles was used to measure belief in miracles: "I believe that God could perform a miracle in curing me of cancer."

Patients rated their response on a five-point scale, ranging from *not at all* (1) to *a great deal* (5). For purposes of conducting exploratory analyses, the other six items of the RBEC were averaged to create an index of other religious beliefs. Additionally, overall religiousness and spirituality were also assessed using items from the Multidimensional Measure of Religiousness and Spirituality Brief Scale.[16] In two separate items, patients rated the extent to which they considered themselves a "religious person" and a "spiritual person." Responses were rated on a 4-point Likert scale, ranging from *not at all religious* (0) to *very religious* (1), and *not spiritual at all* (0) to *very spiritual* (1).

To assess receipt of news of cancer progression, patients were asked what their provider said about their cancer during the scan results discussion. Patients selected whether the provider said the cancer was "worse" (1), "stable" (0), "better" (0), or "other" (0). The "worse" response option indicated receipt of cancer progression news.

Patients' prognostic understanding was assessed at pre and post visit using a four-item composite index used in previous research.[3] The items assess relevant facets of prognostic understanding such as the terminal or non-terminal nature of one's illness, curability or incurability of one's cancer, stage of one's disease, and one's life-expectancy (see Table 1 for items, response options, and coding). Given the sample inclusion criteria and previous data on patients with similar disease characteristics[4] (i.e., metastatic or locally advanced disease, with disease progression after one or more chemotherapy regimens), the patients in the present sample had a median life expectancy of less than six months. Patient responses indicating accurate understanding of prognosis (e.g., identifying as "terminally ill") were coded 1, and other responses coded 0. A prognostic understanding composite score was computed for pre and post visit (possible score ranging from 0 to 4), and a change score was computed subtracting pre-visit score from post-visit score (possible score ranging from −4 to 4). Higher change scores indicated more accurate changes in prognostic understanding.

Analytic Plan

Bivariate associations were examined using Pearson correlation for continuous variables, and independent samples t-test and one-way ANOVA for continuous and categorical variables. To examine the moderating role of religious belief in miracles, an interaction term was created multiplying belief in miracles by news of cancer progression. A linear regression model was estimated predicting prognostic understanding change, using religious belief in miracles, news of cancer progression, and the interaction term as predictors. The p-value associated with the interaction term was used to evaluate significance of the interaction. To probe interaction effect, subgroup analyses examined association between receiving news of cancer progression and prognostic understanding change separately for patients endorsing weak ("not at all" or "a little") and moderate or strong ("somewhat," "quite a bit," or "a great deal") religious belief in miracles. To control for confounding influences stemming from patient characteristics (e.g., age, education, disease type), adjusted models were also computed where characteristics showing significant or marginally significant associations with prognostic understanding change ($p < .10$) were included as covariates.

Results

Sample characteristics are displayed in Table 2. On average, participants were approximately 60 years of age ($SD = 9.74$) and had some college education (mean years of education = 14.30, $SD = 3.48$). Majority were women (65.8%), married (57.4%), insured (70.9%), white (84.8%), and, non-Latino (89.7%). Average religiousness and spirituality ratings were 1.83 ($SD = .99$) and 2.15 ($SD = .90$), respectively.

Only approximately 22% ($n = 35$) of the sample reported no religious belief in miracles (see Table 3). The other approximately 78% ($n = 123$) reported at least some belief, with 46% ($n = 73$) endorsing the strongest level of belief on the Likert response scale ("a great deal"). Religious belief in miracles was negatively correlated with patient characteristics such as age ($r = -.21$, $p < .01$) and education ($r = -.47$, $p < .001$), and positively correlated with religiousness ($r = .48$, $p < .001$) and spirituality ($r = .38$, $p < .001$). Higher religious belief in miracles was found among patients who were black ($t = 3.56$, $p < .001$), Latino ($t = -2.45$, $p < .05$), and uninsured ($t = 4.26$, $p < .001$). Belief in miracles also varied across geographical region ($F = 14.92$, $p < .01$; Northeast, mean = 2.94, $SD = 1.63$; South, mean = 3.55, $SD = 1.57$; Southwest/West, mean = 4.36, $SD = 1.29$) and cancer type ($F = 11.00$, $p < .001$; Lung, mean = 3.80, $SD = 1.56$; GI, mean = 4.07, $SD = 1.39$; Other, mean = 2.77, $SD = 1.64$).

A quarter of the sample ($n = 40$; 25.3%) reported receiving news of cancer progression (i.e., provider said cancer was "worse"). Average score for prognostic understanding change was .08 ($SD = .80$), with scores ranging from −2 to +2, with some participants showing more accurate understanding (23.4%), others showing no change (57%), and others showing more inaccurate understanding (19.6%) over time. More specifically, 2 patients had a change score of −2 (1.3%), 29 had a score of −1 (18.4%), 90 had a score of 0 (57%), 28 had a score of 1 (17.7%), and 9 had a score of 2 (5.7%). Prognostic understanding change showed associations with some patient characteristics such that higher education ($r = .16$, $p = .05$) and being white (as opposed to black; $t = -2.03$, $p = .04$), was associated with more accurate understanding over time. Prognostic understanding change also varied across geographical region ($F = 3.19$, $p = .04$; Northeast, mean = .21, $SD = .79$; South, mean = −.09, $SD = .54$; Southwest/West, mean = −.11, $SD = .82$). In contrast, age ($r = .08$, $p = .30$), gender ($t = -.45$, $p = .65$), marital status ($t = .01$, $p = .99$), insurance status ($t = -.39$, $p = .70$), ethnicity ($t = -.85$, $p = .40$), cancer type ($F = .62$, $p = .54$), religiousness ($r = -.10$, $p = .24$), and spirituality ($r = -.07$, $p = .38$) were not associated with prognostic understanding change.

Bivariately, receiving news of cancer progression (i.e., provider said cancer was "worse") was only marginally associated with changes in prognostic understanding ($r = .14$, $p = .08$), and religious belief in miracles was unrelated to prognostic understanding change ($r = -.13$, $p = .12$). However, examining these two variables together, along with their product term, as predictors in a multiple linear regression model, showed a significant interaction effect ($b = -0.18$, $p = .04$; Table 4) suggesting that the association between news of cancer progression and change in prognostic understanding, varied depending on level of religious belief in miracles. Controlling for potential confounds, including education, race, and geographical region of data collection, did not seem to eliminate the moderating role of religious belief in miracles ($b = -0.17$, $p = .06$; Table 4).

To interpret the interaction, the association between news of cancer progression and prognostic understanding change was estimated separately for patients endorsing weak ("not at all" or "a little") and moderate or strong ("somewhat," "quite a bit," or "a great deal") religious belief in miracles. Results showed that among patients with weak religious belief in miracles, receiving news of cancer progression was associated with more accurate changes in prognostic understanding ($b = 0.67$, $p = .007$; see Table 5). In contrast, among patients with moderate to strong religious belief in miracles, receiving news of cancer progression was unrelated to prognostic understanding change ($b = .08$, $p = .64$). Adjusting for relevant demographic covariates did not change this pattern of results ($b = 0.71$, $p = .005$ versus $b = 0.12$, $p = .52$, for weak and moderate to strong belief in miracles, respectively; Table 5).

Exploratory analyses examined whether religious belief in miracles had a unique moderating role, relative to overall religiousness, overall spirituality, and other types of religious beliefs relevant in end-of-life care. Controlling for these three variables in the regression model testing interaction effect of religious belief in miracles showed that the interaction effect continued to be significant ($b = -.21$; $p = .04$; $n = 141$ due to missing data in religiousness, spirituality, and other religious beliefs). Additionally, these three variables showed no interaction effect of their own in moderating the impact of receiving news of cancer progression on prognostic understanding change ($b = -.09$, $p = .58$, $n = 157$; $b = .00$, $p = .99$, $n = 157$; and $b = -.08$, $p = .63$, $n = 142$, respectively).

Discussion

This study examined if religious belief in miracles would limit the impact of receiving news of cancer progression on prognostic understanding change. Results showed that religious belief in miracles was highly prevalent, with approximately 78% endorsing at least some belief, and 46% endorsing the strongest level of belief ("a great deal"). Most importantly, this prevalent belief appeared to modify the impact of receiving news of cancer progression on prognostic understanding.[8,10,11] While among patients with weak religious belief in miracles, news of cancer progression was associated with more accurate changes in prognostic understanding, among the majority of patients with moderate to strong religious belief in miracles, news of cancer progression was associated with no change in prognostic understanding.

The present study is the first to provide direct evidence that religious belief in miracles may limit the impact of prognostic information, even when they involve concrete medical data coming from scan results. Existing literature thus far has only cited anecdotal or indirect evidence for belief in miracles as an impediment to prognostic discussions.[7,8] The present results accordingly highlight that skills to assess for and respond to belief in miracles during prognostic discussions may be an important competency for oncologists. The results thus highlight the value of trainings and communication protocols that outline how clinicians may approach patient beliefs in miracles.[8,10,11] The present results also converge with previous findings in highlighting the value of integrating patients' spirituality into their medical care. For example, it has been shown that spiritually-informed care by medical teams — where patients' religion and spirituality are acknowledged and addressed — results in more transitions to hospice care and less aggressive end-of-life medical interventions.[17]

The present findings additionally direct attention to an important process: *the translation of received prognostic information into changed patient understanding of their disease course and future.*[18] Research on prognostic communication and understanding often focus on the provision of information as the important factor driving patient understanding.[1,19] The present findings however highlight that *even if information is effectively conveyed to patients, it may only variably translate to an integration of that information into changed prognostic understanding.* Prognostic understanding assessed here included highly relevant facets such as one's life-expectancy, the curability of one's cancer, whether one is terminally ill, and the stage of one's disease. The present findings thus highlight that greater attention should be given to patient factors limiting the integration of provided prognostic information, such as religious belief in miracles.

Some demographic factors were found to be associated with prognostic understanding change from pre to post visit. Being of white race (compared to black race) and being more educated was associated with more accurate prognostic understanding change. Such findings are consistent with previous studies showing racial disparities and differences in end-of-life communication and decision-making.[20,21] It is notable however that controlling for race and education did not eliminate the modifying role of religious belief in miracles: even after adjusting for them, among moderate to strong belief in miracles patients, there was no association between news of cancer progression and prognostic understanding change; in contrast, in weak belief in miracles patients, there was an association. Thus, independent of race and levels of education, when present, high religious belief in miracles may limit the impact of receiving news of cancer progression.

Exploratory analyses showed that the modifying role of religious belief in miracles was unique, and not shown by general religiousness or other religious beliefs, nor did controlling for them change the significance of the religious belief in miracles interaction effect. Thus, there may be something specific about believing in a miracle — beyond general religiousness and spirituality and other religious beliefs — that limits the impact of receiving news of cancer progression. By definition, religious belief in miracles refers to the expectation that due to some divine intervention, events may unfold in ways that defy the natural or expected order of things to be more in one's favor.[8–10] This belief may therefore be uniquely associated with more favorable expectations of one's prognosis, than general religiousness, as the latter may manifest in a variety of ways including unfavorable disease expectations (e.g., "If dying from this illness is part of God's plan for me, I am okay with that").

The results also showed that some patient groups might hold stronger religious belief in miracles than others. Black and Latino patients, and more religious and spiritual patients, showed stronger religious belief in miracles. In contrast, education and insurance status were associated with weaker beliefs. Interestingly, younger participants showed stronger religious belief in miracles, a surprising finding given that religiousness and spirituality tend to increase with age.[22] This counterintuitive association raises questions regarding potential psychosocial processes among younger patients, driving such stronger belief in miracles (e.g., younger patients may be more likely to hear from others that God will cure them).

The limitations of this study include its observational design which leaves open the possibility of alternate explanations. It is possible that unmeasured confounding variables may account for the associations. Measurement may also be a limitation as religious belief in miracles and news of cancer progression were assessed in a global manner with single-item indices; conceivably, both may contain different underlying facets (e.g., beliefs regarding when, how, and under what condition a miracle might happen). Objective assessments of what was discussed regarding scan results would have also been a useful supplement to information collected from patient reports. This is relevant as previous analyses have shown the accuracy of patient understanding of scan results to vary based on the content of the scan results.[23] Finally, the sample studied here is relatively homogenous socio-demographically, therefore, future studies with more diverse samples are needed. Future research should also examine if there are different types of belief in miracles (e.g., religiously-based vs. non-religiously based belief in miracles) and how they may differentially impact prognostic understanding. From an intervention standpoint, it will also be important to assess patients' receptivity to having discussions with their medical providers regarding their belief in miracles.

The strengths of this study include its design, wherein the association between a concrete communication variable (receiving news of cancer progression) and change over time in prognostic understanding is examined as a function of baseline religious belief in miracles. The study accordingly provides more direct and robust evidence for the clinical observation that belief in miracles may hinder impact of prognostic discussions.[10,11] During discussions of prognostic relevance, mere provision of medical information is likely not enough; assessing and addressing personal beliefs that limit impact of information provided may provide added utility. When appropriate, openly discussing relevant belief in miracles and other patient beliefs may improve impact of prognostic information provided, such that patients have more accurate understanding guiding their treatment decisions. Oncologist training and competency, in addressing patient beliefs during prognostic discussions, may be important.

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Table 1:

Prognostic understanding composite index — items, response options and coding

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How would you describe your current health status?

- Seriously ill and terminally ill *(1)*
- Relatively healthy and terminally ill (*1*)
- Seriously ill but not terminally ill *(0)*
- Relatively healthy *(0)*
- Don't know *(0)*

What stage is your cancer?

- End stage *(1)*
- Late stage *(1)*
- Middle stage *(0)*
- Early stage *(0)*
- No evidence of cancer *(0)*
- Don't know *(0)*

Which of the following best represents what your oncology providers have told you about a cure for your cancer?

- My cancer cannot be cured and I am not able to have any further cancer treatment *(1)*
- My cancer cannot be cured but we will try to control the cancer with treatment *(1)*
- My cancer may be cured if treatments are successful *(0)*
- My cancer will be cured *(0)*
- Don't know *(0)*

Many patients have thoughts about how having cancer might affect their life-expectancy, either based on what their doctors have told them, what they have read, or just their own sense about how long they might live with cancer. When you think about this, do you think in terms of:

- Months *(1)*
- Years *(0)*
- Don't know *(0)*

Note. Patient responses indicating accurate understanding were coded 1 (other responses, 0). A sum score was computed for pre- and post-visit assessment (possible range, 0 to 4), and a change score was computed by subtracting pre-visit score from post-visit score (possible range, –4 to 4).

Table 2:

Sample Characteristics

	n (%)
Age (*n* = 157)	Mean = 59.55, SD = 9.74
Education, years (*n* = 155)	Mean = 14.30, SD = 3.48
Religiousness (*n* = 157)	Mean = 1.83, SD = .99
Spirituality (*n* = 157)	Mean = 2.15, SD = .90
Gender	
Male	53 (34.2%)
Female	102 (65.8%)
Married	
Yes	89 (57.4%)
No	66 (42.6%)
Insured	
Yes	112 (70.9%)
No	46 (29.1%)
Race	
White	128 (84.8%)
Black	23 (15.2%)
Ethnicity	
Latino	16 (10.3%)
Non-Latino	140 (89.7%)
Geographic region	
Northeast	94 (59.5%)
South	11 (7.0%)
South-west/west	53 (33.5%)
Cancer type	
Lung cancer	51 (32.3%)
GI cancer	43 (27.2%)
Other	64 (40.5%)

Note. Missing data present in demographic variables; reported percentages based on available data; SD = standard deviation.

Table 3:

Religious belief in miracles for overall sample and by patient characteristics

		Religious Belief in Miracles				
	Not at all	A little	Somewhat	Quite a bit	A great deal	
Overall Sample, No. (%)	35 (22.2%)	15 (9.5%)	24 (15.2%)	11 (7.0%)	73 (46.2%)	
By Patient characteristics						
Age, M [SD]	62.26 [9.74]	64.13 [8.35]	58.83 [9.57]	57.82 [10.72]	57.81 [9.56]	$p < .01$
Education, years, M [SD]	16.68 [2.84]	15.87 [3.02]	14.83 [2.20]	13.82 [3.74]	12.72 [3.40]	$p < .001$
Religiousness, M [SD]	1.12 [0.95]	1.40 [0.83]	1.63 [0.82]	2.18 [0.75]	2.26 [0.88]	$p < .001$
Spirituality, M [SD]	1.62 [1.10]	1.87 [.83]	2.13 [0.80]	2.18 [.60]	2.47 [0.75]	$p < .001$
Female, No. (%)	23 (65.7%)	12 (80.0%)	15 (65.2%)	8 (72.7%)	44 (62.0%)	$p = .49$
Married, No. (%)	23 (67.6%)	8 (53.3%)	11 (47.8%)	8 (72.7%)	39 (54.2%)	$p = .36$
Insured, No. (%)	31 (88.6%)	15 (100.0%)	17 (70.8%)	8 (72.7%)	41 (56.2%)	$p < .001$
Black, No. (%)	2 (5.7%)	0 (0%)	2 (8.3%)	0 (0%)	19 (28.4%)	$p < .01$
Latino, No. (%)	2 (5.7%)	0 (0%)	0 (0%)	2 (18.2%)	12 (16.9%)	$p < .05$
Geographic region, No. (%)						
Northeast	29 (82.9%)	11 (73.3%)	19 (79.2%)	7 (63.6%)	28 (38.4%)	$p < .001$
South	1 (2.9%)	3 (20.0%)	1 (4.2%)	1 (9.1%)	5 (6.8%)	
South-west/west	5 (14.3%)	1 (6.7%)	4 (16.7%)	3 (27.3%)	40 (54.8%)	
Cancer type, No. (%)						
Lung cancer	9 (25.7%)	2 (13.3%)	7 (29.2%)	5 (45.5%)	28 (38.4%)	$p < .001$
GI cancer	4 (11.4%)	3 (20.0%)	6 (25.0%)	3 (27.3%)	27 (37.0%)	
Other	22 (62.9%)	10 (66.7%)	11 (45.8%)	3 (27.3%)	18 (24.7%)	

Note. N = 158; missing data present in patient characteristic variables: age (1), education (3), religiousness (1), spirituality (1), gender (3), married (3), race (7), ethnicity (2); reported percentages based on available data; M = mean; SD = standard deviation; No. = number.

Table 4.

Linear regression models predicting prognostic understanding change

	Unadjusted		Adjusted for demographic variables	
	B (SE)	*p*	*B* (SE)	*p*
Education, years	-	-	.09	.44
Race				
White	-	-	−.14	.25
Black	-	-	Ref.	Ref.
Site				
Northeast	-	-	.16	.30
South	-	-	.09	.50
South-west/west	-	-	Ref.	Ref.
Cancer Progression News	.89 (.34)	.01	.86	.01
Religious belief in miracles	−0.02 (.04)	.73	.04	.43
Interaction term	**−0.18 (.09)**	**.04**	**−.17**	**.06**
	$R^2 = 0.06, p = .02$		$R^2 = 0.10, p = .03$	

Notes. Ref. = Reference group; *n* for unadjusted model = 158; *n* for adjusted model = 150, due to missing data for education (3) and race (5).

Table 5:

Relationship between receiving news of cancer progression and prognostic understanding change by religious belief in miracles

| | Weak belief in miracles (*n* = 50) | | | | Moderate to strong belief in miracles (*n* = 108) | | | |
| | Unadjusted | | Adjusted | | Unadjusted | | Adjusted | |
	B (SE)	*p*	*B* (SE)	*p*	*B* (SE)	*p*	*B* (SE)	*p*
Education, years	-	-	.04 (.04)	.32	-	-	.01 (.03)	.87
Race								
White	-	-	−1.11 (.66)	.10	-	-	.32 (.22)	.15
Black	-	-	Ref.	Ref.	-	-	Ref.	Ref.
Site								
Northeast	-	-	.56 (.44)	.21	-	-	.21 (.20)	.30
South	-	-	.62 (.55)	.26	-	-	−.30 (.35)	.39
Southwest/west	-	-	Ref.	Ref.	-	-	Ref.	Ref.
News of Cancer Progression	**.67 (.24)**	**.007**	**.71 (.24)**	**.005**	**.08 (.18)**	**.64**	**.12 (.18)**	**.52**

Note. Due to missing data in education and race, *n* for adjusted models among weak and moderate to strong belief in miracles lower by 1 and 7, respectively.