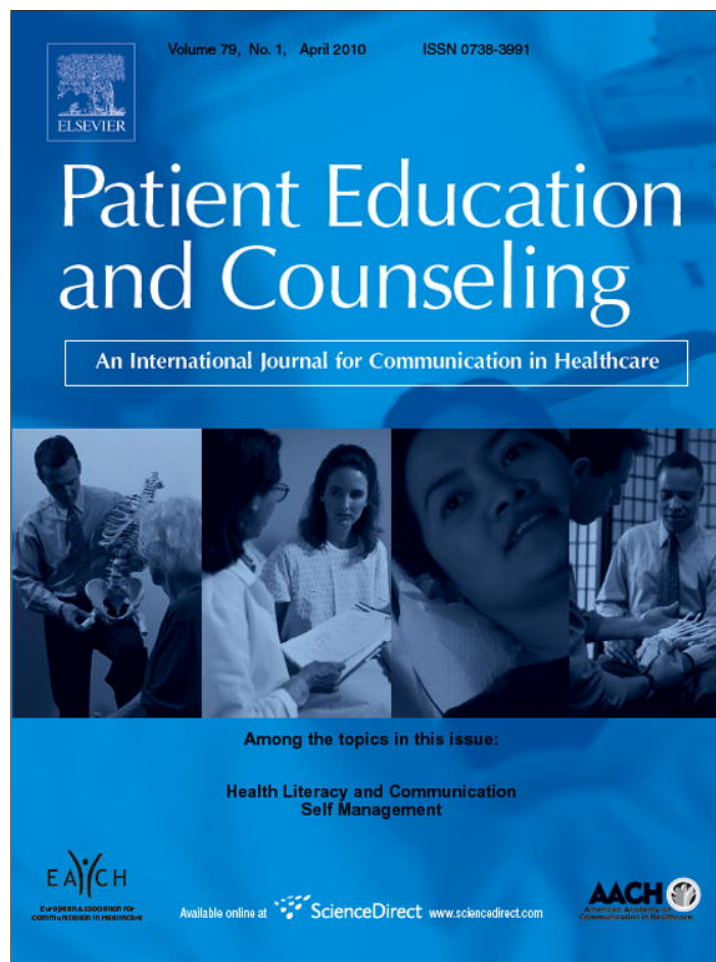


Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

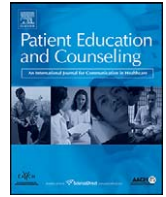
In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>



Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou

Health Literacy and Communication

Patient–provider communication and low-income adults: Age, race, literacy, and optimism predict communication satisfaction

Jakob D. Jensen^{a,b,*}, Andy J. King^a, Lisa M. Guntzville^a, LaShara A. Davis^a^a Purdue University, Department of Communication, West Lafayette, USA^b Purdue University, Regenstrief Center for Healthcare Engineering, West Lafayette, USA

ARTICLE INFO

Article history:

Received 9 July 2009

Received in revised form 17 September 2009

Accepted 18 September 2009

Keywords:

Communication satisfaction

Low-income

Health literacy

Numeracy

Optimism

ABSTRACT

Objective: To assess whether literacy, numeracy, and optimism are related to low-income adults' satisfaction with their healthcare provider's communication skills.

Methods: Low-income adults ($N = 131$) were recruited from seven counties in Indiana through University extension programs. To achieve research triangulation, participants were surveyed and interviewed about their communication satisfaction with health providers.

Results: Survey data revealed that four variables significantly predicted satisfaction: age, race, literacy, and optimism. Low-income adults in the current study were more critical of their healthcare provider's communication skills if they were younger, White, functionally literate, and pessimistic. Follow-up interviews confirmed this pattern and suggested it was a byproduct of patient activism.

Conclusion: In low-income populations, communication satisfaction may be lower for groups that are traditionally active in doctor–patient interactions (e.g., younger patients, patients with higher literacy skills).

Practice implications: Healthcare providers should be aware that older, non-White, optimistic, and literacy deficient patients report greater communication satisfaction than their younger, White, pessimistic, and functionally literate peers. Both groups may be coping with their situation, the former by withdrawing and the latter by actively pushing for a higher standard of care. Healthcare providers should continue to seek out ways to facilitate dialogue with these underserved groups.

© 2009 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Past research has identified communication satisfaction as an important outcome in healthcare interactions [1]. Patients who are satisfied with their healthcare provider's communication skills are more likely to adhere to recommendations across the healthcare continuum [1,2]. In recognition of this research, *Healthy People 2010* established a goal to “increase the proportion of persons who report that their healthcare providers have satisfactory communication skills” [3, pp. 11–17]. Four aspects of communication satisfaction were targeted by *Healthy People 2010*: determining if healthcare providers listen carefully, explain things in a way patients could understand, show respect for what patients had to say, and spent enough time interacting with their patients [3]. All four aspects of communication satisfaction also appear on the Medical Expenditures Panel Survey (MEPS) [4].

To date, several patient characteristics have been linked to the communication satisfaction targets set by *Healthy People 2010*. Women, non-Hispanics, and those under the age of 65 are all less likely to be satisfied with their provider's communication skills [5,6]. Low-income populations and individuals without health insurance or a usual source of care also report lower communication satisfaction ratings [5,7].

Concerning the latter, communication problems between low-income populations and healthcare providers are especially worrisome, as low-income individuals have fewer resources and limited healthcare interactions [7–9]. A primary concern of the medical community is that dissatisfied low-income patients may disregard health advice or reject the healthcare system as a whole, widening healthcare disparities [4,7,10].

Previous research examined the relationship between physician communication and patient communication satisfaction [11], but factors influencing patient perceptions — perhaps regardless of provider behavior — are less clear. For instance, literacy and numeracy problems are more common in low-income adults [12,13], and recent studies suggest that skill deficiencies may be related to communication dissatisfaction [14,15] and a variety of negative health outcomes [16–18]. Moreover, given the many

* Corresponding author at: 100 N. University St., Beering Hall #2144, West Lafayette, IN 47907, USA. Tel.: +1 765 494 7781; fax: +1 765 496 1394.

E-mail addresses: jdjensen@purdue.edu, jakobdjensen@gmail.com (J.D. Jensen).

challenges that low-income adults face in the healthcare system, coping mechanisms (e.g., optimistic or pessimistic thinking) may dominate their perceptions and behaviors [19,20]. The present study addresses these issues by examining the relationship between low-income adults' communication satisfaction and literacy, numeracy, and optimism. To achieve research triangulation, low-income adults were both surveyed and interviewed about communication satisfaction. The surveys and interviews engaged the following research questions:

RQ1: How satisfied are low-income adults with their healthcare provider's communication skills?

RQ2: Do literacy, numeracy, and optimism predict low-income adults' satisfaction with their healthcare provider's communication skills?

RQ3: How do low-income adults explain their healthcare communication satisfaction ratings?

2. Methods

2.1. Participants

One hundred and thirty-one Indiana residents participated in this study. The sample included residents from seven Indiana counties. Recruitment occurred through University extension programs servicing low-income populations in both urban and rural areas. To qualify as low-income, participants had to be at or below 200% of the poverty line, a threshold routinely used by Indiana agencies to identify individuals in need. 97 females (74%) and 34 males (26%) participated in the study. Few participants had a college degree (15.3%) or a junior college/vocational tech degree (10.7%). Fifty-five percent of participants had only a high school education. Roughly one in five (19.1%) had not completed high school. Participants' mean age was 42.9 years ($SD = 17.5$). The sample was racially diverse, with 59.5% Caucasian participants, 26% African American, 9.2% Hispanic, 3.8% of mixed heritage, and 1.5% self-described as "other." The current sample shares some demographic characteristics with the 2002 MEPS data, deviating primarily on sex and income, as the current study included a greater proportion of female participants and only sampled from low-income populations (see Table 1 for comparisons).

2.2. Procedure

An institutional review board approved the protocol for this study. Participants were recruited, and participated, in their homes or in shelters, food pantries, rehab centers, or transitional living spaces. University extension employees that frequently interact with low-income populations through existing programs distributed fliers seeking participants for the study. The flier indicated that interested individuals could participate in a first come, first serve system on a particular day and time (e.g., the following Thursday between 1 and 4 pm). No interested individuals were denied participation in the study, and no data were excluded from analysis. Participants received \$30 in grocery certificates for completing the study. After giving informed consent, participants completed a three-page survey (Flesch-Kincaid grade level = 4.9) in either normal-sized (12-point Times New Roman) or large-sized font (18-point Times New Roman). Participants could elect to have the survey read by a researcher (to accommodate limited literacy participants). Eleven people (8%) asked to have the survey read to them. The survey assessed participants' demographics, numeracy, and optimism. After the survey, researchers administered an oral measure of health literacy. Finally, participants completed a semi-structured interview about healthcare issues. Digital recorders captured the interviews, and participants were asked questions

Table 1

New table demographic comparison of the current study with the 2002 MEPS.

	Current study	2002 MEPS [5]
Sex		
Male	26.0%	48.1%
Female	74.0%	51.9%
Race/ethnicity		
Caucasian/White	59.5%	82.4%
African American/Black	26.0%	11.3%
Hispanic/Latino	9.2%	12.2%
Mixed heritage	3.8%	1.1%
Other	1.5%	5.2%
Education		
Completed high school	80.9%	81.0%
Did not complete high school	19.1%	19.0%

Note: Data regarding income and geographic location is not included in this table, as the sample for the current study was all low-income individuals in the Midwest. The current study had greater detail about attained education, but the numbers in the table represent a calculation to mirror demographics presented in a report of the MEPS data [5]. Additionally, the race/ethnicity data for the 2002 MEPS adds to more than 100% because they differentiated between race and ethnicity, whereas the current study combined the two. All 2002 MEPS estimates are taken from those reported in another study [5].

about their communication satisfaction in healthcare situations. Interviews ranged from 15 to 90 min, which provided approximately 200 pages of single-spaced data.

2.3. Outcome measures

2.3.1. Communication satisfaction

During the interview, participants were asked four questions used on the MEPS that assess satisfaction with healthcare communication (four-point response scale: *never, sometimes, usually, always*) [4]. All four questions started with "In your opinion, how often do doctors or other health providers" and ended with: (a) listen carefully to you ($M = 2.95, SD = .72$), (b) explain things in a way you can understand ($M = 3.11, SD = .75$), (c) show respect for what you have to say ($M = 3.13, SD = .81$), or (d) spend enough time with you ($M = 2.68, SD = .95$). *Healthy People 2010* (objective 11-6) utilized the same language for communication satisfaction [3,21].

Open-ended interview questions allowed for more thorough exploration of factors explaining participant responses. The follow-up questions were designed to encourage conversation about communication satisfaction and related outcomes. After each of the close-ended communication satisfaction questions, participants were asked a corresponding follow-up question: (a) How do you know when a doctor or health provider is listening carefully to you? (b) What are the things that doctors or other health providers do that help you to understand? (c) How do you know when a doctor or other health provider is showing respect for what you have to say? (d) Other than length of time, how do you know that a doctor has spent enough time with you? For the current study, responses to the follow-up questions provide further insight about results of our statistical analysis, and present some examples of individual experience with healthcare communication (dis)satisfaction.

2.4. Predictor variables

2.4.1. Demographics

Participants' gender (female, male), race (White, non-White), education (less than high school, high school degree, junior college or vocational tech degree, college degree), and age were measured.

2.4.2. Visitation history

Participants were asked whether they had been to a healthcare provider in the last 12 months (*yes, no*).

2.4.3. Literacy

Literacy was measured using the full 66-item Rapid Estimate of Adult Literacy in Medicine (REALM) [22]. The REALM is a word recognition test where participants are given a list of 66 medical terms and asked to read them aloud. Literacy level is based on the number of correct answers: 0–18 correct (\leq 3rd grade), 19–44 (4–6th grade), 45–60 (7–8th grade), and 61–66 (\geq 9th grade). Individuals that score below a 61 on the REALM will struggle with most health materials [22]. Participants in the current study had a raw mean REALM score of 54.38 ($SD = 14.55$). Participants were distributed as follows: \leq 3rd grade (5.3%), 4–6th grade (11.5%), 7–8th grade (35.1%), and \geq 9th grade (48.1%).

2.4.4. Numeracy

Numeracy was measured using an abbreviated version of the Test of Functional Health Literacy in Adults (TOFHLA) [23]. Four items were used to assess numeracy based on previous recommendations [24]. Individuals that respond correctly to four (out of four items) should have sufficient numerical ability to navigate most health situations. Participants in the current study had a mean numeracy score of 2.79 ($SD = 1.05$).

2.4.5. Optimism

Participant's optimism was measured using the Life Orientation Test-Revised (LOT-R). The LOT-R is a six-item scale measuring individuals' optimism and pessimism [25]. Respondents answer each question using five-point scales ranging from *strongly disagree* to *strongly agree*. The total optimism score is a summation of the six items, with a possible range of six (very low optimism) to 30 (very high optimism). Sample items include "In uncertain times, I usually expect the best," "I hardly ever expect things to go my way," and "Overall, I expect more good things to happen to me than bad." The Lot-R has proven to be a reliable measurement instrument (Cronbach's alphas ranging from .75 to .89) and demonstrated good test-retest reliability (Cronbach's alpha = .79) [25,26]. In the present study, the scale had acceptable reliability (Cronbach's alpha = .70) and participants had a mean optimism score of 21 ($SD = 4$).

3. Results

3.1. Communication satisfaction

The first research question asked how satisfied low-income adults were with their healthcare provider's communication. Chi-square analyses revealed that response options were not evenly distributed for any of the four questions (see Table 2). Many people expressed satisfaction with the communication that took place in healthcare situations, but also indicated areas of tension. Roughly one in five felt health providers were not listening carefully enough or respecting what they had to say. One in seven felt health providers failed to consistently explain things in a way they could understand. Almost half were displeased with the amount of time health providers spent with them during interactions.

The percentage of people dissatisfied with their healthcare communication was considerably higher in the current study than observed in the past. In the 2006 MEPS data, 10.0% of low-income adults (125–200% of the federal poverty line) felt that doctors were not listening carefully, 10.9% felt that doctors failed to explain things in a way they could understand, 9.5% felt that doctors did not respect what they had to say, and 16.1% felt that doctors did not spend enough time with them [4].

One difference between the two datasets is that, compared to the MEPS, the current study contained a greater proportion of females. Past research has found that females are less satisfied with their healthcare provider's communication [5,6]. It is possible that

some of this discrepancy is explained by gender differences; however, previously observed gender effects have been very small (1–3% point differences) and statistically significant for only one satisfaction outcome (time) [5,6]. Another difference between the two datasets is that the MEPS only considered adults who had been to a doctor or other health provider in the last 12 months. The current study included all low-income adults, regardless of their visitation history. To check whether this distinction meaningfully impacted the results, participants in the present study who had not visited a healthcare provider in the last 12 months ($N = 16$) were eliminated from the sample. Removing these participants did not substantially alter the previously described patterns (see Table 2).

3.2. Factors that predict communication satisfaction

The second research question asked whether literacy, numeracy, and optimism predicted low-income adults' satisfaction with their healthcare provider's communication. To address this question, four hierarchical regression analyses were performed (one for each communication satisfaction question) with nine variables entered in separate blocks. Demographic variables were entered first and, within demographics, order was determined by past research (i.e., significant predictors entered first, as follows: Step 1, age; Step 2, gender; Step 3, education; Step 4, ethnicity; Step 5, race). Health provider visitation history was entered in Step 6, as past research has suggested that routine (and recent) visitation is positively related to satisfaction [7]. Following visitation history, three new predictors were entered: two skills (literacy, numeracy) were entered in Step 7 and Step 8, respectively, and one personality trait (optimism) was entered in Step 9. Thus, the hierarchical regression was a conservative test with proven demographic factors entered first, and then untested skills and personality traits entered second.

3.2.1. Listen carefully

For listen carefully, the regression equation was significant at the fifth block (race), $R = .29$, $R^2 = .08$, $F(5, 108) = 2.02$, $p = .010$ (see Table 3). Race was the only significant coefficient (coded as White or Non-White). White participants were more likely than non-White participants to feel that health providers did not listen carefully. Literacy was also marginally significant in later blocks. Individuals with greater literacy skills were more likely to be critical of their health providers.

3.2.2. Explain things

In the hierarchical regression that tested how often participants felt that healthcare providers explained things in a way they could understand, the regression equation was significant at the ninth block (optimism), $R = .35$, $R^2 = .12$, $F(9, 104) = 1.63$, $p = .036$. Optimism was the only significant predictor variable in the final equation. More optimistic participants felt that doctors did a better job explaining things in a way they could understand. Literacy was also marginally significant; once again, individuals with greater literacy skills were more likely to be critical of their health provider.

3.2.3. Respect what you have to say

In the hierarchical regression that tested how often participants felt that healthcare providers respected what they had to say, the regression equation was significant at the seventh block (literacy), $R = .35$, $R^2 = .12$, $F(5, 106) = 1.37$, $p = .007$, and marginally significant at the ninth block (optimism), $R = .40$, $R^2 = .16$, $F(9, 102) = 2.17$, $p = .062$. At the ninth block, literacy was the only significant predictor. Once again, those with greater literacy were more likely to be critical of their health provider. Both age and optimism were marginally significant; younger participants and

Table 2
Low-income adults' healthcare provider communication satisfaction scores.

How often do doctors or other health providers...	Listen carefully to you		Explain things in a way you can understand		Show respect for what you have to say		Spend enough time with you	
	All participants	Visited last 12 months	All participants	Visited last 12 months	All participants	Visited last 12 months	All participants	Visited last 12 months
Always	29 (24.0%)	24 (23.3%)	37 (30.8%)	29 (28.4%)	46 (38.7%)	41 (39.8%)	28 (24.3%)	23 (23.2%)
Usually	57 (47.1%)	50 (48.5%)	63 (52.5%)	58 (56.9%)	45 (37.8%)	40 (38.8%)	33 (28.7%)	31 (31.3%)
Sometimes	39 (28.9%)	29 (28.2%)	16 (13.3%)	12 (11.8%)	26 (21.8%)	20 (19.4%)	43 (37.4%)	36 (36.4%)
Never	0 (00.0%)	0 (00.0%)	4 (03.3%)	3 (2.9%)	2 (01.7%)	2 (01.9%)	11 (09.6%)	9 (9.1%)
χ^2	10.7**	11.0**	67.0***	68.9***	43.0***	40.1***	18.6***	16.8***
df	2	2	3	3	3	3	3	3
N	121	103	120	102	119	103	115	99

Note: Displayed percentages represent the number of participants who chose each response option. The first column for each question represents all participants in the study regardless of health provider visitation history. The second column represents only participants who had been to see a healthcare provider in the last 12 months. Significant chi-squares indicate that response options are not evenly distributed.

[†] $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3
Hierarchical regression predicting communication satisfaction from demographics, visitation history, literacy, numeracy, and optimism.

How often do doctors or other health providers...	Listen carefully to you		Explain things in a way you can understand		Show respect for what you have to say		Spend enough time with you	
	B (SE)	R ²	B (SE)	R ²	B (SE)	R ²	B (SE)	R ²
1. Age	.000 (.005)	.010	-.007 (.005)	.000	-.010 (.005) [†]	.001	.012 (.006) [†]	.064**
2. Gender	.170 (.163)	.014	.056 (.166)	.000	.084 (.178)	.001	.079 (.218)	.067
3. Education	.021 (.078)	.015	.009 (.080)	.000	.113 (.084)	.006	.099 (.106)	.069
4. Ethnicity	-.093 (.367)	.027	-.325 (.376)	.021	.014 (.399)	.012	.202 (.485)	.069
5. Race	.345 (.171) [*]	.086 [†]	.209 (.176)	.058 [*]	.247 (.190)	.061 [*]	.140 (.229)	.074
6. Visitation history	-.052 (.198)	.087	.025 (.203)	.058	.168 (.223)	.064	-.138 (.277)	.077
7. Literacy	-.012 (.007) [†]	.101	-.014 (.007) [†]	.086 [†]	-.020 (.007) [†]	.127**	-.017 (.009) [†]	.103 [†]
8. Numeracy	.071 (.076)	.110	.011 (.078)	.086	-.065 (.082)	.131	.092 (.102)	.110
9. Optimism	.030 (.019)	.130	.042 (.020) [*]	.124 [*]	.039 (.021) [†]	.161 [†]	.007 (.026)	.111
Constant	2.252 (.940)		3.575 (.966)		2.967 (1.026)		1.721 (1.245)	
N	114		114		112		108	

Note: Coefficients (B) and standard errors (SE) are for the final model in which all variables are entered. The R² column represents the amount of variance explained by all of the blocks included up to that point. Subtracting R² from the previous block will yield R² change (i.e., the amount of variance explained by that block alone).

[†] $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

those who were more skeptical were more likely to feel disrespected by their doctors.

3.2.4. Spend enough time

In the hierarchical regression that tested whether participants felt that healthcare providers spent enough time with them, the regression equation was significant at the first block (age), $R = .25$, $R^2 = .06$, $F(1, 106) = 7.19$, $p = .008$, and marginally significant at the seventh block (literacy), $R = .32$, $R^2 = .10$, $F(7, 100) = 1.63$, $p = .095$. In the final model, both age and literacy were marginally significant predictors. Younger participants and those with greater literacy were again more likely to think that health providers did not spend enough time with them.

3.3. Explanations of communication satisfaction ratings

To better understand participant perceptions, the current study utilized follow-up interview questions after all of the communication satisfaction questions. The purpose of the follow-up questions was to identify underlying factors that might help to explain, and perhaps confirm, participant survey responses.

Survey data revealed that low-income adults were more critical of their healthcare provider's communication skills if they were younger, White, functionally literate, and pessimistic. Interviews

were consistent with these findings and, more importantly, they suggested two possible explanations for the observed patterns: patient activism and awareness.

3.3.1. Patient activism

Past research has suggested that some patients are more assertive than others during healthcare interactions [27,28]. Patient assertiveness or activism is typically viewed as a positive behavior that improves healthcare outcomes; however, in the present study, patient activism seemed to be negatively related to communication satisfaction. For example, Diane (all names are pseudonyms) expressed dissatisfaction with her healthcare provider's communication skills while at the same time stressing her own activism:

They don't give details to tell you what it is or what it's caused from unless you ask. They'll tell you what you have, but then you better ask what it is or what it consists of 'cause they're not gonna just explain it to you. ... they don't explain it to you, you have to ask 'em (43-year old pessimistic White female with 7–8th grade reading level).

Active patients seemed more likely to be dissatisfied with their communication environment, and many were increasingly angry about the situation. Melanie vented her frustration:

I don't know. . . like my doctor sometimes I'll ask him a question and he'll be like, what, and I'll ask him again, and he'll say what, and I'm like will you freakin' listen to me? . . . This jerk wants to get me out of here, get my money and go to the next patient, you know? (25-year old pessimistic White female with a 9th grade reading level or higher).

Nadine was also frustrated about her doctor's unwillingness to answer questions, but she saw the situation as a larger pattern of decline.

I've only had two doctors probably my whole life that have listened to me. The rest just. . . I don't think they're listening. I don't even think they're taking anything in. . . I think that we're just a number. That's how I feel. And it's getting worse, and people that I know that go to the doctor all the time. . . like my aunts and my uncles. . . it's just getting worse (53-year old pessimistic White female with a 9th grade reading level or higher).

Thus, one reason younger, White, functionally literate, and pessimistic individuals might be less satisfied with their healthcare provider's communication is because they are more active than their peers. This activism seems to inversely impact their satisfaction, perhaps by creating conflict with non-responsive systems.

3.3.2. Patient awareness

In healthcare interactions, low-income patients are more likely to receive subpar care [29] and limited communication [30]. Many of the unsatisfied participants in this study seemed to perceive (real or imagined) service inequalities. For instance, Joanne felt that doctors treated her differently because of her insurance status:

Right now I have a problem with [my daughter's] doctor and I just went to see him last week and I always feel like he's pushing us out of there, whether it's because, you know, she's on state insurance right now and maybe he's not makin' enough money off of her, but I always feel like he's pushing us out (28-year old pessimistic White female with a 9th grade reading level or higher).

Dissatisfied participants also interpreted their healthcare provider's communication in light of other problems in the healthcare system. For instance, Doug was displeased with the amount of time doctors spent with him, but his assessment seemed to be based on a waiting room to visitation ratio.

I. . . sit in the waiting room forever. . . and then you get back there and you have to wait a half hour, twenty minutes later. . . then they're in the room with you maybe 5–10 minutes (36-year old pessimistic White male with a 9th grade reading level or higher).

Veronica echoed this idea, and added that the time limitation seemed to stem from staffing problems:

There. . . seems to never be enough doctors so they [are] spread too thin. I usually, whenever I've gone to a doctor or a hospital or something like that, I spend more time with the nurse than the actual doctor (23-year old pessimistic White female with a 9th grade reading level or higher).

Paula noted that hurried healthcare providers often neglected basic elements of communication:

I mean you never, ever have a doctor say to you, "do you have any more questions?" You never have a doctor say that to you. It's almost like they're afraid to say that, that you're gonna come out with 10 questions and they don't have time for 10 questions, so they need to rush on (24-year old pessimistic Hispanic female with a 7th–8th grade reading level).

So, another reason participants seemed to be dissatisfied was because they were (perhaps increasingly) aware of the limitations they faced in the healthcare system.

4. Discussion and conclusion

4.1. Discussion

Past research has demonstrated that income is negatively related to communication satisfaction in healthcare interactions [4]. The present study replicated this basic finding; however, low-income adults were even more dissatisfied than previously observed. It is not clear why this might be the case, although it could stem from differences in the sample population (i.e., an Indiana sample vs. a national sample) or sampling timeframe (i.e., the MEPS data is from 2006 and the current study was conducted in 2008). Future work should further investigate this finding to help determine how communication satisfaction can be improved and estimated in low-income populations.

Low-income adults in the current study were more critical of their healthcare provider's communication skills if they were younger, White, functionally literate, and pessimistic. Past research has shown that younger, White, educated patients are more likely to be active in physician–patient encounters [27,28]. Thus, the present study suggests that low-income adults' communication satisfaction may be negatively related to patient activism. Past research has found that satisfaction and activism are positively related in most populations [28]; however, low-income adults may differ in this regard as increased activism may be (1) a response to past problems or (2) a mechanism by which they become aware of the limitations they face within the healthcare system [29]. Concerning the latter, research suggests physicians are less likely to encourage interaction or provide feedback when communicating with lower social economic status (SES) patients [30], a pattern that may prove frustrating for more skilled (and perhaps active) members of the group.

One implication of this finding is that researchers should be cautious with how they interpret communication satisfaction scores, particularly those tracked by *Healthy People 2010*. Past research has suggested that low-income adults have lower communication satisfaction scores; however, the more skilled individuals within this group seem to be pulling the numbers down. If literacy skills increase in low-income populations, communication satisfaction scores could decrease. Similarly, increased communication satisfaction scores within low-income populations could be more reflective of dwindling patient activism (i.e., less skill, more coping) than improvements in communication performance.

Several limitations should be noted concerning this study. First, the sample may not be representative of all adults in the U.S. as participants were only recruited from seven counties in the state of Indiana. Second, the analyses offered in the current study are correlational, and therefore it is not possible to make claims about causality or ordering of variables. Finally, participants provided self-reports concerning their communication satisfaction, a situation that leaves open the possibility of perceptual or memory bias.

4.2. Conclusion

Communication dissatisfaction appears to be more common in low-income adults than in higher SES adults. The present study

complicates the situation by revealing more skilled (and perhaps active) individuals within low-income populations are most critical of their care. It is not surprising that skilled low-income adults should feel this way, as past research found healthcare providers communicate poorly with lower SES groups [29], and because significant economic disparities undermine healthcare access and service [7,8]. Future research should further investigate low-income adults' perceptions of their healthcare providers' communication skills. Special attention should be paid to the relationship between patient skills, patient activism, and communication satisfaction. Researchers should also consider current events factors (e.g., economic recession) that might make consumers less satisfied with all goods and services.

4.3. Practice implications

When it comes to low-income populations, healthcare providers should be aware that older, non-White, optimistic, and literacy deficient patients tend to report greater communication satisfaction than their younger, White, pessimistic, and functionally literate peers. Both groups may be coping with their situation, the former by withdrawing and the latter by actively pushing for a higher standard of care. These findings suggest that the complex task of increasing skills in low-income populations might not be an efficient means of improving patient communication satisfaction. Healthcare systems could engage individuals who are withdrawing by continuing to develop interfaces that accommodate patients with limited skills as well as encouraging providers to initiate dialogue. Active patients might be less satisfied with their communicative experiences with physicians, but this dissatisfaction might be able to be used to improve self-management. Physicians assisting patients in improving self-management will improve health outcomes, and acts as a way to channel patient activism. This might allow patients engaging in activism to improve their health as well as establish a more collaborative, satisfying interaction style with their physician.

Acknowledgements

Jakob D. Jensen is an Assistant Professor in the Department of Communication at Purdue University as well as a Research Associate in the Regenstrief Center for Healthcare Engineering. Andy J. King, Lisa Guntzviller, and LaShara A. Davis are all doctoral students in the Department of Communication at Purdue University. This research was supported by a grant from the Regenstrief Center for Healthcare Engineering. The authors would like to thank Steve Witz, Ken Musselman, Bart Collins, Mary Schultz, and all of the Purdue extension staff members who helped with the recruitment process.

References

- [1] Ong LM, de Haes JC, Hoos AM, Lammes FB. Doctor-patient communication: a review of the literature. *Soc Sci Med* 1995;40:903–18.
- [2] Roter DL, Hall JA. Doctors talking with patients/patients talking with doctors: improving communication in medical visits. Westport, CT: Auburn House; 1992.
- [3] United States Department of Health and Human Services. Healthy People 2010, 2nd ed: with understanding and improving health and objectives for improving health. Washington, DC: US Government Printing Office; 2000.
- [4] 2006 Medical Expenditures Panel Survey, Agency for Healthcare Research and Quality, <http://www.meps.ahrq.gov/mepsweb:2006> [accessed 9 June 2009].
- [5] DeVoe JE, Wallace LS, Fryer GE. Measuring patients' perceptions of communication with healthcare providers: do differences in demographic and socioeconomic characteristics matter? *Health Expect* 2009;12:70–80.
- [6] DeVoe JE, Wallace LS, Fryer GE. Patient age influences perceptions about healthcare communication. *Fam Med* 2009;41:126–33.
- [7] DeVoe JE, Wallace LS, Pandhi N, Solotaroff R, Fryer GE. Comprehending care in a medical home: a usual source of care and patient perceptions about healthcare communication. *J Am Board Fam Med* 2008;21:441–50.
- [8] Fiscella K, Franks P, Gold MR, Clancy CM. Inequality in quality: addressing socioeconomic, racial, and ethnic disparities in healthcare. *J Am Med Assoc* 2000;283:2579–84.
- [9] Hussey P, Anderson G, Berthelot J, Feek C, Kelley E, Osborn R, Raleigh V, Epstein A. Trends in socioeconomic disparities in healthcare quality in four countries. *Int J Qual Healthcare* 2008;20:53–61.
- [10] Fiscella K, Franks P, Clancy CM. Skepticism toward medical care and healthcare utilization. *Med Care* 1998;36:180–9.
- [11] Wanzer MB, Booth-Butterfield M, Gruber K. Perceptions of healthcare providers' communication: relationships between patient-centered communication and satisfaction. *Health Commun* 2004;16:363–83.
- [12] Institute of Medicine. Health literacy: a prescription to end confusion report brief. Washington, DC: National Academies; 2004. <http://www.iom.edu/cms/3775/3827/19723/19726.aspx> [accessed 9 June 2009].
- [13] Kutner M, Greenberg E, Jin Y, Boyle B, Yung-Chen H, Dunleavy E. Literacy in everyday life: results from the 2003 national assessment of adult literacy. Washington, DC: US Government Printing Office; 2007.
- [14] Katz MG, Jacobsen TA, Veledar E, Kripalani S. Patient literacy and question-asking behavior during the medical encounter: a mixed-methods analysis. *J Gen Intern Med* 2007;22:782–6.
- [15] Sudore RL, Landefeld CS, Perez-Stable EJ, Bibbins-Domingo K, Williams BA, Schillinger D. Unraveling the relationship between literacy, language proficiency, and patient-physician communication. *Patient Educ Couns* 2009;75:398–402.
- [16] Baker DW, Gazmararian JA, Williams MV, Scott T, Parker RM, Green D, Ren J, Peel J. Health literacy and use of outpatient physician services by Medicare managed care enrollees. *J Gen Intern Med* 2004;19:215–20.
- [17] Paasche-Orlow MK, Wolf MS. The causal pathways linking health literacy to health outcomes. *Am J Health Behav* 2007;31:S19–26.
- [18] Williams MV, Davis T, Parker RM, Weiss BD. The role of health literacy in patient-physician communication. *Fam Med* 2004;34:383–9.
- [19] Rasmussen HN, Wrosch C, Scheier MF, Carver CS. Self-regulation processes and health: the importance of optimism and goal adjustment. *J Pers* 2006;74:1721–47.
- [20] Scheier MF, Carver CS. Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychol* 1985;4:219–47.
- [21] Healthy people 2010 midcourse review. US Department of Health and Human Services; 2009. <http://www.healthypeople.gov/data/midcourse> [accessed 10 June 2009].
- [22] Davis TC, Long SW, Jackson RH, Maveaux EJ, George RB, Murphy PW, Crouch MA. Rapid estimate of adult literacy in medicine: a shortened screening instrument. *Fam Med* 1993;25:391–5.
- [23] Parker RM, Baker DW, Williams MV, Nurss JR. The test of functional health literacy in adults: a new instrument for measuring patients' literacy skills. *J Gen Intern Med* 1995;10:537–41.
- [24] Baker DW, Williams MV, Parker RM, Gazmarian JA, Nurss JR. Development of a brief test to measure functional health literacy. *Patient Educ Couns* 2004;38:33–42.
- [25] Scheier MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *J Pers So Psychol* 1994;67:1063–78.
- [26] Steed LG. A psychometric comparison of four measures of hope and optimism. *Educ Psychol Meas* 2002;62:466–82.
- [27] Nussbaum JF, Ragan S, Whaley B. Children, older adults, and women: impact on provider-patient interaction. In: Thompson TL, Dorsey AM, Miller KI, Parrott R, editors. *Handbook of health communication*. Mahwah, NJ: Erlbaum; 2003. p. 183–206.
- [28] Street RL, Gordon HS, Ward MM, Krupat E, Kravitz RL. Patient participation in medical consultations: why some patients are more involved than others. *Med Care* 2005;43:960–9.
- [29] Grossman E, Legedza AT, Wee CC. Primary care for low-income populations: comparing healthcare delivery systems. *J Healthcare Poor Underserved* 2008;19:743–57.
- [30] Willems S, De Maesschalck S, Deveugele M, Derese A, De Maeseneer J. Socio-economic status of the patient and doctor-patient communication: does it make a difference? *Patient Educ Couns* 2005;56:139–46.