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RESEARCH ARTICLE

Patient Characteristics that Impact Health and Use

Interpersonal Processes of Care and Patient Satisfaction: Do Associations Differ by Race, Ethnicity, and Language?

Anna María Nápoles, Steven E. Gregorich, Jasmine Santoyo-Olsson, Helen O'Brien, and Anita L. Stewart

Objective. Describe association of patient satisfaction with interpersonal processes of care (IPC) by race/ethnicity.

Data Sources/Study Setting. Interview with 1,664 patients (African Americans, English- and Spanish-speaking Latinos, and non-Latino Whites).

Study Design/Methods. Cross-sectional study of seven IPC measures (communication, patient-centered decision making, and interpersonal style) and three satisfaction measures (satisfaction with physicians, satisfaction with health care, and willingness to recommend physicians). Regression models explored associations, controlling for patient characteristics.

Principal Findings. In all groups: patient-centered decision making was positively associated with satisfaction with physicians ($B = 0.10$, $p < .0001$) and health care ($B = 0.07$, $p < .001$), and "recommend physicians" (OR = 1.23, 95 percent CI 1.06, 1.43); discrimination was negatively associated with satisfaction with physicians ($B = 0.09$, $p < .05$) and health care ($B = 0.17$, $p < .001$). Unclear communication was associated with less satisfaction with physicians among Spanish-speaking Latinos. Explaining results was positively associated with all satisfaction outcomes for all groups with one exception (no association with satisfaction with physicians for Latino Spanish-speakers). Compassion/respect was positively associated with all outcomes for all groups with two exceptions (no association with satisfaction with health care among English-speaking Latinos and Whites).

Conclusions. All IPC measures were associated with at least one satisfaction outcome for all groups except for unclear communication.

Key Words. Patient satisfaction, patient–physician communication, interpersonal care, race, ethnicity

Satisfaction with health care and with clinicians is a key quality-of-care indicator (Cleary and McNeil 1988). Numerous studies have explored whether satisfaction with care varies by race/ethnicity. Most have found that one or

more minority groups are less satisfied than nonminority groups (Meredith and Siu 1995; Harpole et al. 1996; Cooper-Patrick et al. 1999; Morales et al. 1999; Doescher et al. 2000; Murray-Garcia et al. 2000; Haviland et al. 2003; Saha, Arbelaez, and Cooper 2003; Hunt, Gaba, and Lavizzo-Mourey 2005). Research consistently finds Spanish-speaking Latinos to be less satisfied than English-speaking Latinos (Hu and Covell 1986; David and Rhee 1998; Carrasquillo et al. 1999; Morales et al. 1999; Mosen et al. 2004).

Research to explore possible mechanisms of these widely observed disparities in satisfaction is needed (Hunt, Gaba, and Lavizzo-Mourey 2005). Cleary and McNeil conceptualize three basic types of determinants of satisfaction: patient characteristics, structure of care, and processes of care (Cleary and McNeil 1988). Establishing links between *patient characteristics* (e.g., race/ethnicity) and satisfaction helps identify patient groups at risk of poorer satisfaction. The *structure of care,* such as information management and organizational design, can contribute to improved patient satisfaction (Glickman et al. 2007). *Processes of care* include technical care and interpersonal aspects of the physician–patient relationship. With respect to interpersonal processes, three broad dimensions have been identified: communication, patient-centered decision making, and interpersonal style (Stewart, Nápoles-Springer, and Pérez-Stable 1999; Stewart et al. 2007).

Most studies of interpersonal processes and satisfaction have focused on communication. Three literature reviews support the conclusion that the amount and clarity of information provided is a clear correlate of satisfaction (Cleary and McNeil 1988; Hall, Roter, and Katz 1988; Ong et al. 1995). For example, a meta-analysis concluded that satisfaction was most dramatically predicted by the amount of information imparted by providers (Hall, Roter, and Katz 1988).

Regarding interpersonal style, several reviews concluded that patients were more satisfied when physicians were sensitive to their needs and had a supportive, reassuring style (DiMatteo et al. 1985; Buller and Buller 1987; Cleary and McNeil 1988; Greene et al. 1994). Being treated with respect and

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Address correspondence to Anna María Nápoles, Ph.D., M.P.H., Department of Medicine, Medical Effectiveness Research Center for Diverse Populations, Division of General Internal Medicine, University of California, San Francisco (UCSF), 3333 California Street, Suite 335, San Francisco, CA 94118-1944, e-mail: anna.napoles-springer@.ucsf.edu. Anna María Nápoles, Steven E. Gregorich, Ph.D., Jasmine Santoyo-Olsson, M.S., Helen O'Brien, B.A., and Anita L. Stewart, Ph.D., are with the Department of Medicine, Medical Effectiveness Research Center for Diverse Populations, Division of General Internal Medicine, University of California, San Francisco, CA. Jasmine Santoyo-Olsson, M.S., and Anita L. Stewart, Ph.D., are with the Institute for Health and Aging, University of California, San Francisco, CA.

dignity also has been independently associated with satisfaction with care among diverse ethnic groups (Beach et al. 2005). Several studies among minority patients found that perceived racism was associated with dissatisfaction with health care (Auslander et al. 1997; LaVeist, Nickerson and Bowie 2000; Hunt, Gaba and Lavizzo-Mourey 2005; Benkert et al. 2006). In another study, the compassion with which care was provided was the strongest predictor of patients' willingness to recommend care providers (Burroughs et al. 1999).

Several aspects of patient-centered decision making also have been associated with patient satisfaction. Patients of physicians who provided a greater opportunity to participate in decision making, negotiation, and other aspects of the medical encounter were more satisfied (Stewart 1984; Brody et al. 1989; Greene et al. 1994; Franciosi et al. 2004). Reviews suggest that patients are more satisfied when physicians do not have a controlling communication style (Buller and Buller 1987; Hall, Roter, and Katz 1988; Greene et al. 1994). For example, the more physicians talked relative to patients during visits, the less satisfied the patients (Bertakis, Roter, and Putnam 1991). Finally, being involved in decision making to the extent desired was associated with global satisfaction in four racial/ethnic groups (Beach et al. 2005).

Despite the attention to patient satisfaction in the literature, few studies have examined simultaneously a broad range of interpersonal processes; thus, we know little about whether the different domains (e.g., communication, decision making) independently determine satisfaction. Furthermore, many of the studies in diverse populations involve small samples or audiotapes of visits, thus limiting generalization. Finally, we know little about whether the associations between various interpersonal processes and satisfaction differ across racial/ethnic groups. Identifying which interpersonal processes are important to all patients, and those that may be especially important to patients of certain ethnic groups only, can help identify mechanisms to reduce health and health care disparities.

The purpose of this study was to explore, in a diverse sample of general medicine patients: (1) whether patient satisfaction differed across racial, ethnic, and language groups; (2) whether reports of several dimensions of interpersonal processes of care (IPC) were independently associated with several measures of satisfaction with care; and (3) whether these associations differed significantly across patient racial, ethnic, and language groups. We hypothesized that good interpersonal processes would be positively associated with satisfaction, but we were uncertain whether the associations would be consistent across racial/ethnic groups. This study extends previ-

ous research by studying an ethnically diverse sample that included English- and Spanish-speaking Latinos. Another unique contribution is that the study examined a variety of interpersonal aspects of care provided by physicians and their relative influence on satisfaction using measures that have undergone extensive qualitative and psychometric testing (Nápoles-Springer et al. 2006; Stewart et al. 2007). The measures consisted of patient reports of events rather than ratings, facilitating identification of specific physician behaviors that might be modified to increase patient satisfaction and reduce disparities in care.

METHODS

Sample

Our sample included adult general medicine patients from nine university-based practices in San Francisco staffed by general internists, family medicine physicians, and nurse practitioners. A previous physician survey conducted in these practices suggested that the availability of Spanish-speaking clinicians or professional interpreters was limited (e.g., only 8 percent of clinicians reported speaking Spanish and well over half reported at least two encounters in the previous month where they had not used an interpreter when they felt one was needed (Karliner, Perez-Stable, and Gildengorin 2004). Sampling procedures are described elsewhere (Nápoles-Springer, Santoyo, and Stewart 2005); briefly, patients with at least one primary care visit in the prior 12 months were identified and stratified by race/ethnicity and language: African American, English-speaking Latino, Spanish-speaking Latino, and non-Latino White. We stratified our sampling by language for Latinos because we anticipated that language barriers would be related to IPC. Within each stratum, batched random samples were selected, enabling us to send a letter and call within 2 weeks. Telephone interviews (conducted October 1, 2001 through January 31, 2002) lasted about 30 minutes. Interviewers obtained verbal informed consent before the interview. All procedures were approved by the academic health center's Institutional Review Board.

Measures

Measures of Dependent Variables. Three patient satisfaction measures served as dependent variables. These were single items assessing global satisfaction with physicians, global satisfaction with health care, and whether patients would recommend physicians to others.

The global satisfaction with physicians measure was adapted slightly from a managed care survey (Hays et al. 1998) ("How would you rate the overall quality of care and service provided by your doctors over the past 12 months?"). The global satisfaction with health care measure was designed for this study ("Overall how would you rate the care you have received at [clinic site] over the past 12 months?"). These items used the same five-level response set (1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent) so that higher scores represented greater satisfaction. The "recommend physicians" measure asked, "Would you recommend the doctors you have seen at (clinic site) to a close friend or family member?" (yes, maybe, no). This item was scored dichotomously: yes versus no/maybe. Pearson's correlations among the three satisfaction measures ranged from 0.50 to 0.77.

Measures of Independent Variables. Our primary independent variables consisted of seven multi-item scales from the patient-reported Interpersonal Processes of Care Survey (Stewart et al. 2007), developed to be appropriate for patients from diverse racial/ethnic groups. Conceptually, three general domains of IPC are represented by this instrument: communication, patient-centered decision making, and interpersonal style. For this study, we selected the seven scales that met scalar invariance criteria (IPC-Short Form), which allows for valid, unbiased comparisons across African Americans, English-speaking Latinos, Spanish-speaking Latinos, and non-Latino Whites. The short form comprises three communication scales (*lack of clarity, elicited concerns/responded,* and *explained results*), one patient-centered decision making scale (*decided together*), and three interpersonal style scales (*compassionate/respectful, discriminated due to race/ethnicity*, and *disrespectful office staff*). Possible scores for each scale ranged from 1 to 5. A higher score indicates reports of more experiences of the labeled process, that is, more explanations or more discrimination. The scales are summarized in Table 1, including the definition and internal consistency reliability within the total sample and by racial/ethnic/language group.

Race/ethnicity was based on self-report. Language was identified based on preferred language for the telephone survey. We combined these two variables to create a single race/ethnicity/language indicator with four categories: African Americans, English-speaking Latinos, Spanish-speaking Latinos, and Whites. For brevity, we refer to this indicator hereafter as "race/ethnicity."

Measures of Covariates. We included measures of six covariates: age in years, gender, education (1 < high school, 2 = high school, 3 = some college,

Table 1: Definitions of Seven Interpersonal Processes-of-Care Short-Form Measures

		Internal Consistency Reliability				
DOMAIN/Subdomain (# of Items)	*Definition: Frequency with Which Doctors . . .*	*Total Sample n = 1,664*	*African Americans n = 435*	*English-Speaking Latinos n = 428*	*Spanish-Speaking Latinos n = 383*	*Whites n = 418*
Communication						
Lack of clarity (2)	Spoke quickly, used complex words	0.66	0.62	0.66	0.63	0.72
Elicited concerns/ responded (3)	Let patient say what was important, heard patient's concerns and took them seriously	0.79	0.80	0.78	0.81	0.78
Explained results (2)	Explained results of tests and physical examinations	0.80	0.82	0.80	0.78	0.80
Patient-Centered Decision Making						
Decided together (2)	Asked about the patient's preferences for helping decide treatment, worked out treatment plan together	0.74	0.75	0.77	0.74	0.70
Interpersonal Style						
Compassionate/ respectful (3)	Expressed concern about the patient's feelings, respectful of patient as a person and an equal	0.71	0.75	0.73	0.55	0.79
Discriminated due to race/ethnicity (2)	Patient perceived discrimination or inattentiveness of doctors due to patient's race or ethnicity	0.79	0.84	0.75	0.78	0.68
Disrespectful office staff (4)	Office staff were negative and rude, gave patient a hard time, talked down to patient	0.91	0.89	0.91	0.89	0.91

4 = college degree, 5 > college degree), income (≤ \$25k, > \$25k – ≤ \$40k, > \$40k – ≤ \$75k, > \$75k), health insurance (none, public health insurance only, or any private health insurance), and self-rated health (1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent). In addition, to account for possible between-site variation, we included a categorical indicator of the academic practice where the patient had his or her most recent clinic visit.

Methods of Analysis

SAS version 9.1 was used for all analyses. Because of the relatively low overall response rate, all analyses incorporated nonresponse weights based upon response propensity stratification, as described by Little and Vartivarian (2003). We explored unadjusted racial/ethnic group differences in covariates, IPC measures, and patient satisfaction measures using χ^2 analysis or analysis of variance.

To model outcomes describing global satisfaction with physicians and global satisfaction with health care, we used multiple linear regression. Logistic regression was used to model the dichotomous "recommend physicians" outcome. All models included main effects for covariates, race/ethnicity, the seven IPC measures effects, and the interactions of each IPC measure and race/ethnicity. Through backward elimination, we retained main effects with p-values $< .20$ and interaction terms with p-values $< .05$. For significant interactions, we estimated the corresponding IPC effect within each racial/ethnic group ("separate slopes" analyses); post hoc analyses tested whether IPC effects differed significantly across all possible pair-wise comparisons between racial/ethnic groups. Before fitting regression models, the IPC measures were grand-mean centered. As a result, in any model that included one or more race/ethnicity-by-IPC interaction terms, the main effect of race/ethnicity was evaluated at the joint mean value of the IPC measures retained in the model. Finally, we report the adjusted probability (ap) of the "recommend physicians" outcome corresponding to a one-unit increase above the mean value of each IPC measure.

RESULTS

Sample Characteristics

Of those contacted and eligible ($N = 2{,}411$), 69 percent participated ($N = 1{,}664$). Of those invited to participate (advance notice letter mailed) and known to be eligible (contacted, eligible), 40 percent (1664/4192) completed surveys (The American Association for Public Opinion Research 2008).

A broad age range was obtained and the majority was women (Table 2). Spanish-speaking Latinos were the oldest (mean = 63), had the lowest socioeconomic status, and were most likely to report fair or poor health (55 percent). Spanish-speaking Latinos also were much more likely to have less than a high school education than the other groups. English-speaking Latinos were

Table 2: Sample Characteristics and Interpersonal Processes-of-Care Short-Form Measures: Total Sample and by Racial/Ethnic/Language Group

Characteristic	*Total Sample n = 1,664*	*African Americans n = 435*	*English-Speaking Latinos n = 428*	*Spanish-Speaking Latinos n = 383*	*Whites n = 418*	*p-value*
Age in years, mean (SD)	50 (18)	50 (18)	42 (15)	63 (16)	48 (19)	<.0001
Sex (% women)	66	70	67	72	58	<.0001
Education (%)						
Less than high school	14	15	6	43	4	<.0001
High school	18	23	17	25	11	
Some college	27	37	37	19	17	
College degree	27	18	29	10	42	
Some postgraduate study	14	7	11	3	27	
Household income (%)						
≤ $25,000	30	38	20	52	21	<.0001
$25,001-$40,000	19	23	18	24	14	
$40,001-$75,000	27	25	35	16	26	
$75,000 or more	24	14	26	7	38	
Born in the U.S. (%)	69	96	57	2	88	<.0001
If not: years living in U.S., mean (SD)	29 (13)	19 (13)	28 (12)	29 (12)	30 (22)	<.01
Health insurance (%)						
Any private insurance	70	63	79	50	82	<.0001
Public only	26	34	15	47	15	
None	3	3	6	3	3	
Health condition needing ongoing care (%)	63	68	51	63	66	<.0001
Self-rated health fair or poor (%)	35	42	27	55	24	<.0001
Interpersonal Processes of Care Scale[†],[‡] mean (SD)						
Lack of clarity (−)	1.82 (0.93)	1.80 (0.98)^{S,W}	1.92 (0.84)^{W}	2.03 (0.96)^{A,W}	1.66 (0.90)^{A,E,S}	<.0001
Elicited concerns/ responded (+)	4.15 (0.91)	4.27 (0.95)^{E,S}	4.02 (0.86)^{A,W}	4.07 (0.93)^{A}	4.18 (0.88)^{E}	<.001
Explained results (+)	4.11 (1.12)	4.25 (1.14)^{E,S}	3.92 (1.09)^{A,W}	4.03 (1.13)^{A}	4.17 (1.09)^{E}	<.0001
Decided together (+)	3.13 (1.42)	3.16 (1.49)^{S}	3.16 (1.30)^{S}	2.81 (1.35)^{A,E,W}	3.26 (1.48)^{S}	<.001
Compassionate/ respectful (+)	4.08 (0.97)	4.29 (0.98)^{E,S,W}	4.02 (0.91)^{A}	3.94 (0.91)^{A}	3.99 (1.03)^{A}	<.0001
Discriminated due to race/ethnicity (−)	1.23 (0.62)	1.35 (0.81)^{S,W}	1.27 (0.58)^{S,W}	1.17 (0.54)^{A,E}	1.12 (0.45)^{A,E}	<.0001
Disrespectful office staff (−)	1.67 (0.88)	1.56 (0.87)^{E,S,W}	1.92 (0.92)^{A,S,W}	1.38 (0.65)^{A,E,W}	1.75 (0.94)^{A,E,S}	<.0001

[†]All measures are on a 1–5 scale: (−) indicates higher scores = worse IPC and (+) indicates higher scores = better IPC.

[‡]Superscripts indicate that the indexed mean significantly differed ($p<.05$) from the corresponding mean in one or more racial/ethnic groups designated as A, African American; E, English-speaking Latino; S, Spanish-speaking Latino; W, White.

IPC, interpersonal processes of care.

Table 3: Patient Satisfaction by Racial/Ethnic/Language Group: Unadjusted Scores

*Satisfaction Measure**	*Total Sample N = 1,624–1657*	*African Americans N = 422–432*	*English-Speaking Latinos N = 424–427*	*Spanish-Speaking Latinos N = 366–386*	*Whites N = 412–416*	*p-value*
Global satisfaction with physicians mean (SD)	3.69 (1.12)	3.78 (1.18)^{E,S}	3.54 (1.06)^{A,W}	3.56 (0.98)^{A,W}	3.79 (1.22)^{E,S}	<.001
Global satisfaction with health care mean (SD)	3.70 (1.15)	3.79 (1.20)^{E,S}	3.56 (1.08)^{A,W}	3.57 (1.04)^{A,W}	3.79 (1.25)^{E,S}	<.01
Recommend physicians (%)	81.98	83.50^{E}	76.46^{A,S,W}	86.11^{E}	82.26^{E}	<.01

*Global satisfaction measures are on a 1–5 scale with a higher score indicating greater satisfaction; the recommend physicians measure has a response set of yes versus maybe/no.

Superscripts indicate that the indexed parameter significantly differed ($p < .05$) from the corresponding parameter in one or more racial/ethnic groups designated as A, African American; E, English-speaking Latino; S, Spanish-speaking Latino; W, White.

the youngest (mean age = 42 years). Overall, the mean number of visits during the prior year was seven (SD = 8.5).

Racial/Ethnic Group Differences in IPC and Patient Satisfaction

We found significant racial/ethnic group differences on all seven IPC scales (Table 2), although the magnitude of these differences was small. Whites reported the best quality of interpersonal processes for *lack of clarity, decided together, and discriminated due to race/ethnicity,* scoring significantly higher on these measures than at least one other group. African Americans reported the best quality on *elicited concerns, responded, explained results*; *and compassionate/respectful*, scoring significantly higher than English- and Spanish-speaking Latinos on all three measures. Spanish-speaking Latinos reported significantly less *disrespectful office staff* than the other groups. Either English-speaking or Spanish-speaking Latinos reported the worst IPC on all of the IPC measures except for *discrimination due to race/ethnicity*, for which African Americans reported the worst IPC.

Unadjusted satisfaction scores also varied across racial/ethnic groups (Table 3). English- and Spanish-speaking Latinos reported significantly less satisfaction with physicians and health care than African Americans and Whites. English-speaking Latinos were significantly less likely to recommend their physician (76 percent) than Whites (82 percent), African Americans (84 percent), and Spanish-speaking Latinos (86 percent).

Associations of IPC with Patient Satisfaction

In the multivariate models (Table 4), age was significantly and positively associated with all outcomes and women were more satisfied with their physicians and health care than men. Education and income were eliminated in all final models (p values $\geq .20$). Health insurance was positively associated with satisfaction with health care and "recommend physicians" for those with public insurance only. Self-rated health was significantly and positively associated with satisfaction with physician and health care but was eliminated in the "recommend physicians" model (p value $\geq .20$). There were no significant main effects of race/ethnicity for any outcome.

Among Spanish-speaking Latinos, *lack of clarity* was significantly and negatively related to satisfaction with physicians ($B = -0.136$, $p < .05$) and health care ($B = -0.159$, $p < .01$). For all other race/ethnic/language groups, no significant effects were observed for these two measures. This IPC measure was unrelated to the "recommend physicians" outcome.

For all racial/ethnic groups, *elicited concerns/responded* was significantly and positively associated with all outcomes. Of all the IPC measures, it had the strongest relationships (largest parameter estimates) with all three outcomes: satisfaction with physicians ($B = 0.467$, $p < .0001$), satisfaction with health care ($B = 0.470$, $p < .0001$), and "recommend physicians" (OR = 2.23, CI 1.74–2.85). With all explanatory variables held at their means, the predicted probability of recommending one's physician equaled .912. The adjusted probability associated with a one-unit increase above the mean, ap, on the *elicited concerns/responded* measure equaled .955.

Explained results was significantly and positively associated with satisfaction with physicians among African Americans ($B = 0.096$, $p < .05$), English-speaking Latinos ($B = 0.134$, $p < .01$), and Whites ($B = 0.107$, $p < .05$), but not Spanish-speaking Latinos. *Explained results* was significantly and positively related to the satisfaction with health care ($B = 0.055$, $p < .05$) and "recommend physicians" (OR = 1.29; 95 percent CI 1.08, 1.51; a$P = .928$) outcomes in all groups.

In all groups, *decided together* was significantly and positively associated with all outcomes: satisfaction with physicians ($B = 0.095$, $p < .0001$); satisfaction with health care ($B = 0.065$, $p < .001$); and "recommend physicians" (OR = 1.23; 95 percent CI 1.06, 1.43; a$P = .927$).

Compassionate/respectful was significantly and positively related to satisfaction with health care among English-speaking Latinos ($B = 0.180$, $p < .001$) and Whites ($B = 0.239$, $p < .0001$) only. Among all groups, this scale was significantly and positively related to satisfaction with physicians ($B = 0.184$,

Table 4: Association of Interpersonal Processes-of-Care Short-Form Measures with Patient Satisfaction with Care

	Global Satisfaction with Physicians		*Global Satisfaction with Health Care*		*Recommend Physicians to Close Friend or Family Member*	
Variable	*B*	*p-value*	*B*	*p-value*	*OR (95% CI)*	
Covariates						
Age (in 10 year increments)	0.003	.021	0.007	<.0001	1.22	(1.09, 1.36)
Female	0.165	<.001	0.153	.002	†	†
Education*	†	†	†	†	†	†
Household income**	†	†	†	†	†	†
Health insurance		.133		.010		.089
None	0.109	.356	−0.124	.325	0.96	(0.40, 2.33)
Public only	0.102	.059	0.157	.006	1.68	(1.05, 2.68)
Any private	Reference		Reference		Reference	
Self-rated health‡	0.100	<.0001	0.133	<.0001	†	†
Race/ethnicity/language group		.059		.230	†	†
African Americans	0.110	.140	0.131	.087		
English-speaking Latinos	0.032	.691	0.081	.320		
Spanish-speaking Latinos	Reference		Reference			
Whites	0.165	.028	0.144	.061		
IPC measures						
Lack of clarity (−)	§	§	§	§	†	†
Interaction with race/ethnicity¶		.017		.007		
African Americans	0.035[S]	.437	0.048[S]	.322		
English-speaking Latinos	0.087[S]	.103	0.088[S]	.118		
Spanish-speaking Latinos	−0.136[A,E]	.013	−0.159[A,E]	.006		
Whites	−0.042	.395	−0.050	.339		
Elicited concerns/responded (+)	0.467	<.0001	0.470	<.0001	2.23	(1.74, 2.85)
Explained results (+)	§	§	0.055	.038	1.28	(1.08, 1.51)
Interaction with race/ethnicity¶		.003				
African Americans	0.096[S]	.021				
English-speaking Latinos	0.134[S]	.002				
Spanish-speaking Latinos	−0.075[A,E,W]	.111				
Whites	0.107[S]	.013				

Decided together (+)	0.095	<.0001	0.065	<.001	1.23	(1.06, 1.43)
Compassionate/respectful (+)	0.184	<.0001	[§]	[§]	2.08	(1.66, 2.61)
Interaction with race/ethnicity[¶]				.001		
African Americans			0.086[W]	.145		
English-speaking Latinos			0.180[S]	<.001		
Spanish-speaking Latinos			−0.054[E,W]	.395		
Whites			0.239[A,S]	<.0001		
Discriminated due to race/ethnicity (−)	−0.092	.028	−0.174	<.001	0.82	(0.63, 1.05)
Disrespectful office staff (−)	[§]	[§]	−0.081	.005	0.84	(0.69, 1.02)
Interaction with race/ethnicity[¶]		.005				
African Americans	0.102[E,S,W]	.041				
English-speaking Latinos	−0.096[A]	.040				
Spanish-speaking Latinos	−0.092[A]	.236				
Whites	−0.116[A]	.016				
R^2	0.47		.43		0.49	

(−) Indicates that a higher score = worse IPC; (+) indicates that a higher score = better IPC; higher satisfaction scores = greater satisfaction; that is, a higher score indicates more of the construct on a 1–5 scale.

*1 = less than high school, 2 = high school, 3 = some college, 4 = college degree, 5 = graduate degree.

**1 = ≤ $25,000, 2 = $25,001–$40,000, 3 = $40,001–$75,000, 4 = $75,000 or more.

[†]Variable dropped through backward elimination (p-value > .20 for main effects and p-value > .05 for interaction effects).

[‡]1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent.

[§]Main effect not reported due to significant interaction of IPC and race/ethnicity/language; results from stratified analyses are presented instead.

[¶]Parameter estimates within each group are from separate slopes model; in each model, superscripts indicate that the indexed parameter significantly differed (p < .05) from the corresponding parameter in one or more racial/ethnic groups designated as A, African American; E, English-speaking Latino; S, Spanish-speaking Latino; W, White.

IPC, interpersonal processes of care.

$p<.0001$) and "recommend physicians" (OR = 2.08; 95 percent CI 1.66, 2.61; a$p = .956$).

Among all groups, *discriminated due to race/ethnicity* was significantly and negatively associated with both global satisfaction outcomes: satisfaction with physicians ($B = -0.092$, $p<.05$) and health care ($B = -0.174$, $p<.001$). This IPC measure was not significantly related to the "recommend physicians" outcome.

Disrespectful office staff was significantly and negatively associated with satisfaction with physicians among English-speaking Latinos ($B = -0.096$, $p<.05$) and Whites ($B = -0.116$, $p<.05$), positively associated with this outcome among African Americans ($B = 0.102$, $p<.05$) and nonsignificant among Spanish-speaking Latinos. That is, more disrespect from office staff was associated with less satisfaction with physicians among English-speaking Latinos and Whites, and greater satisfaction with physicians in African Americans. The association between *disrespectful office staff* and satisfaction with physicians was significantly different for African Americans compared with the other groups ($p<.05$). *Disrespectful office staff* was significantly and negatively associated with satisfaction with health care ($B = -0.081$, $p<.01$) among all groups. This IPC measure was not significantly related to the "recommend physicians" outcome.

Variance in Patient Satisfaction Explained by IPC

For satisfaction with physicians, the final model explained 47 percent of the variance ($R^2 = 0.47$; Table 4), with IPC measures accounting for 41 percent of this variance. For satisfaction with health care, the final model explained 43 percent of the variance, with IPC measures accounting for 35 percent. Finally, with respect to "recommend physicians," the final model explained 49 percent of the variance (Nagelkerke 1991) with IPC measures accounting for 44 percent.

DISCUSSION

This study examined associations between seven IPC measures (reports of patients' experiences) and three patient satisfaction measures (patients' ratings of that experience) in a large diverse sample that included English- and Spanish-speaking Latinos, African Americans, and non-Latino Whites. Results overwhelmingly suggest that these interpersonal processes mattered for all groups in terms of satisfaction. It is notable that scales from all three dimen-

sions—communication, patient-centered decision making, and interpersonal style—were independently associated with all satisfaction measures.

Two IPC scales, eliciting and responding to patient concerns and patient-centered decision making, were consistently and strongly related to all outcomes regardless of race/ethnicity and language. The associations between the various IPC measures and whether patients would recommend their physicians were also similar for all race/ethnic groups, with four of the scales being positively associated with this outcome. Discrimination was also negatively associated with the two global satisfaction measures across all groups. However, the associations of four IPC scales (*lack of clarity, explained results, compassionate/respectful, and disrespectful staff*) with the two global satisfaction measures differed by race/ethnicity and language, suggesting that some interpersonal processes may be more important to patients from some groups compared to those from others. Differences in the relative importance of specific interpersonal processes may identify potential mechanisms of disparities in health care and patient satisfaction.

For Latinos, some effects of IPC depended on language. Notably, unclear communication (*lack of clarity)* was negatively associated with satisfaction only for Spanish-speaking Latinos. This is consistent with a study that found that Spanish-speaking Latinos were more dissatisfied than English-speaking Latinos and Whites with how well medical staff listened, answered their questions, explained medications, explained medical procedures and tests results, and provided reassurance and support (Morales et al. 1999). These findings suggest that we need more studies of interventions that aim to improve the clarity of communication among non-English speaking patients, such as professional interpreter services. Another difference associated with language was that the quality of explanations of examination and test results was not significantly associated with satisfaction with physicians among Spanish-speaking Latinos (although it was associated with satisfaction with health care and recommending physicians in all groups). It could be that in encounters where language barriers exist, Spanish-speaking Latinos feel less confident in reporting on the quality of specific explanations provided by physicians.

Disrespect on the part of office staff was negatively associated with satisfaction with health care in all groups, but its effects on satisfaction with physicians differed across groups. For African Americans, reporting more disrespect from office staff was associated with greater satisfaction with their physicians, while this was not the case in the other groups. Reasons for this are unclear and require further study and confirmation in other samples. Perhaps, greater sensitivity to discrimination by office staff makes African Americans more appre-

ciative of positive encounters with physicians. Disrespectful office staff did not affect reports of recommending physicians, suggesting that interactions with office staff are not of central importance in patient recommendations.

Our findings that compassionate and respectful care was associated with the two physician-related outcomes regardless of race/ethnicity are similar to those of Saha, Arbelaez, and Cooper (2003) who found that respect was associated with satisfaction for African Americans, Whites, and Asians, and another study in diverse ethnic groups that found that being treated with dignity by providers was associated with greater patient satisfaction (Beach et al. 2005).

Similar to others (Gattellari, Butow, and Tattersall 2001; Beach et al. 2005), we found that eliciting and responding to patient concerns as well as patient-centered decision making were consistently and strongly related to patient satisfaction. These results suggest specific ways in which physician behavior might improve satisfaction—an advantage of assessing reports of physician behavior rather than ratings. Only a few studies have focused on interventions that aim to improve skills to elicit patients' concerns and involve them in their care (Carrillo, Green, and Betancourt 1999; Epstein and Street 2007). Limited evidence suggests that whereas physician behavior can be changed (frequency with which physicians elicit patient's concerns), interventions may not affect patient outcomes, such as adherence and satisfaction, without similar attention to patient activation (Joos et al. 1996; Kiesler and Auerbach 2006). Development of interventions to improve IPC in clinical practice is an important future direction.

Because our sample was drawn from a single academic health care system, generalizability of the findings is a major limitation of the study. The IPC survey is a new instrument; thus, further investigation and replication are warranted. Another limitation is that we had no provider-specific covariates since the IPC survey asks patients to average reports across all providers seen in the previous year. We did, however, control for clinic site as a covariate. In addition, the sample did not include Asian/Pacific Islander patients among whom determinants of satisfaction may differ from the groups included in this study.

Our findings support the conclusion that various IPC contribute uniquely to each satisfaction measure, suggesting that patients distinguish these dimensions in evaluating their health care. For example, four IPC measures influenced whether patients would recommend their physicians, with elicitation of concerns and compassion being more strongly associated with this outcome than the other measures; a one-point increase on the elicitation or compassion/respect measures was associated with more than a twofold increase in the odds that patients would recommend their physicians to others.

The fact that all models included unique effects of multiple IPC measures suggests a need to focus on multiple facets of IPC to maximize patient satisfaction. In fact, in a review of the processes of decision making in cancer care, Epstein and colleagues emphasize that listening, clear explanations, and unhurried manner are all elements of patient-centered decisions (Epstein and Street Jr. 2007).

In previous studies, ethnic differences in IPC or satisfaction might reflect actual differences in care or, alternatively, measurement bias. Our results offer a significant advancement in the field as the multi-item IPC scales were subjected to rigorous psychometric testing to ensure their measurement invariance (lack of bias) across the four groups (Stewart et al. 2007). Furthermore, as reports of what actually happened during medical encounters, the IPC scales may be more objective and better able to capture group differences in care, compared to ratings, which are more strongly influenced by expectations (Cleary et al. 1988; Weech-Maldonado et al. 2003).

Substantial literature supports the link between effective physician–patient interactions and positive patient outcomes (Stewart 1995; Beach et al. 2005; Epstein and Street Jr. 2007). Future research can explore associations of specific interpersonal processes to patient outcomes, such as self-care behaviors, adherence to recommended follow-up care, and psychological well-being. Such research would make a substantial contribution to addressing disparities in health and health care.

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Appendix SA1: Author Matrix.

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