Major Contribution

Empirical Evaluation of Veterans' Perceived Nonconcordance With Providers Regarding Medically Unexplained Symptoms

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Abstract

Medically unexplained symptoms (MUS) are common among veterans and are difficult to treat. Optimal treatment entails continued care from providers, yet this care may be influenced negatively by nonconcordance between veterans' and providers' views of MUS. We surveyed 243 veterans with MUS and evaluated the degree of nonconcordance perceived by veterans and their primary care providers regarding their MUS, as well as the effect of perceived nonconcordance on treatment behaviors and outcomes. Approximately 20% of veterans in our sample perceived nonconcordance with their provider regarding their MUS. In turn, perceived nonconcordance predicted important outcomes of interest, particularly veterans' satisfaction with their provider. Perceived concordance with primary care doctors may be required for sufficient adherence to MUS treatment recommendations, such as seeking and maintaining psychological counseling. We discuss future research directions for counseling psychologists.

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Medically unexplained symptoms or syndromes (MUS; e.g., fibromyalgia, chronic fatigue syndrome, irritable bowel syndrome) are difficult to treat, are common in patients seeking medical care, and are particularly pervasive among returning veterans from recent military operations abroad (Iannacchione et al., 2011; Roy, Koslowe. Kroenke, & Magruder, 1998). The negative effects of MUS on veterans' well-being and general health care costs are significant (Tackett et al., 2005).

Optimal treatment for MUS includes a team-based approach with a primary care provider leading a team that includes a mental health provider. The mental health provider typically delivers the first-line treatment, which is cognitive behavioral therapy. The team also includes a nurse and other allied health professionals such as a physical therapist or occupational therapist. For integrated teams to be effective there must be effective communication between the patient and the primary care provider who is organizing the patient's care and facilitating the maintenance of the behavioral treatments. Effective communication between the primary care provider and the patient is believed to be particularly important in treating MUS specifically, given that there is no known cure for MUS. Treatment requires that the patient and provider work together to determine the best management strategy for each particular patient, which often includes psychological counseling (Heijmans et al., 2001; Rosendal, Olesen, & Fink, 2005). Due to their expertise in the working alliance, counseling psychologists are conducting research into and consulting on how integrative healthcare teams can develop effective relationships between patients and providers.

We posit that a necessary component of an effective patient–provider relationship for MUS is concordance (or agreement) between the patient and provider regarding the patients' beliefs about MUS (e.g., perceptions about its causes, characteristics, treatment). This conceptualization expands on theory and research regarding the working alliance in psychotherapy, in which patient–provider agreement on goals and tasks of treatment contribute to an effective therapeutic relationship (Bordin, 1979). Patient–provider concordance results from a process in which the patient and provider hear each other's perceptions about the illness and/or condition and negotiate a shared understanding of these perceptions, as well as a shared understanding of the treatment plan (Royal Pharmaceutical Society of Great Britain [RPSoGB] & Marinker, 1997).

The main theoretical framework utilized in research on concordance between patients and providers is the common-sense self-regulation model (CS-SRM; Leventhal, Brissette, & Leventhal, 2003). The originators of the CS-SRM proposed that patients use their understanding of their health to manage their health. This model delineates five broad types of illness and treatment perceptions: (a) perceptions about the illness' identity (e.g., diagnosis; associated symptoms), (b) cause, (c) control (e.g., self- versus other-control), (d) consequences, and (e) duration (e.g., acute vs. chronic). Together, these perceptions are referred to as *illness representations.* Illness representations of patients with MUS play a key role in the development of MUS from acute events (Moss-Morris, 2011; Spence, Moss-Morris, & Chalder, 2005) to the persistence of MUS (Wittaker, Kemp, & House, 2007).

Concordance between the patient and provider regarding illness representations about MUS are thought to contribute to high satisfaction in the patient–provider relationship (Hahn, 2001; Ring, Dowrick, Humphris, & Salmon, 2004; Smith et al., 2006; Wileman, May, & Chew-Graham, 2002), to treatment adherence, and to higher quality of life (Azoulay, Ehrmann-Feldman, Truchon, & Rossignol, 2005; Phillips, Leventhal, & Leventhal, 2011; Staiger, Jarvik, Deyo, Martin, & Braddock, 2005). Researchers have found support for the importance of concordance among patients with chronic pain (a common symptom of MUS), for whom concordance of illness representations is associated with patient satisfaction (Azoulay et al., 2005) and health outcomes (Staiger et al., 2005). Further, among patients with medically known conditions, concordance between patients and providers has been associated with (a) greater satisfaction with the medical consultation (Perreault, Pawliuk, Veilleux, & Rousseau, 2006; Sewitch, Abrahamowicz, Dobkin, & Tamblyn, 2003), (b) better treatment outcomes (Perreault et al., 2006), (c) greater adherence to treatment recommendations (Maly, Leake, Frank, DiMatteo, & Reuben, 2002), and (d) more favorable perceptions of recovery (Stewart, McWhinney, & Buck, 1979). Phillips et al. (2011, 2012), for example, showed that primary care patients' perceptions of concordance with the provider regarding their presenting problem and prescribed treatment predicted their adherence to that treatment and their problem resolution in the subsequent month, as well as their satisfaction with the provider.

The extent to which veterans perceive nonconcordance with their providers regarding their MUS is unknown. Similarly it is unknown whether perceived nonconcordance predicts veterans' satisfaction with care as well as other behaviors and outcomes, such as adherence to treatment recommendations. The results of qualitative studies indicate that nonconcordant perceptions about MUS are predictive of poor patient–provider relationships among veterans (Chew-Graham, Dowrick, Wearden, Richardson, & Peters, 2010).

Nonconcordance is believed to come from patients viewing MUS as a physical condition requiring medical treatment (Chew-Graham et al., 2010; Olde Hartman et al., 2009; Raine, Carter, Sensky, & Black, 2004) and providers viewing MUS as a psychological condition requiring psychological treatment (Reid, Whooley, Crayford, & Hotopf, 2001). That is, nonconcordance regarding the nature, identity, and cause of MUS and therefore the appropriate treatment for MUS, may be particularly important for determining patient satisfaction with care and adherence to MUS treatment recommendations, including seeking and maintaining psychological counseling.

In this paper, we evaluate the degree of veterans' nonconcordance with their primary care providers regarding their MUS. Additionally, we provide the first known assessment of the relationship between patient–provider concordance, treatment adherence and intentions, and patient satisfaction with care for MUS (Hahn, 2001; Kane, Maciejewski, & Finch, 1997; Smith et al., 2003; Smith et al., 2006).

The importance of concordance between veterans and their providers regarding MUS illness perceptions for counseling psychology is threefold. First, veterans' concordance with the primary care provider on illness perceptions should promote patient satisfaction with care and treatment adherence, which means following the provider's recommendations to seek counseling from a psychologist. Second, although we did not directly test this, veterans' concordance with counseling psychologists should promote continuity of care. Ideally, this concordance allows and promotes the optimization of MUS treatment. Finally, psychologists are urged to improve communication within primary care teams; to do so, the critical components of communication (those factors required for optimizing communication and its outcomes) must be elucidated. In the present study, we evaluate these potential effects of perceived concordance. Importantly, concordance does not require full agreement on all specifics of the illness (Lange et al., 2013). Based on previous qualitative research with veterans and the experiences of the authors working with this population, we focus primarily on nonconcordance of identity and causal perceptions of MUS (Ring et al., 2004; Wileman et al., 2002).

We first measure veterans' perceptions of nonconcordance with their primary care provider regarding MUS overall, as well as on specific aspects of MUS (i.e., identity, causes). Second, we test the possibility that perceptions of nonconcordance may be related to the quality of the patient–provider relationship (assessed via patient satisfaction with care), past and/or current treatment adherence, treatment-adherence intentions, and expectations for MUS improvement (Mondloch, Cole, & Frank, 2001). Third, we anticipated that perceived nonconcordance with the provider regarding MUS overall would be negatively related to these outcomes. Last, we tested the hypothesis that

perceived nonconcordance with the provider on MUS illness perceptions (specifically general nature and causes) would be negatively related to the outcomes of interest.

Method

Participants and Procedure

After obtaining Institutional Review Board approval we sent surveys via postal mail to military veterans who receive care from a Veterans Affairs (VA) tertiary clinic focused on MUS. To be on this mailing list, veterans satisfied the following inclusion criteria: 18 years of age or older, identifying as a U.S. military veteran, and seeking care for postdeployment health. We sent all eligible patients from three participating VA tertiary clinics a letter and survey. Out of a total of 1200 packets sent, 243 were returned with responses, yielding a response rate of 20%. However, this is a low estimate of our actual response rate given that many invitation letters were returned to us due to inaccurate contact information. We compensated respondents via mail with a voucher for $10. The participants' average age was 50 years ($SD = 13.6$ years; range: 24–88 years); 88% were men. In terms of employment status, 10% worked part-time, 36% worked full-time, 22% were unemployed, and 32% were retired.

Measures

First, we pilot tested the survey instructions and measures with veterans and staff for face validity and clarity, prior to administration to study volunteers. In the survey, we asked about the veterans' perceptions of their MUS. When MUS occur in a group they can be labeled as fibromyalgia, chronic pain, chronic fatigue syndrome, irritable bowel syndrome, and Gulf War Illness, among other labels. We used the term MUS as opposed to a more specific label, as it allowed for a wide range in illness experiences and perceptions associated with these conditions. The survey started with the statement:

> This survey asks questions about physical symptoms that may be 'medically unexplained' but still impact your quality of life. Medically unexplained symptoms are: 1. Chronic symptoms that are just difficult to diagnose or are connected to a problem we don't know enough about. . . 2. Sometimes these symptoms may not have a name or a known cause. . . 3. Sometimes you or your doctor may have an idea about what causes these difficult-to-diagnose symptoms, but for this survey we will call them medically unexplained

symptoms, or MUS. . . Answer the questions about what you think is the main problem that causes most of your chronic symptoms.

Veterans' perceptions of nonconcordance regarding MUS overall. We directly asked veterans about perceived nonconcordance using the following question: "Do you and your primary care physician disagree about your MUS in general?" We asked veterans to rate their perceived nonconcordance with a 5-point Likert-type scale ranging from 1 (*no disagreement/we completely agree*) to 5 (*we completely disagree*). There were a large number of missing responses to this item (*n* = 59), perhaps because participants had a difficult time inferring what their providers' views were.

Veterans' perceptions of nonconcordance regarding MUS specifics. We measured nonconcordance between veterans' own perceptions and their reports of the provider's perceptions regarding the nature and/or identity and causes of the MUS. We assessed nonconcordance regarding the identity of MUS in general (psychological vs. medical) with the following items: "To what extent do you think your MUS represent a psychological versus medical problem in general?" and "To what extent does your primary care provider think your MUS represent a psychological versus medical problem in general?" Possible responses to both items ranged from 1 (*completely medical*) to 5 (*completely psychological*), with 3 being *equally medical and psychological*. We adapted these items from those used in the literature to assess patients' perceptions of concordance with their primary care provider regarding the nature and/or identity of their presenting problem (Greer & Halgin, 2006). Twenty-nine participants did not answer the first item, and 54 participants did not answer the second item.

We assessed nonconcordance regarding perceptions of the causes of the MUS with the following six items: (a) "To what extent do you think your MUS were initially caused by: internal, biological factors?"; (b) ". . . environmental or external agents or events?"; (c) ". . .mental factors?"; (d) "To what extent does your primary care provider think your MUS were initially caused by: internal, biological factors?"; (e) ". . .environmental or external agents or events?"; and (f) ". . .psychological/mental factors?" Possible responses were measured with a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very much*). We developed these items based on the CS-SRM, and are similar to illness perception measures in the literature that do not assess concordance (e.g., Illness Perception Questionnaire-Revised for Chronic Fatigue Syndrome; Moss-Morris et al., 2002). There were more missing values for the items assessing veterans' reports of their providers' perceptions

(n = 40–46) than their own perceptions (n = 10–11). To evaluate the effect of nonconcordance on the outcomes of interest, we used polynomial regression and response surface analysis.

Outcomes. We evaluated four outcomes and behaviors of interest by asking veterans to respond to several self-report measures.

  Satisfaction with the primary care provider. First, we asked all veterans "How satisfied are you with the overall care you have received from your primary care provider?" Responses were measured with a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very much*). Twenty-one participants did not answer this question.

  Treatment adherence in the previous 6 months. Treatment adherence in the last 6 months was evaluated with two items. First, we asked veterans "To what degree did you follow your primary care providers' recommendations for MUS treatment in the past 6 months?" Response options were on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very much*). Next, we asked veterans, "How much effort did you put into the recommended treatments for your MUS?" The scale ranged from 1 (*0% possible effort*) to 10 (*100% possible effort*). We combined these items by taking an average of equated values (i.e., answer responses from 1–5 on the past adherence item were recoded to 0, 2.5, 5, 7.5, and 10 before being averaged with the effort item; items were correlated at r = .67). Eighteen individuals were missing a response for one of the two items; 30 participants were missing responses for both items. For the 18 cases with incomplete data, we used the value of the item that was answered as their response on that variable, and analyzed the data with and without these cases (see Analysis Plan section for information on data imputation approach). Descriptive statistics for separate items and combinations are shown in Table 1.

  Intentions to adhere in the subsequent 6 months. We measured veterans' intentions to adhere to treatment in the subsequent 6 months by asking the following question: "How likely are you to follow up on your providers' recommendations about treatment in the next 6 months?" Response options were on a 5-point Likert-type scale ranging from 1 (*very unlikely*) to 5 (*very likely*). Thirty-nine participants did not answer this question. We suspect that the missing data is due to the question not being relevant for those who had not received or did not recall MUS-specific treatment recommendations from their primary care provider.

Table 1. Descriptive Statistics and Paired-Sample t-tests Between Study Variables

Variable	M (SD)	Possible range	t-test statistic[a]
Perceived nonconcordance with provider on MUS overall	2.41 (1.29)	1–5	
Veteran's perception of MUS identity (medical to psychological)	2.17 (1.04)	1–5	−3.78***
Report of provider's perception of MUS identity (medical to psychological)	2.47 (1.13)	1–5	
Veteran's perception of biological causes	2.73 (1.47)	1–5	1.94*
Report of provider's perception of biological causes	2.60 (1.32)	1–5	
Veteran's perception of environmental causes	4.12 (1.20)	1–5	9.37***
Report of provider's perception of environmental causes	3.27 (1.46)	1–5	
Veteran's perception of psychological causes	2.45 (1.43)	1–5	−0.76
Report of provider's perception of psychological causes	2.51 (1.38)	1–5	
MUS treatment adherence, past 6 months	3.31 (1.41)	1–5	
MUS treatment effort, past 6 months	6.55 (3.20)	0–10	
MUS treatment adherence/effort, past 6 months	6.02 (3.19)	0–10	
MUS treatment intentions, next 6 months	3.77 (1.25)	1–5	
Satisfaction with the primary care provider	3.39 (1.27)	1–5	
Expectations for MUS improvement	2.38 (0.97)	1–5	

Note. MUS = medically unexplained symptoms.
[a]The paired sample t-test statistics are presented for comparisons between veteran's specific causal perceptions and their report of the provider's specific causal perceptions.
*p < .05. ***p < .001.

Expectations for improvement. Lastly, we assessed expectations for improvement in five different domains related to MUS with the following items: "Do you expect to see improvement in any of the following over the next 6 months: Number of physical symptoms? Severity of physical symptoms? How much are you bothered by your physical symptoms? Your experience of general pain? Your mood or stress levels?" Possible answer options ranged from 1 (*no improvement*) to 5 (*great improvement*). We took the average of participants' responses to these five items to represent their overall expectations for improvement; higher scores indicated greater expectations for improvement. We excluded 16 participants who did not respond to any of the five items from analyses using this variable; six individuals missed one of the five items.

Data Analysis Plan

There were varying numbers of missing responses to different measures. First, we used pairwise deletion for cases that were completely missing data on variables in the analysis (i.e., the participant did not answer a single-item measure or did not answer any items of a multi-item measure). The missing data in these cases are likely missing not at random. For example, those who did not answer the items regarding past MUS treatment adherence were likely not prescribed treatment for MUS in the past. It would be theoretically inappropriate to test predictors of adherence for these individuals; thus, we eliminated them from the analyses of past adherence (see Kang, 2013). When participants provided some data for a variable (e.g., were missing only some items on a multi-item variable), we imputed individual-means for the incomplete data. We did this for expectations for improvement and for past treatment adherence. This is an acceptable method of data imputation that optimizes interpretability of the results when missing values are in a relatively small percentage of the sample (fewer than 10% in our sample; see Shrive, Stuart, Quan, & Ghali, 2006).

To evaluate the effect of imputing individual means for these variables, we conducted analyses of these variables with and without the imputed values; results were meaningfully the same. Therefore, we report the results from the imputed data. The sample size for each analysis, which depends on the available data for the variables in that analysis, are reported in the Results section.

We used descriptive statistics to examine veterans' perceptions of nonconcordance with their provider regarding MUS overall and regarding the specific identity and causes of MUS. We used paired *t*-tests to evaluate whether differences in perceptions were statistically significant, where applicable.

To evaluate whether veterans' perceptions of nonconcordance with the provider (regarding MUS overall) were related to the outcomes of interest, we first calculated bivariate correlations. We then tested the relationship of nonconcordance on the identity of MUS and specific causal perceptions to the outcomes of interest using polynomial regression (Edwards, 2002; Phillips, 2013). Polynomial regression has advantages over other methods (e.g., using a differential or creating artificial concordance groups) for evaluating the effect of concordance between two predictors on outcomes. In the past, to evaluate the influence of concordance (also referred to as agreement, match, fit, or congruence) between two predictors (e.g., the patients' perceptions and providers' perceptions) on an outcome, researchers primarily used a difference score (patients' perceptions minus providers' perceptions) to represent concordance (e.g., Greer & Halgin, 2006; see Phillips, 2013 for a review). However, difference scores can increase Type I error risk because they confound the effects of the distinct predictors on the outcome. For example, only one of the predictors actually may be related to the outcome, but its inclusion in the difference score will make it seem like concordance between predictors is important for the outcome when it is not. At the same time, difference scores can make a Type II error more likely, because difference scores reduce the available statistical power for finding an effect—that is, they constrain the relationships that can be detected between the two predictors and the outcome (see Edwards, 2002; Phillips, 2013).

Rather than taking a difference score of the predictors, polynomial regression leaves the two variables as separate predictors and evaluates the effects of concordance on the outcome using multidimensional analyses. In this analysis, a hierarchical linear regression is conducted that tests each order polynomial in a separate block of the regression (i.e., linear terms entered first, quadratic terms entered second, cubic terms entered third) until the best-fitting polynomial model is determined. The best-fitting model is the highest order model that explains significant incremental variance in the outcome (significant R^2 change). To estimate the regression, first, the two predictors (in this case, the veteran's perception and the veteran's estimate of the provider's perception) are centered, and the polynomial terms are created from these centered terms (syntax is available online, in supplemental material for Phillips, 2013). The two centered predictors are entered in the first block of the hierarchical regression, their quadratic terms in the second step (X^2, Y^2, XY), and their cubic terms in the third step (X^3, X^2Y, XY^2, Y^3). The quartic terms may be added in a subsequent step but are rarely significant; in practice, one typically tests only the first three order equations. The results of the polynomial regression are graphed using readily available online resources

and interpreted via response surface methodology (Edwards, n.d.; Phillips, 2013; Shanock, Bran, Gentry, Pattison, & Heggestad, 2010).

The importance of concordance between veterans' perceptions (variable X) and veterans' estimates of the providers' perceptions regarding MUS (variable Y) for outcomes of interest is determined by the shape of the final polynomial figure and particular characteristics of the polynomial surface. The shape of the surface itself is used to interpret results (Edwards, 2002). Parameters of the surface can be used to conduct statistical inference tests to quantify what is seen in the graph. A final linear model has the shape of a plane; a quadratic model can be either convex, concave, or a saddle surface. In the present study, we expect concave quadratic surfaces, where the outcome (e.g., patient satisfaction) is high when veterans' perceptions (X) and reports of the providers' perceptions (Y) are concordant (i.e., when X = Y, for all values of X and Y), but then decreases whenever the perceptions are not the same, being lowest when these perceptions are maximally nonconcordant (i.e., when X= -Y, for all values of X and Y).

We ran four polynomial regression analyses for each outcome of interest. These represented four pairs of predictors: (a) the veteran's perception of the psychological versus medical nature of the MUS (X_1) and the veteran's report of the provider's perception of the same (Y_1); (b) the veteran's perception of a biological cause of MUS (X_2) and the veteran's report of the provider's perception of the same (Y_2); (c) the veteran's perception of an environmental cause (X_3) and the veteran's report of the provider's perception of the same (Y_3); and (d) the veteran's perception of a psychological cause (X_4) and the veteran's report of the provider's perception of the same (Y_4).

Results

Table 1 presents descriptive statistics for study variables, including the mean level of specific identity and causal perceptions, and paired *t*-tests, where applicable. Table 2 presents bivariate correlations between perceived overall MUS-related nonconcordance and outcomes of interest. There were 0 univariate and multivariate outliers.

Descriptive Information on Perceptions of Nonconcordance Regarding MUS

The levels of perceived nonconcordance regarding MUS overall were as follows (*n* = 184): 33% of veterans perceived no disagreement with their provider, 22% perceived slight or minor disagreement, 26% perceived moderate

disagreement, 10% perceived quite a bit of disagreement, and 9% perceived complete disagreement.

With respect to the mean levels, the greatest discrepancies between veterans and their providers were for (a) the identity of MUS, with veterans having stronger perceptions that their MUS was medical in nature, and (b) environmental causal perceptions, with veterans having stronger perceptions that the cause of their MUS was environmental. There were no significant differences in average levels of psychological or biological causal perceptions.

Associations between Perceived Nonconcordance Regarding MUS Overall and Outcomes

As the correlations in Table 2 indicate, there was a negative, statistically significant association between perceived nonconcordance and satisfaction with the provider, which supports our prediction. Additionally, there was a negative, statistically significant relationship between perceived nonconcordance and intentions to adhere to MUS treatment. However, perceived nonconcordance did not have a statistically significant relation with past adherence, effort, or expectations for improvement, as we originally predicted.

Polynomial Regression Analyses of Perceived Nonconcordance

We present the results in this section by outcome of interest. We show standardized regression coefficients in Tables 3 to 6 to ease comparison of effects. To aid interpretation, we used unstandardized regression coefficients to graph results in Figures 1 to 3 (Phillips, 2013).

Satisfaction with the provider. Table 3 shows the polynomial regression results for all sets of predictors on satisfaction with the provider. For perceptions of the general nature of MUS as being medical versus psychological, the results are from the linear model. We found that only the veterans' estimates of the providers' perception of the general nature of MUS was related to patient satisfaction; specifically, veterans who perceived that their provider perceived their MUS as being more medical in nature were significantly more satisfied with their provider.

Regarding perceptions of the biological cause of MUS, the results are from the quadratic model. As can be seen in Figure 1a, patient satisfaction was maximized when perceptions were concordant between veterans and their providers (when $X = Y$); that is, whether either perceived the cause as biological did not matter for satisfaction; rather, it was whether there was

Table 2. Pearson Bivariate Correlations Between Study Variables

Study Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Perceived nonconcordance, MUS overall	—												
2. Veteran's MUS identity perception	.05	—											
3. Report of provider's MUS identity perception	.40***	.47***	—										
4. Veteran's perception of the cause of MUS as biological	.01	.14*	.05	—									
5. Report that provider thinks MUS was caused by biological factors	-.06	.04	.03	.67***	—								
6. Veteran's perception of the cause of MUS as environmental	.17*	-.12	.07	-.03	.01	—							
7. Report that provider thinks MUS was caused by environmental factors	-.26***	-.12	-.25***	.02	.20	.55***	—						
8. Veteran's perception of the cause of MUS as psychological	.07	.64***	.39***	.20*	.15*	.09	.08	—					
9. Report that provider thinks MUS was caused by psychological factors	.15*	.45***	.57***	.16*	.20*	.20*	.11	.69***	—				
10. MUS treatment adherence/effort, past	-.05	-.26***	-.16*	.10	.20*	.19*	.25***	-.15*	-.01	—			
11. MUS treatment intentions	-.21*	-.07	-.10	.01	-.01	.14*	.16*	-.07	-.06	.26***	—		
12. Satisfaction with the provider	-.43***	-.07	-.20*	.05	.04	.05	.25***	.04	.04	.28***	.21*	—	
13. Expectations for MUS improvement	-.05	.24***	.06	.12	.05	-.10	-.02	.26***	.21*	-.08	-.10	.14*	—

Note. MUS = medically unexplained symptoms.
*p < .05. ***p < .001.

Table 3. Polynomial Regression Results for Patient Satisfaction

Predictors	β	R^2 Final Model
Perception of the medical versus psychological nature of MUS		
Linear model		.04*
X	0.04	
Y	−0.22**	
Perception of the cause of MUS as biological		
Quadratic model		.07**
X	0.08	
Y	−0.06	
X^2	−0.21*	
XY	0.37***	
Y^2	−0.07	
Perception of the cause of MUS as environmental		
Linear model		.09***
X	−0.19*	
Y	0.36***	
Perception of the cause of MUS as psychological		
Cubic model		.14*
X	−0.27	
Y	−0.13	
X^2	−0.59***	
XY	0.52***	
Y^2	−0.16	
X^3	0.53	
X^2Y	0.52	
XY^2	−0.44	
Y^3	0.08	

Note. MUS = medically unexplained symptoms. X represents the veteran's perception; Y represents the veteran's report of the provider's perception. Only the regression coefficients of the final model (best fitting) for each set of predictors is presented.
*$p < .05$. **$p < .01$. ***$p < .001$.

concordance with the provider's estimated view that determined satisfaction, verified statistically by the significant curvature of the surface along the line of nonconcordance (X = -Y; curvature = -0.44), $t(189) = -3.62$, $p < .001$, which indicates that patient satisfaction decreases exponentially as values of X and Y become discrepant from (nonconcordant with) each other (see Edwards, 2002; Phillips, 2013 for greater detail).

Regarding perceptions of an environmental cause of MUS, the linear model was the best fitting, and both perceptions predicted satisfaction. As

Table 4. Polynomial Regression Results for Veteran's Past Treatment Adherence

Predictors	β	R^2 Final Model
Perception of the medical versus psychological nature of MUS		
Linear model		.09***
X	−0.28***	
Y	−0.03	
Perception of the cause of MUS as biological		
Linear model		.04*
X	−0.04	
Y	0.23*	
Perception of the cause of MUS as environmental		
Linear model		.07**
X	0.08	
Y	0.20*	
Perception of the cause of MUS as psychological		
Linear model		.06**
X	−0.35**	
Y	0.24*	

Note. MUS = medically unexplained symptoms. X represents the veteran's perception; Y represents the veteran's report of the provider's perception. Only the regression coefficients of the final model (best fitting) for each set of predictors is presented.
*$p < .05$. **$p < .01$. ***$p < .001$.

seen in Figure 1b, patient satisfaction was lowest when perceptions were nonconcordant with respect to the environmental nature of the cause. Unexpectedly, patient satisfaction was highest when the veteran did not perceive an environmental cause but estimated that the provider did perceive an environmental cause.

Lastly, regarding perceptions of a psychological cause of MUS, the final model was cubic in nature. Figure 1c illustrates that satisfaction was highest when perceptions were concordant between veterans and their providers. Specifically, patient satisfaction was lowest when the veteran perceived a psychological cause but estimated that the provider did not.

Past treatment adherence. Table 4 shows the polynomial regression results for all sets of predictors for the outcome variable of past treatment adherence. The linear model was significant (and best fitting) for all sets of predictors. For three sets of predictors, the importance of concordance for the outcome was not evident; rather, only one of the two predictors was significant. For identity perceptions, only the veteran's perception was related to past treatment adherence,

Table 5. Polynomial Regression Results for Veterans' Intentions to Adherence

Predictors	β	R^2 Final Model
Perception of the medical versus psychological nature of MUS		
Linear model		.01
X	−0.08	
Y	−0.06	
Perception of the cause of MUS as biological		
Linear model		.00
X	−0.004	
Y	−0.002	
Perception of the cause of MUS as environmental		
Linear model		.03
X	0.09	
Y	0.11	
Perception of the cause of MUS as psychological		
Linear model		.004
X	−0.05	
Y	−0.02	

Note. MUS = medically unexplained symptoms. X represents the veteran's perception; Y represents the veteran's report of the provider's perception. Only the regression coefficients of the final model (best fitting) for each set of predictors are presented, where applicable. If no model was significant, the linear model is presented.

with adherence being greater the more the veteran perceived a medical nature of MUS. For biological causal perceptions, only the veteran's estimate of the provider's perception was related to past treatment adherence, with adherence being greater the more the veteran estimated the provider to perceive a biological cause of MUS. Similarly, only the veteran's estimate of the provider's perception regarding an environmental cause of MUS was related to past treatment adherence, with greater adherence associated with perceiving an environmental cause.

Regarding perceptions of a psychological cause, our results indicate that nonconcordance between perceptions may determine adherence. In the graph of the linear model (Figure 2), past adherence was lowest when the veteran perceived a psychological cause of MUS but estimated that the provider did not. Unexpectedly, past adherence was highest when the veteran did not perceive a psychological cause but estimated that the provider did.

Adherence intentions. Table 5 shows the polynomial regression results for all sets of predictors of the outcome of adherence intentions. None of the models

Table 6. Polynomial Regression Results for Veterans' Expectations for MUS Improvement

Predictors	β	R^2 Final Model
Perception of the medical versus psychological nature of MUS		
Linear model		.06**
X	0.26**	
Y	−0.05	
Perception of the cause of MUS as biological		
Quadratic model		.05*
X	0.22*	
Y	−0.09	
X^2	−0.25**	
XY	0.01	
Y^2	0.08	
Perception of the cause of MUS as environmental		
Linear model		.02
X	−0.16	
Y	0.06	
Perception of the cause of MUS as psychological		
Linear model		.06**
X	0.17	
Y	0.09	

Note. MUS = medically unexplained symptoms. X represents the veteran's perception; Y represents the veteran's report of the provider's perception. Only the regression coefficients of the final model (best fitting) for each set of predictors are presented, where applicable. If no model was significant, the linear model is presented.
*$p < .05$. **$p < .01$.

predicted significant variance in adherence intentions for any of the sets of predictors.

Expectations for MUS improvement. Table 6 shows the polynomial regression results for all sets of predictors of veterans' expectations for MUS improvement. Perceptions of an environmental cause of MUS did not predict veterans' expectations for MUS improvement. For the other three predictors, the importance of concordance for the outcome was not evident.

The linear model was the best for perception of the general nature of MUS and a psychological cause of MUS. Specifically, only the veteran thinking MUS was psychological in nature was related to better expectations for MUS improvement and only the veteran perceiving a psychological cause of MUS was related to better expectations for MUS improvement.
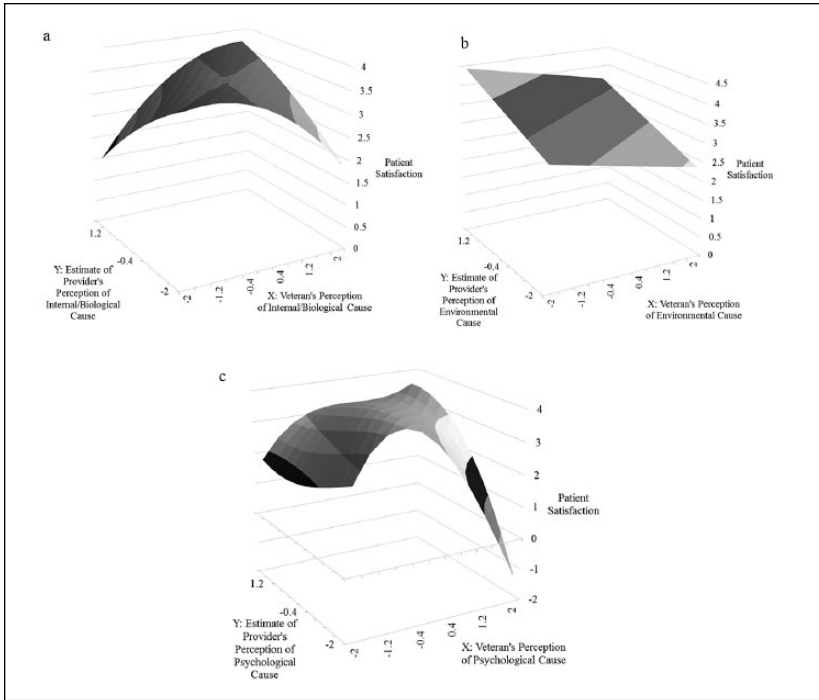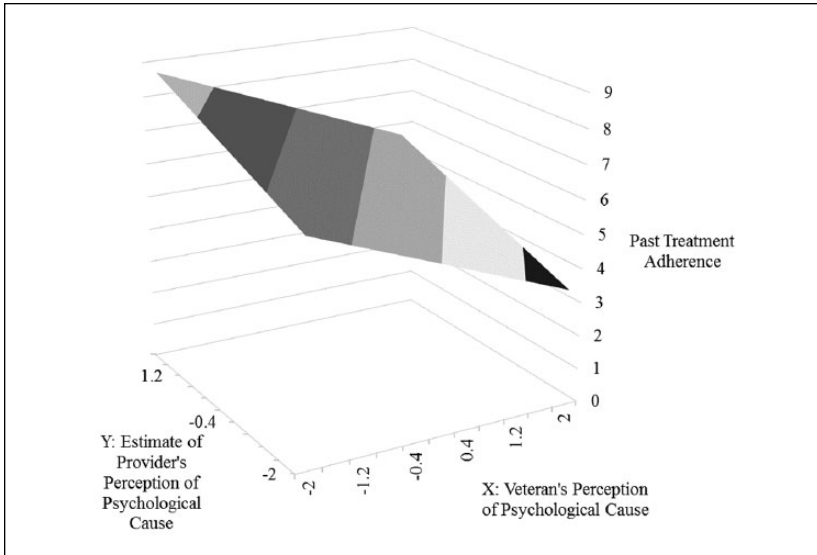
Figure 1. Response surface of the concordance relationships between perceptions of a biological cause of medically unexplained symptoms (MUS; 1a), environmental cause of MUS (1b), and psychological cause of MUS (1c), with patient satisfaction as the outcome.

The quadratic model was the best fitting for predicting expectations for improvement from perceptions of a biological cause of MUS. We found a curvilinear effect of the veteran's perception of a biological cause (X) on expectations for improvement. The greatest expectations for improvement were associated with moderate levels of a biological causal belief. The curvilinear effect is statistically supported by the significant regression coefficient on the X^2 term.

Discussion

We are the first to evaluate the degree of, and outcomes associated with, perceived nonconcordance between veterans and their providers regarding MUS. Specifically, we investigated the perceived nonconcordance between

Figure 2. Response surface of the concordance relationship between perceptions of a psychological cause of medically unexplained symptoms with past treatment adherence as the outcome.

veterans and their providers regarding the nature of MUS and causes of MUS as well as how these predictors related to the following outcomes: veteran satisfaction with care, treatment adherence, and expectations for MUS improvement. There was a fair amount of variation in perceived nonconcordance with the provider regarding the MUS overall, but no overly marked levels of strong nonconcordance. Regarding nonconcordance on MUS, veterans perceived their MUS to be more medical in nature and caused by environmental factors more than they estimated their providers did.

We were primarily interested in evaluating whether perceived concordance on MUS was important for patient satisfaction with care and patient treatment adherence. Both of these outcomes are important for optimal care of MUS, because satisfaction is important for continuity of care and treatment requires seeking, as well as, continuing counseling. Consistent with expectations, we found evidence that concordance in perceptions may matter more for these outcomes than do the perceptions themselves. Specifically, concordance of perceptions between veterans and their providers regarding a biological cause of MUS and regarding a psychological cause of MUS was predictive of patient satisfaction with the provider. Further, nonconcordance
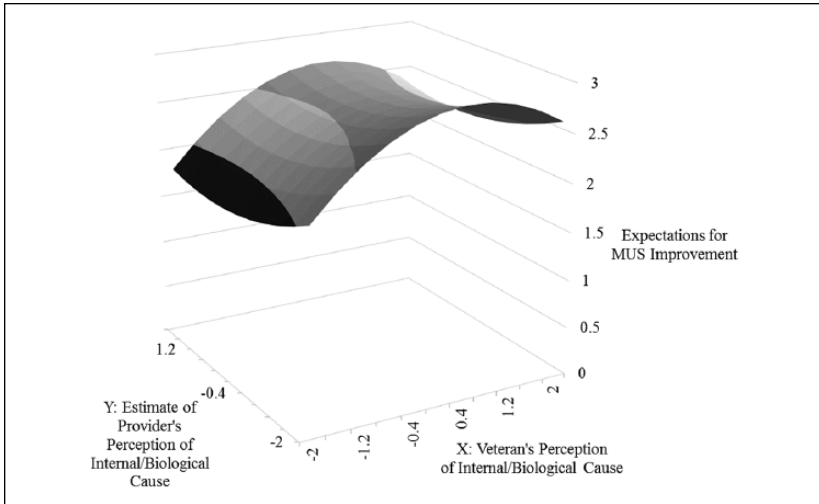
Figure 3. Response surface of the concordance relationship between perceptions of a biological cause of medically unexplained symptoms with expectations for improvement as the outcome.

on an environmental cause of MUS (where the veteran perceived an environmental cause) was related to lower satisfaction, whereas the reverse (where the veteran did not perceive an environmental cause) was related to higher satisfaction.

Concordance was also important for predicting past treatment adherence, but not as expected. Past adherence was lowest when the veteran perceived a psychological cause of MUS but estimated that the provider did not perceive a psychological cause. Unexpectedly, past adherence was highest when the veteran did not perceive a psychological cause but reported that the provider did. In all other analyses of past adherence, adherence intentions, and expectations for MUS improvement, concordance between perceptions of MUS were not predictive. For the relationship between identity perceptions and patient satisfaction, the veterans' report of the providers' perception was more predictive. Similarly, for biological and environmental causal perceptions, only the reports of the providers' perceptions predicted past treatment adherence. For expectations of MUS improvement, only the veterans' perceptions were predictive (for identity, biological cause, and psychological cause). None of the perceptions predicted treatment intentions.

Overall, our findings suggest the following: patient satisfaction was highest when the patient and provider had concordant perceptions or when the

veteran thought that the provider viewed MUS as being medical in nature and caused by environmental factors. Past treatment adherence was highest when the patient perceived a medical nature of MUS, an environmental cause of MUS, and no psychological cause of MUS. Interestingly and in contrast to the predictors of patient satisfaction and past adherence, expectations for MUS improvement seem to be most (and positively) related to the patient perceiving a psychological nature and psychological cause of MUS. Although our findings are more complex than previous findings reported in the literature, we believe that our results extend the existing literature regarding the importance of perceived nonconcordance with the provider on patient satisfaction and adherence.

Limitations

The inconsistent findings regarding the importance of concordance for the various outcomes may be due to limitations of our study, such as limitations of the measures. The measures were self-reported by veterans and were comprised of a small number of items. The mailed survey we used to collect our data allowed contact with veterans from around the United States, not just limited to one location. The length of the survey necessitated limiting items to reduce participant burden. However, single items can often provide adequate information for constructs, such as those we evaluated in the current study (Drolet & Morrison, 2001).

Another limitation is that the items we wrote to assess veterans' perceptions of their MUS were based on MUS very broadly defined. The lack of a cohesive and clear definition of MUS limits our ability to interpret responses and generalize findings, given that participants could have been reflecting on different symptoms as they answered the questions. Similarly, the treatment adherence items were about treatment in general. More specific studies focused on particular treatments, or a large enough sample of veterans reporting adherence to various types of treatment within one study, would be required to evaluate these differences. We asked the veterans in the survey what treatment(s) they were answering about in the adherence questions, and they reported several different treatments, including medication, acupuncture, exercise, physical therapy, and counseling. We collected data at one time point and did not include actual MUS-related outcomes. A longitudinal study that follows veterans from pre or directly postdeployment to years post-follow-up, and that assesses actual outcomes (e.g., symptom improvement), would better allow for evaluation of the change in, and effect of, MUS-related perceptions on behavior and outcomes. Moreover, future research should be conducted to evaluate providers' actual perceptions of the general nature and

causes of MUS. However, as perceived nonconcordance (on the part of the patient) may by itself influence patients' behaviors and health outcomes, interventions focused on addressing these perceptions may improve veterans' MUS-related outcomes.

Lastly, we measured the constructs based on the veterans' experiences with their primary care providers. There is some evidence that concordance of illness representations is important for patient–mental health provider relationships as well. For example, Claiborn, Ward, and Strong (1981) assigned clients with procrastination difficulties either to a counselor who agreed with their preexisting perceptions about procrastination or to one who offered an alternative explanation for the procrastination. Clients randomized to the counselor who provided concordant views had significantly better outcomes. Scott and Tacchi (2002) later developed a concordant treatment approach for psychiatric patients with bipolar disorder. At the end of treatment, the patients were significantly more adherent to medication for the disorder. Future research should be performed to evaluate whether these findings extend to psychologists' relationships with patients with MUS.

Implications for Counseling Psychologists

Determining aspects of effective patient–provider relationships for patients with medical conditions is increasingly important to counseling psychologists. With our growing integration into the medical system and, in particular, the primary care system, counseling psychologists are expected to consult on how to improve patient–provider relationships for all patient–provider dyads. Fuertes et al. (2007) have shown that the working alliance for patient–primary care dyads can function similarly to the working alliance generally utilized in patient–counseling psychologist dyads. We expand on this work by investigating components of patient–provider relationships that may be particularly critical for patients with medical conditions generally, and MUS specifically.

Our results suggest implications for counseling psychologists to optimize care for veterans with MUS. To form a working therapeutic alliance with veterans, a beneficial first task may be to build a concordant illness representation with the veteran. Specifically, counseling psychologists may determine the veterans' perceptions of the identity and causes of MUS and acknowledge that environmental or biological factors may indeed have been contributing to the onset of the MUS. Discussions could proceed from a standing of mutual agreement and trust to psychological and/or behavioral factors that may be perpetuating MUS and therefore may be addressable through counseling and daily living behaviors, such as physical activity. Future research conducted in counseling psychology settings could work to determine communication

strategies that maintain concordance but shift veterans' acceptance of psychological treatments for physical symptoms that were initially caused by environmental or other triggers.

Declaration of Conflicting Interests

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