

PATIENT SATISFACTION WITH TREATMENT FOR CHRONIC PAIN:  
PREDICTORS AND RELATIONSHIP TO COMPLIANCE

By

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Abstract of Thesis Presented to the Graduate School  
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Patient satisfaction with treatment has been extensively researched in a variety of medical patients. However, satisfaction with treatment for chronic pain has received considerably less attention. The present study sought to identify the predictors of patient satisfaction with treatment for chronic pain and explore its relationship to compliance with treatment recommendations. One hundred eighty patients seeking treatment for chronic pain at the University of Florida pain clinics were recruited for this telephone follow-up study. Results indicated high satisfaction ratings, with ratings of satisfaction with care significantly higher ( $t(179) = 9.58, p < 0.001$ ) than ratings of satisfaction with improvement. Aspects of the patient-provider interaction, pain relief, and anxiety at treatment onset predicted patient satisfaction with care. These same variables, save anxiety, also predicted patient satisfaction with improvement. Those patients who were more satisfied with their improvement were also more compliant with treatment recommendations, and this relationship was stronger for HCP-rated compliance. Results

suggest the importance of distinguishing between satisfaction with care and satisfaction with improvement in assessments of patient satisfaction. Patient satisfaction with treatment for chronic pain is not merely a matter of pain relief. To increase the probability of treatment success and satisfaction, attention to the interpersonal aspects of the HCP-patient relationship appears critical. Explanations for satisfaction's stronger relationship to HCP-rated compliance are discussed.

## CHAPTER 1 INTRODUCTION

Patient satisfaction with treatment has been defined as the extent to which treatment gratifies the wants, wishes, and desires of clients (Lebow, 1982) and its assessment in medical patients is becoming a common occurrence. Information on patient satisfaction with treatment provides a dependent measure of service quality and treatment effectiveness and may also serve as a useful predictor of health-related behavior (Linn, Linn, & Stein, 1982; Nguyen, Attkisson, & Stegner, 1983; Ware & Davies, 1983; Hall, Milburn, & Epstein, 1993). While patient satisfaction with treatment in general has been extensively researched, satisfaction with treatment for chronic pain has received less attention.

Most of the satisfaction literature has focused exclusively on those patients with non-chronic medical conditions. Not surprisingly, those patients who experience symptom relief are likely to be more satisfied with their treatment than those who regard treatment as less effective (Nguyen et al., 1983; Ware & Davies, 1983; Hall et al., 1993; McCracken, Klock, Mingay, Asbury, & Sinclair, 1997). Similarly, symptom chronicity is usually associated with less satisfaction (Lehman & Zastowny, 1983). However, this intuitive relationship is not without exception. There is some evidence of patients who enjoy little symptom relief and yet are highly satisfied with their treatment, especially among the chronic pain population (Donovan, 1983; Ward & Gordon, 1996; Pellino & Ward, 1998). Treatment satisfaction for chronic pain may, therefore, depend less on symptom relief and more on additional variables than for other medical patients.

Although these findings have not yet been fully elucidated, nor are they entirely consistent, some research suggests the importance of the patient-provider relationship in partially explaining the often paradoxical relationship between satisfaction and symptom alleviation.

There is a substantial literature highlighting the importance of the patient-provider interaction on satisfaction with treatment in general (Hall, Roter, & Katz, 1988). In particular, the extent to which the importance of treatment goals have been expressed by the service provider (Dawson, Spross, Jablonski, Hoyer, Sellers, & Solomon, 2002), the degree of patient trust and confidence in the provider (McCracken et al., 1997), and the congruence of the interpersonal styles of the patient and provider (Krupat, Rosenkranz, Yeager, Barnard, Putnam, & Inui, 2000) have all been shown to significantly impact patient satisfaction. Furthermore, this impact on satisfaction often equals and sometimes exceeds that of mere symptom relief. Prediction of treatment satisfaction in the chronic pain patient, therefore, should perhaps focus simultaneously on the variables that comprise the patient-provider interaction and on symptom alleviation.

In addition to symptom chronicity and relief and aspects of the patient-provider interaction, psychological distress has also been shown to impact patient satisfaction, with those patients who are psychologically distressed reporting more dissatisfaction with services than do the non-distressed (Greenley, Young, & Schoenherr, 1982; Robinson & Riley, 1999). The well-documented high comorbidity of chronic pain and negative mood (Pilowsky, Chapman, & Bonica, 1977; Kraemlinger, Swanson, & Maruta, 1983), therefore, make it likely that the pain patient's satisfaction with treatment will be duly affected. Nevertheless, the sparse literature to date has been equivocal regarding the

impact of pain chronicity and comorbid negative mood on patient satisfaction with treatment. Furthermore, much of this literature has focused exclusively on one component of negative mood – namely depression – to the exclusion of other, potentially important components (e.g., anxiety).

Some limitations common in the treatment satisfaction literature are noteworthy and are addressed in the present study. The assessment procedure and the operationalization of the satisfaction construct are particularly problematic. The assessment procedure may have a significant impact on patients' satisfaction ratings. Most assessments of patient satisfaction occur in the treatment facility. This may be problematic due to the documented decay of satisfaction ratings when patients are interviewed at home rather than in the clinic (Carr-Hill, Humphries, & McIver, 1987). Satisfaction ratings are often obtained by members of the treatment team. This may produce spuriously high ratings due to social desirability bias and/or the fear that a negative evaluation may lead to less adequate future care. For these and possibly other reasons (e.g., question framing effects), treatment evaluations typically show consistently high levels of satisfaction (Carr-Hill, 1992). The current study sought to improve upon these limitations by assessing patient satisfaction via telephone while the patients were at home and by an individual who was not involved in the patients' care. In addition, it may be important to assess patient satisfaction in more than one domain. Nguyen et al. (1983) noted that patients might be unwilling to express dissatisfaction in the presence of significant, yet ineffective caring. In other words, patients may be dissatisfied with ineffective treatment (i.e., little symptom relief) but satisfied with received care (i.e., positive patient-provider interactions). Unfortunately, most investigations of patient

satisfaction have ignored one of these domains or combined them into one general satisfaction construct. This practice is inappropriate, as the potential for divergent satisfaction ratings renders an assessment of patient satisfaction with care and patient satisfaction with treatment/improvement essential. Finally, it is important to provide a continuous measure of satisfaction. A dichotomous approach that forces a “yes/no”-type response on the patient may wrongly assume that patients are either entirely satisfied or not satisfied with treatment. A continuous measure is more appropriate and permits patients to rate their degree of satisfaction with treatment, providing a much richer assessment.

The importance of assessing satisfaction with treatment for chronic pain, the paucity of research that has been conducted in this area, and the limitations of much of that research suggest further investigation into treatment satisfaction in this population. In addition to improving upon the limitations of previous investigations, the current study sought to 1) identify the predictors of patient satisfaction with treatment for chronic pain, and 2) explore the relationship between patient satisfaction and compliance with treatment recommendations.

## CHAPTER 2 METHODS

### **Participants**

Participants were recruited from the pain clinics at the University of Florida. Five potential participants declined. The two pain clinics included a spine-specific, multidisciplinary clinic located in an orthopedic department with medication management and rehabilitation focused treatments. The second clinic is a multidisciplinary clinic located in Anesthesiology. The same non-medical treatments (e.g., psychology, physical therapy) were employed by both clinics. Timing and duration of treatments were adjusted to the patient, rather than standardized. All participants were engaging in, or completed, their respective rehabilitative programs for chronic pain. The demographic characteristics of the sample are presented in Table 2-1. The sample consisted of 180 participants, representing consecutive admissions to the clinics. 84 (46.7%) were males and 96 were (53.3%) females. The mean age of the sample was 50.12 years (SD = 12.59 years; age range, 22 – 82 years). The majority of the sample (64.4%) was married, with the remaining 35.6% being single, divorced, or widowed. Most of the participants reported their race as Caucasian (83.9%), with 11.7% reporting their race as African-American, 2.8% as Hispanic, and 1.7% as other. 73.3% of the sample was not working at the time of assessment. The mean duration of pain in the sample was 103.60 months (SD = 124.80 months; range, 4 – 780 months).

Table 2-1. Demographic Characteristics of Participants

	N	M	SD	Range	%
Age (Years)		50.12	12.59	22-82	
<b>Gender</b>					
Male	84				46.7
Female	96				53.3
<b>Marital Status</b>					
Married	116				64.4
Divorced	34				18.9
Widowed	13				7.2
Single	17				9.4
<b>Race</b>					
Caucasian	151				83.9
African-American	21				11.7
Hispanic	5				2.8
Other	3				1.7
Pain Duration (Months)		103.60	124.80	4-780	

### Measures

Participants completed a standard battery as part of their initial assessment into their rehabilitative program. This battery included a demographic questionnaire, Numerical Rating Scale (NRS), Beck Depression Inventory (BDI), and Pain-Anxiety Symptoms Scale (PASS).

**Numerical Rating Scale (NRS).** The NRS asks participants to rate their average pain experience. It is an 11-point scale with anchors at 0 (no pain) and 10 (worst pain imaginable). The NRS is significantly correlated with other pain intensity measures and is sensitive to treatments aimed at reducing pain intensity (Heiby & Carlson, 1986).

**Beck Depression Inventory (BDI).** The BDI (Beck, Rush, Shaw, & Emery, 1979) is a self-report measure of depression that assesses the presence of cognitive, affective,

and physiological symptoms of depression. The BDI is well validated and extensively used in pain research.

**Pain-Anxiety Symptoms Scale (PASS).** The PASS (McCracken, Zayfert, & Gross, 1992) is a self-report scale that evaluates fear and anxiety related to pain. It uses a 6-point Likert-type scale with anchors at 0 (“Never”) and 5 (“Always”). The PASS yields four subscales – cognitive anxiety, escape/avoidance behaviors, fearful appraisal, physiological anxiety – and a total scale. Only the total scale was used in the current study. The PASS has demonstrated good psychometric properties (Larsen, Taylor, & Asmundson, 1997).

Follow-up assessment included the Participant Satisfaction Reporting Scale (PSRS), the Participant Pain Reporting Scale (PPRS), the Participant Compliance Reporting Scale (PCRS), and the Health Professional Compliance Evaluation (HPCE).

**Participant Satisfaction Reporting Scale (PSRS).** The PSRS assesses participants’ satisfaction with the information they were provided during treatment, as well as their acceptance of this information. It is a 5-item self-report questionnaire modeled after those instruments used by Riley et al. (1999) and Stouthard, Hartman, & Hoogstraten (1992) in dental patients. Participants rate their satisfaction with information provided, recommendations made, care received, level of improvement, and satisfaction with improvement on a scale with anchors at 0 (complete dissatisfaction) and 100 (complete satisfaction).

**Participant Pain Reporting Scale (PPRS).** The PPRS assesses participants’ pain levels, affective reactions to pain, perception of control over managing pain, and control of compliance with treatment recommendations. It is an 11-item self-report scale

that is an adaptation of a questionnaire used by Riley et al. (1999) in dental patients. Participants rate their pain, affect, and level of control on a scale with anchors at 0 and 100. These endpoints describe extreme endorsements in each of these areas.

**Participant Compliance Reporting Scale (PCRS).** The PCRS was developed specifically for this and related studies. It contains 12 items and asks participants to rate their level of compliance with 10 prescribed treatment recommendations for their chronic pain. The PCRS assesses compliance with recommendations in the following areas: treatment medications, discontinuation of medications, use of assistive devices, physical therapy exercises, other home treatments, follow-up appointments, referrals to other health-care professionals, surgical interventions, alternative medicine treatment, and other treatment recommendations. Compliance in each of these areas is rated on a scale with anchors at 0 (“did not do that at all”) and 100 (“did everything that was recommended”). The impact that compliance with these recommendations had on their overall level of improvement is also assessed.

**Health Professional Compliance Evaluation (HPCE).** The HPCE asks healthcare providers to rate their patients’ levels of compliance with 10 prescribed treatment recommendations for chronic pain. The HPCE is similar in content and rating system to the PCRS.

A compliance index for each compliance questionnaire was calculated by summing the level of compliance with each recommendation (i.e., 0 – 100 ratings) and dividing by the total number of recommendations offered by the HCP.

### **Procedures**

Participants in the current study had been evaluated at least six months prior to assessment of satisfaction and compliance with their respective treatment programs.

They were contacted by telephone and asked to participate in a research study evaluating their treatment program. Those participants who provided consent then completed the PSRS, PPRS, and PCRS questionnaires over the telephone. Upon completing the questionnaires, the participants were fully debriefed concerning the nature of the study. Subsequently, the HCP who was most involved in the participant's treatment program was asked to complete the HPCE for that participant and provide consent for his/her compliance ratings to be used in the investigation. The medical providers (two physicians and one nurse practitioner with experience in the pain field of 20, 12, and 6 years, respectively) agreed and consulted the patient's chart for treatment recommendations and notes concerning compliance with those recommendations in order to complete the compliance questionnaire. Both patients and providers were assured that all data would be kept strictly confidential. All procedures were approved by the Institutional Review Board.

## CHAPTER 3 RESULTS

### **Analyses**

Descriptive statistics were used to examine the clinical characteristics of the participants. A Pearson correlation was used to examine the relationship between ratings of satisfaction with care and satisfaction with improvement, and a paired samples t-test was used to test for differences in these ratings. Simultaneous multiple regression analyses were conducted to explore predictors of patient satisfaction with care and satisfaction with improvement. Finally, simultaneous multiple regression analyses were conducted to explore the relationship between patient satisfaction and compliance with treatment recommendations.

### **Satisfaction Ratings**

The clinical characteristics of the sample are presented in Table 3-1. Descriptive statistics revealed high overall satisfaction ratings with wide variability. Mean rating for satisfaction with care was 77.43 (SD = 29.98) with scores ranging from 0 to 100. Satisfaction with improvement ratings (M = 55.53, SD = 36.90) were significantly lower ( $t(179) = 9.58, p < 0.001$ ) but with similarly wide variability (0 to 100). Correlation analysis indicated a significant and moderate relationship between ratings of satisfaction with care and satisfaction with improvement ( $r = 0.52, p < 0.001$ ).

Table 3-1. Clinical Characteristics of Participants

	Scale	Range	M	SD
Pain at Assessment	0-10	1-10	6.74	2.09
Pain at 6 month follow-up	0-100	0-100	60.96	24.28
Anxiety at Assessment	0-200	3-158	80.96	34.59
Depression at Assessment	0-63	0-50	14.96	9.59
Pain Relief	0-100	0-100	52.39	28.44
How well problem explained (PSRS #1)	0-100	0-100	81.67	28.91
Agreement with treatments (PSRS #2)	0-100	0-100	82.09	26.41
Participant Satisfaction:				
With Care	0-100	0-100	77.43	29.98
With Improvement	0-100	0-100	55.53	36.90
Participant-rated Compliance	0-100	27-100	89.12	14.82
HCP-rated Compliance	0-100	8-100	69.82	23.53

Table 3-2. Zero Order Correlations for Variables Included in Regression Analyses

	Sat. w/ Care	Sat. w/ Impr.	Explained	Agreed	Pain Relief	BDI Total	PASS Total	Patient-rated Compliance
Sat. w/ Impr.	.515**							
Explained	.508**	.374**						
Agreed	.551**	.427**	.424**					
Pain Relief	.511**	.721**	.354**	.402**				
BDI Total	-.095	-.037	-.214**	-.011	-.125			
PASS Total	-.200*	-.084	-.211**	-.074	-.115	.622**		
Patient-rated Compliance	.169*	.281**	.182*	.343**	.209**	.006	-.025	
HCP-rated Compliance	.277**	.349**	.176*	.125	.198**	-.124	-.138	.363**

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

### Prediction of Patient Satisfaction

Table 3-2 presents the zero order correlations for the variables included in the subsequent regression analyses. Two separate sets of simultaneous multiple regression analyses were conducted to explore predictors of patient satisfaction with care and satisfaction with improvement. Table 3-3 presents the results of these analyses. For both sets of analyses, the following variables were entered as predictors: ratings of how well the pain problem was explained (PSRS #1); endorsed level of agreement with treatment (PSRS #2); pain relief (PPRS #5); depression (BDI total score); and anxiety (PASS total score). Results of the first analysis indicated that the regression model accounted for 50% of the variance in ratings of satisfaction with care ( $F(5,146) = 29.62, p < 0.001$ ). Evaluation of the standardized regression coefficients indicated that explained ratings ( $t = 4.046, p < 0.001$ ), level of agreement ( $t = 4.670, p = 0.003$ ), pain relief ( $t = 4.350, p = 0.005$ ), and anxiety ( $t = -2.305, p = 0.02$ ) were the significant components of the model. The depression variable approached significance ( $t = 1.745, p = 0.08$ ) but did not quite reach the  $p=0.05$  standard. These variables were all positively related to satisfaction with care, save anxiety.

Results of the second regression equation indicated that the model accounted for 56% of the variance in ratings of satisfaction with improvement ( $F(5,146) = 37.08, p < 0.001$ ). Explained ratings ( $t = 1.976, p = 0.05$ ), level of agreement ( $t = 2.519, p = 0.01$ ), and pain relief ( $t = 9.729, p < 0.001$ ) were the only significant components of the model. These variables were all positively related to satisfaction with improvement. The mood variables (depression:  $p = 0.49$ ; and anxiety:  $p = 0.98$ ) did not uniquely predict satisfaction with improvement in this equation.

Table 3-3. Results of Regression Analyses Predicting Patient Satisfaction

Variable	Std. B	R <sup>2</sup>	t	F	p
<b>Satisfaction with Care</b>					
Explained Rating (PSRS #1)	.274		4.046		<.001
Level of Agreement (PSRS #2)	.321		4.670		<.001
Pain Relief (PPRS #5)	.288		4.350		<.001
BDI	.132		1.745		.08
PASS	-.173		-2.305		.02
MODEL		.50		29.62	<.001
<b>Satisfaction with Improvement</b>					
Explained Rating (PSRS #1)	.126		1.976		.05
Level of Agreement (PSRS #2)	.163		2.519		.01
Pain Relief (PPRS #5)	.607		9.729		<.001
BDI	.049		0.687		.49
PASS	.002		0.030		.98
MODEL		.56		37.08	<.001

### Relationship Between Patient Satisfaction and Compliance

Two separate sets of simultaneous multiple regression analyses were conducted to explore the relationship between patient satisfaction and compliance with treatment recommendations. The first analysis was conducted for patient-rated compliance, the second for provider-rated compliance. Table 3-4 presents the results of these analyses. For both sets of analyses, ratings of satisfaction with care and satisfaction with improvement were entered as the predictor variables. Results of the first analysis indicated that the regression model accounted for 8% of the variance in overall patient-rated compliance ( $F(2,177) = 7.68, p = 0.001$ ). Satisfaction with improvement ( $t = 3.137, p = 0.002$ ) was the only significant component of the model, indicating that those patients

who were more satisfied with their improvement also rated themselves as more compliant with treatment recommendations offered by their providers. Satisfaction with care ( $p = 0.69$ ) did not uniquely predict this compliance index.

Results of the second regression equation indicated that the model accounted for 14% of the variance in overall HCP-rated compliance. Consistent with the previous equation, only satisfaction with improvement ( $t = 3.438$ ,  $p = 0.001$ ) was a significant component of the model. Those patients who were more satisfied with their improvement were also judged by their providers to be more compliant with treatment recommendations. Again, satisfaction with care ( $p = 0.106$ ) did not uniquely predict this compliance index.

Table 3-4. Results of Regression Analyses Examining the Relationship Between Patient Satisfaction and Compliance

Informant	Variable	Std. B	R <sup>2</sup>	t	F	p
Participant	Satisfaction With Care	.033		0.396		.692
	Satisfaction With Improvement	.264		3.137		.002
	MODEL		.08		7.68	.001
HCP	Satisfaction With Care	.133		1.626		.106
	Satisfaction With Improvement	.281		3.438		.001
	MODEL		.14		13.77	<.001

## CHAPTER 4 DISCUSSION

The purpose of this study was to expand upon the patient satisfaction literature by examining the predictors of satisfaction with treatment for chronic pain and exploring the relationship between satisfaction and compliance. Consistent with previous investigations, satisfaction ratings in the current study were generally high, with ratings of satisfaction with care ( $M = 77.43$ ) significantly higher than satisfaction with improvement ( $M = 55.53$ ). These rating differences suggest that patients distinguish between quality of care – a more interpersonal construct – and quality of treatment – a more outcomes-oriented construct. This discrepancy between treatment and care may partly explain the often-paradoxical relationship between satisfaction and symptom relief in the pain patient, where patients express high levels of satisfaction despite limited pain relief. It has been hypothesized that patients may be reticent in expressing dissatisfaction in the face of significant, albeit ineffective, caring when the criteria for evaluating the efficacy of treatment are unclear (Nguyen et al., 1983). The results of the present study provide some support for this hypothesis and suggest that satisfaction assessments should provide opportunities for patients to not only rate the effectiveness of the treatment administered, but also the quality of the care received. Nevertheless, the presence of relatively high patient ratings of satisfaction with improvement, even when given the opportunity to distinguish between care and improvement, emphasizes the need to further investigate the relationship between satisfaction and symptom relief.

Results of the regression analysis predicting satisfaction with care indicated that the model accounted for half of the variance in satisfaction ratings. Aspects of the patient-provider interaction, pain relief, and patient mood were all significant constituents of the model. Specifically, the better the patients thought their pain problem was explained to them by their HCP; the more they agreed with the treatment recommendations; the more pain relief they experienced; and the less pain-related anxiety they reported at initial assessment the more satisfied they were with care. Depression levels at initial assessment also approached significance. These results concerning depression's lack of prominence in the prediction equation are inconsistent with past investigations that found depression to be strongly associated with satisfaction (Greenley et al., 1982). However, many of these studies included depression as their only mood variable and did not include a measure of patient anxiety. A recent study that did include measures of depression and anxiety found that reduction in depression throughout treatment was more strongly related to patient satisfaction than reduction in pain-related anxiety (McCracken, Evon, & Darapas, 2002). Conversely, in the present analyses, initial pain-related anxiety was a stronger predictor of satisfaction than depression. These discrepant findings suggest that both of these mood characteristics should be included in future prediction equations to elucidate their relationship to patient satisfaction.

Results of the regression analysis predicting satisfaction with improvement were similarly impressive, the model accounting for 56% of the variance in satisfaction ratings. The same patient-provider interaction variables as the first regression equation, as well as pain relief, were also significant constituents of this model. However, the mood measures (i.e., depression and anxiety) were not significant components. These results

shed new light on the previous equivocal findings regarding satisfaction with pain interventions and negative mood. Negative mood may only impact satisfaction with care and be unrelated to satisfaction with treatment effectiveness. Patients' negative mood at the onset of treatment may influence the interpersonal care they receive, or at least their perception of the quality of their care, and, subsequently, their satisfaction with that care. Those patients who evidence less negative mood may experience or perceive more positive interpersonal contacts with their HCPs and, thus, be more satisfied with their care than those who bring anxious and depressive symptoms with them to treatment. Given the impact that patient satisfaction has been shown to have on subsequent health-related behavior (Linn et al., 1982; Ware & Davies, 1983), early psychological intervention aimed at reducing these negative mood characteristics and thereby improving satisfaction may greatly enhance treatment outcomes. Future investigations should assess the effects these interventions may have on patient satisfaction, subsequent behavior, and treatment outcome.

The results of these analyses provide further evidence that satisfaction is not achieved by merely keeping pain levels low and/or reducing pain. Equally if not more important are the aspects of the patient-provider relationship. Consistent with previous work, these results highlight the importance of patient-provider interpersonal factors in satisfaction ratings. Full explanations of the patient's condition, as well as the perceived merits of the treatment recommendations, appear to be critical features, especially regarding the more interpersonal construct of satisfaction with care. A recent study by McCracken et al. (2002) demonstrated the importance of patients receiving an adequate explanation of clinic procedures. Although the items examining patients' perceptions of

adequacy of provided explanations were worded differently in this study, and perhaps assessed explanations regarding different aspects of treatment, the present findings in combination with those of the aforementioned study suggest the importance of HCPs taking the time to provide full explanations to patient's regarding all aspects of their condition and treatment. Additional work is needed to explore other aspects of the patient-provider interaction, which may also impact patient satisfaction.

Results of the analyses examining the relationship between satisfaction and compliance with treatment recommendations indicated that satisfaction with improvement was more strongly related to both patient and provider-rated compliance and was the only unique constituent of the regression models. Those patients who were more satisfied with their improvement were also more compliant with treatment recommendations, and this relationship was stronger for HCP-rated compliance. HCP compliance ratings may be more influenced in retrospect by actual patient improvement, while patient compliance ratings may be more influenced by actual compliance, a desire to be perceived as compliant, or both. This is one explanation for satisfaction's stronger relationship with HCP-rated compliance. An additional, yet speculative, explanation concerns expectations regarding the efficacy of prescribed interventions. HCPs may expect greater improvements resulting from treatment than do patients. Past research has demonstrated that HCPs' expectations have powerful placebo effects on patients' pain reports (Gracely, Dubner, Deeter, & Wolskee, 1985). Therefore, it may be the case that the more HCPs believe patients have been compliant with treatment recommendations, the even greater are HCPs' expectations regarding the efficacy of that treatment. This may, in turn, result in a greater placebo effect on pain relief, thereby resulting in higher

satisfaction with improvement ratings. Unfortunately, neither patient nor HCP expectations were assessed in this study, and, therefore, this possible explanation remains highly speculative. Future research should more thoroughly investigate the impact of patient and HCP expectations regarding treatment on satisfaction and pain relief.

Although one of the aims of this investigation was to improve upon the limitations of previous studies, some limitations of the current study should be noted. First, expectations were not assessed in this study. Given the influence that patient expectations often have on their satisfaction with treatment, it is perhaps surprising that the predictors accounted for so much of the variance in satisfaction ratings without the inclusion of expectations. Future studies should assess patient expectations regarding treatment and care, as well as HCP expectations, which have almost entirely been ignored in the literature. Second, the present study did not permit a more thorough analysis of the relationship between satisfaction and compliance with treatment recommendations. Future investigations should be designed to address directionality issues pertaining to this relationship, specifically, how satisfaction influences compliance and vice versa. Past research has suggested that satisfaction impacts compliance, but it may be the case that a recursive relationship between these two variables is more likely. For example, past satisfaction with treatment and/or care may predict current compliance, which may then predict future satisfaction. Third, although a phone assessment conducted by an individual who was not part of the treatment team was employed to minimize potential demand characteristics, it is still possible that patients felt inclined to provide positive ratings of satisfaction and compliance. Fourth, some of the questionnaires used in this study require further psychometric validation, a common problem in the satisfaction

literature that has yet to be adequately resolved. In this study, patient satisfaction was assessed from two items that employed single numerical rating scales that have not been sufficiently validated. However, our results provide preliminary support for these items' construct validity, and future investigations should further evaluate their psychometric properties. Finally, because patient-HCP interaction ratings were derived from items on the same questionnaire that assessed patient satisfaction, contained similarly worded items as the satisfaction questions, and utilized the same numerical rating format and anchor points as the satisfaction items, their relationships in the regression analyses could have been partly due to shared method variance.

These limitations notwithstanding, the current study demonstrated the need to assess satisfaction with care and treatment effectiveness in the chronic pain patient. Furthermore, the results indicated that for these patients, pain relief is not necessarily the ultimate treatment goal. To increase the probability of treatment success and satisfaction, attention to the interpersonal aspects of the HCP-patient relationship appear critical.

APPENDIX  
STUDY QUESTIONNAIRES

**Participant Satisfaction Reporting Scale (PSRS)**

Evaluator: \_\_\_\_\_ Participant ID: \_\_\_\_\_

1. How well was your pain problem **explained** to you during treatment?

On a scale of 0 to 100 with 0 = the problem was not clearly explained and 100 = completely explained. \_\_\_\_\_

2. Did you **agree** with the types of treatments and recommendations that you received?

On a scale of 0 to 100 with 0 = complete disapproval of the treatments and recommendations that were offered and 100 = complete approval of the treatments and recommendations. \_\_\_\_\_

3. How **satisfied** were you with the care that you received in the Spine Care Center/ Anesthesiology Clinic?

On a scale of 0 to 100 with 0 = completely dissatisfied with the care received to 100 = completely satisfied with care received. \_\_\_\_\_

4. Rate your overall **improvement** since starting treatment:

On a scale of 0 to 100 with 0 = no improvement and 100 = complete improvement. \_\_\_\_\_

5. Rate your level of **satisfaction with your improvement** since starting treatment:

On a scale of 0 to 100 with 0 = complete dissatisfaction and 100 = complete satisfaction. \_\_\_\_\_

### Participant Pain Reporting Scale (PPRS)

Evaluator: \_\_\_\_\_

Participant ID: \_\_\_\_\_

1. Rate your **level of pain** right now:

On a scale of 0 to 100 with 0 = no pain and 100 = the worst pain imaginable.

\_\_\_\_\_

2. Rate your **average level of pain** for the past week:

On a scale of 0 to 100 with 0 = no pain and 100 = the worst pain imaginable.

\_\_\_\_\_

3. Rate your **pain** at its worst:

On a scale of 0 to 100 with 0 = no pain and 100 = the worst pain imaginable.

\_\_\_\_\_

4. Rate your **pain** at its least:

On a scale of 0 to 100 with 0 = no pain and 100 = the worst pain imaginable.

\_\_\_\_\_

5. Rate the **pain relief** you have experienced since you started treatment:

On a scale of 0 to 100 with 0 = no pain relief and 100 = complete pain relief.

\_\_\_\_\_

6. During the past week how **anxious** or tense have you been?

On a scale of 0 to 100 with 0 = not at all anxious and 100 = extremely anxious.

\_\_\_\_\_

7. During the past week how **sad or depressed** have your been?

On a scale of 0 to 100 with 0 = not depressed at all and 100 = extremely depressed.

\_\_\_\_\_

8. During the past week how **angry** have your been?

On a scale of 0 to 100 with 0 = not angry and 100 = extremely angry.

\_\_\_\_\_

9. During the past week how **frustrated** have your been?

On a scale of 0 to 100 with 0 = not frustrated and 100 = extremely frustrated.

\_\_\_\_\_

10. How much **control** do you have in managing your pain?

On a scale of 0 to 100 with 0 = no control at all to 100 = absolute control at controlling pain.

\_\_\_\_\_

11. How much **control** do you have following through with treatment recommendations?

On a scale of 0 to 100 with 0 = no control at all to 100 = absolute control at following through with recommendations.

\_\_\_\_\_

**Participant Compliance Reporting Scale (PCRS)**

Evaluator: \_\_\_\_\_

Participant ID: \_\_\_\_\_

**Instructions:** Please identify treatment areas recommended to you during treatment for your pain and rate how well you followed through with those recommendations on a 0 to 100 scale with 0 = did not do that at all and 100 = did everything that was recommended.

**RECALL:** What recommendations were made to you by your healthcare team to help you manage your pain?

Recommendations	How well did you follow through with this recommendation? On a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended:
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____

**Recognition:**

1. Were **treatment medications** recommended to you?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with taking **treatment medications**? \_\_\_\_\_

2. Were recommendations made to you to **stop certain medications**?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with **stopping certain medications**? \_\_\_\_\_

3. Were **aids** such as a walking cane or brace recommended to you?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and

100 = did everything that was recommended – how well did you follow through with using those **aids**? \_\_\_\_\_

4. Was **Physical Therapy** recommended to you?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with attending **Physical Therapy appointments**? \_\_\_\_\_

5. Were **other home treatments** such as home physical therapy exercises, hot/cold packs, relaxation techniques, or biofeedback recommended to you?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with **home treatments**? \_\_\_\_\_

6. Were **follow-up appointments** to the Spine Care Center/ Anesthesiology Clinic scheduled for you?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with attending **follow-up appointments**? \_\_\_\_\_

7. Were **referrals to other healthcare professionals such as to a Psychologist or Psychiatrist** made for you?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with attending appointments with these **other healthcare professionals**? \_\_\_\_\_

8. Was **surgery recommended** to you to help relieve your pain?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with **surgical recommendations**? \_\_\_\_\_

9. Were **alternative medicine treatment** recommendations such as the use of a chiropractor, medicinal herbs, or acupuncture made to you?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with **alternative medicine treatment recommendations**? \_\_\_\_\_

Did you try any form of **alternative medicine** such as a chiropractor, medicinal herbs, or acupuncture after your pain treatment program?

Yes  No

If Yes, what types of **alternative medicine** did you use?

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If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with **alternative medicine treatments**?

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10. Were **other treatment recommendations** made to you?

Yes  No

If Yes, what were the treatment recommendations?

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If Yes, on a scale of 0 to 100 with 0 = did not do that at all and 100 = did everything that was recommended – how well did you follow through with **other treatment recommendations**?

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11. How did **following through** with treatment recommendations affect your overall improvement on a scale of 0 to 100 with 0 = completely interfered with improvement and 100 = very beneficial?

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12. How did **not following through** with treatment recommendations affect your overall improvement on a scale of 0 to 100 with 0 = very beneficial to improvement and 100 = completely interfered with improvement?

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### Health Professional Compliance Evaluation (HPCE)

Evaluator: \_\_\_\_\_

Participant ID: \_\_\_\_\_

**Instructions:** Please identify treatment areas recommended to participant during the course of treatment and rate their level of compliance with those recommendations on a 0 to 100 scale with 0 = no compliance at all and 100 = absolute compliance.

1. Were **treatment medications** recommended to this participant?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with **treatment medications**: \_\_\_\_\_

2. Were recommendations made to the participant to **discontinue medications** ?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant to **discontinue medications**: \_\_\_\_\_

3. Were **assistive devices** such as a walking cane or brace recommended to this participant?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with **assistive devices**: \_\_\_\_\_

4. Were **Physical Therapy exercises** recommended to this participant?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with **Physical Therapy exercises**: \_\_\_\_\_

5. Were **other home treatments** such as hot/cold packs, relaxation techniques, or biofeedback recommended to this participant?  Yes  No

If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with **other home treatments**: \_\_\_\_\_

6. Were **follow-up appointments** to this facility scheduled for this participant?  Yes  No
- If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with **follow-up appointments**: \_\_\_\_\_
7. Were **referrals to other healthcare professionals**, such as a Psychologist/Psychiatrist or other specialists, made for this participant?  Yes  No
- If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with **referrals to other healthcare professionals**: \_\_\_\_\_
8. Were **surgical interventions** recommended for this participant?  Yes  No
- If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with **surgical interventions**: \_\_\_\_\_
9. Were **alternative medicine treatment** recommendations such as the use of a chiropractor, medicinal herbs or acupuncture made to this participant?  Yes  No
- If Yes, on a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with **alternative medicine treatments**: \_\_\_\_\_
10. Were **other treatment recommendations** made to this participant?  Yes  No
- If Yes, what were the treatment recommendations?  
\_\_\_\_\_  
\_\_\_\_\_
- On a scale of 0 to 100 with 0 = no compliance at all and 100 = absolute compliance how compliant was the participant with these **other treatment recommendations**: \_\_\_\_\_
11. How did **compliance** with treatment recommendations impact this participant's overall improvement on a scale of 0 to 100 with 0 = completely interfered with improvement and 100 = very beneficial to improvement? \_\_\_\_\_

12. How did **noncompliance** with treatment recommendations impact this participant's overall improvement on a scale of 0 to 100 with 0 = very beneficial to improvement and 100 = completely interfered with improvement? \_\_\_\_\_

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## BIOGRAPHICAL SKETCH

Adam Todd Hirsh was born in Richmond, Indiana, on February 23, 1979. He graduated from Woodham High School in 1997 and received his Bachelor of Arts degree in psychology from the University of Central Florida in December 2001. Adam worked in the Substance Use Research Group (SURG) at UCF from 1999 to 2002, conducting research on alcohol and drug use. He entered the Clinical and Health Psychology doctoral program at the University of Florida in 2002 with a concentration in clinical health psychology. While at UF, he has worked in the Center for Pain Research and Behavioral Health under the mentorship of Michael E. Robinson, Ph.D.