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Influence of Race and Socioeconomic Status on Engagement in Pediatric Primary Care

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Abstract

Objective—To understand the association of race/ethnicity with engagement in pediatric primary care and examine how any racial/ethnic disparities are influenced by socioeconomic status.

Methods—Visit videos and parent surveys were obtained for 405 children who visited for respiratory infections. Family and physician engagement in key visit tasks (relationship building, information exchange, and decision making) were coded. Two parallel regression models adjusting for covariates and clustering by physician were constructed: 1) race/ethnicity only and 2) race/ethnicity with SES (education and income).

Results—With and without adjustment for SES, physicians seeing Asian families spoke 24% fewer relationship building utterances, compared to physicians seeing White, non-Latino families ($p<0.05$). Latino families gathered 24% less information than White, non-Latino families ($p<0.05$), but accounting for SES mitigates this association. Similarly, African American families were significantly less likely to be actively engaged in decision making (OR=0.32; $p<0.05$), compared to White, non-Latino families, but adjusting for SES mitigated this association.

Conclusion—While engagement during pediatric visits differed by the family's race/ethnicity, many of these differences were eliminated by accounting for socioeconomic status.

Practice implications—Effective targeting and evaluation of interventions to reduce health disparities through improving engagement must extend beyond race/ethnicity to consider socioeconomic status more broadly.

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Keywords

race/ethnicity; income; education; communication; engagement; Roter Interaction Analysis System (RIAS); decision making; upper respiratory infection; pediatrics; primary care; negative binomial regression

1. Introduction

Reducing racial/ethnic disparities in health outcomes has been a focal point for healthcare improvement efforts [1]. Because a patient's engagement in healthcare can influence health outcomes [2–14], the role of racial/ethnic differences in this engagement in creating health disparities has received considerable interest. For example, patients who are more actively engaged in their care achieve better control of their diabetes or high blood pressure and reported less conflict about difficult treatment decisions [6, 9, 15]. Broadly, a link between health disparities and racial/ethnic differences in patient engagement is plausible as minority patients often report less engagement as well as lower satisfaction with their healthcare visits [4].

Patient engagement is key across the three main tasks of a healthcare visit—relationship building, information exchange, and decision making [16]. To date, how race/ethnicity is associated with engagement in these key tasks is not always clear. Specifically, engagement in building the physician-patient relationship or exchanging information is often reduced for minority patients [17–23] and their physicians [18, 19, 22–30], although not always [17, 18, 21, 25, 31, 32]. With regard to information exchange, however, racial/ethnic differences exist, but may be explained by variation in patient communication [23], reflecting how this communication is co-constructed with one participant's engagement influencing the other participants'. Studies on engagement in decision making are few and suggest active participation in decision making is less common among minority patients [8, 33].

Conflicting findings with regard to the association between patient race and engagement likely arise from multiple, complex influences on communication in the healthcare visit. Variations in clinical setting alone could be responsible for the disparate results in these studies (e.g., care in a clinic for veterans versus that of a cancer center). Further, patient engagement is shaped by a multitude of factors beyond the setting, but related to the patient and physician themselves and to characteristics of the visit [8, 14]. Prior studies were hampered by limited availability of data about these factors or by sample sizes, both of which make detecting significant associations challenging and prohibit consideration of important characteristics of the patient, physician or visit.

Resolution of these discrepancies is critical to understanding whether targeting patient engagement had the potential to reduce racial/ethnic disparities in health outcomes. For example, other factors such as the length or severity of the illness at the time of the visit could be associated with engagement but also with race (through delays in seeking care) [34]. In addition, race/ethnicity may influence engagement through minority families' often disadvantaged status, such as financial resources or education [23, 34–37]. Few studies consider the potential influence of income on patient communication [38, 39] in favor of understanding the role of educational attainment. Among those studies that do consider whether racial/ethnic disparities in engagement can be explained by disadvantaged status [23, 35, 39–42], disparate conclusions arise where sometimes racial effects remain even after adjusting for education or income [35, 39]. Understanding the mechanisms through which race/ethnicity influence patient engagement, and ultimately health outcomes, informs

the tailoring and targeting of interventions and encourages consideration of these factors in assessing outcomes such as engagement or health.

We sought to understand the impact of patient race on engagement by families and physicians across the three key visit tasks – relationship building, information exchange, and decision making in pediatric primary care visits. Further, we wished to examine how any racial/ethnic differences in engagement are influenced by disadvantaged status, as assessed by education and income. Our data included extensive surveys from over 400 children's visits in ethnically diverse Los Angeles, CA, as well as visit videos from which to directly assess engagement.

2. Methods

2.1. Subjects

Data were from 405 children and their parents visiting one of 32 pediatricians in 23 Los Angeles community pediatrics practices in October 2000-June 2001. For a period of 1–3 weeks, all parents who brought a child to see a participating physician were screened for the following eligibility criteria: English-speaking parent with a child aged 6 months to 10 years of age with upper respiratory infection (URI) symptoms (fever, cough, runny nose, or sore throat). Parents were approached until 15 participants were identified for each physician. Human subjects review board approval was obtained at all participating institutions.

2.2. Data collection and coding of engagement from videos

Before the visit, parents completed a self-administered survey of parent and child sociodemographics (age, gender, education, household income, and race/ethnicity), child's relationship to the physician (primary patient versus other, length of relationship with physician), presence of chronic or recurrent illness (child has any of 13 chronic or recurrent conditions such as asthma or recurrent ear infections), and visit characteristics (how long child had been ill, parent worry about the illness, and day of the week for this visit). Education response categories included 8th grade or less; 9th–12th grade, but not a high school graduate; high school graduate or equivalent; some college; associate's degree or technical school graduate; bachelor's degree; and graduate or professional degree. Income response categories were <$10,000 up to >$80,000 in $10,000 increments. Race/ethnicity response categories were White, non-Latino; Latino; African American/Black; Asian/Pacific Islander; Native American or Alaskan native; and other). Physician demographics included age, gender and race. Survey items were chosen on the basis of either theoretical or known associations with engagement or URI care [30, 43–48]. Each child's visit was video recorded in its entirety using a small, stationary camera.

Our assessment of engagement used two systematic approaches. First, to assess engagement in relationship building and information exchange, visit videos were coded with the Roter Interaction Analysis System (RIAS), a widely used and reliable system for assessing communication during a medical interaction [13, 25, 49–57]. Parent, child, and physician talk were each coded. Each speakers' utterances were coded into 1 of 34 mutually exclusive categories (e.g., concern, agreement, medical information giving). Second, to assess engagement in decision making, coders applied the first author's reliable and valid coding scheme that identified the speaker and recipient for all proposed plans as well as any risks or benefits of those plans [58]. Talk was coded only for periods in which the physician was present. In instances of more than one parent at the visit (12% of visits), all parent talk was coded as coming from a single person. Talk between a parent and child averaged less than 5% of visit talk and was not coded. Videos were coded by one of three trained coders with a 15% random sample double-coded to assess interrater reliability.

2.3. Measures

The main outcome of interest was family or physician engagement in the three key tasks of the healthcare visit— relationship building, information exchange, and decision making. Given the young ages of most patients (mean age=4.4 years), child talk comprised less than 4% of all coded talk. Thus, child talk was combined with parent talk to create a family talk variable for all outcome variables.

Engagement variables were created by aggregating coded utterances representative of each task, based on meta analysis of correlations with health outcomes [29, 59] and prior work [44, 50, 51, 60]. Relationship building was comprised of positive talk and social conversation, measured by summing the number of utterances coded as personal remarks, laughter, approval, empathy, concern, reassurance, asking for reassurance, agreement, and partnership. Information exchange included counts of utterances for information giving and information gathering. Information giving was measured by summing the number of utterances coded as giving information about medical, therapeutic, lifestyle, or psychosocial concerns. Information gathering was measured by summing the number of questions about medical, therapeutic, lifestyle, or psychosocial concerns. Decision making included the total number of plans suggested by the physician and an indicator of active family engagement through offering a plan or raising a risk or benefit [58, 61]. Modeling the total number of plans suggested by families was not possible because only 15 families (<2%) proposed a plan.

Our main explanatory variables were parent race/ethnicity, education, and income. Based on survey responses, race was modeled as White, non-Latino; Latino; African American; or Asian. Education response options were aggregated to represent four categories: <9th grade, some high school, high school graduate or some college, and bachelors degree or greater. Similarly, income response options were aggregated to represent four groups: very low (< $20,000); low ($20,000–$39,999); medium ($40,000–$79,999); and high (≥$80,000).

Covariates included parent characteristics [age, parent present (mother only versus all other)], child characteristics [age, visiting primary physician (yes/no), length of relationship with physician (first visit, <1 year, 1–2 years, 2–4 years, >4 years), presence of chronic illness (yes/no)], visit characteristics [when the child got sick (today, one day ago, 2–7 days ago, more than a week ago), parents worry about current health (not very, somewhat, very, extremely) and the day of the week] [44, 46, 60, 62], and physician characteristics [gender, race (White, non-Latino versus other), age (<40 years, 40–65 years, >65 years)].

2.4. Analyses

Weighted kappas or Cramer's phi (for binary data) were computed to assess interrater reliability of engagement measures across the three coders. Descriptive statistics included means and percents. Measures of engagement were either count or binary, thus negative binomial and logistic models, respectively, were used to analyze engagement by the family's race. Because our counts of engagement tasks have overdispersion (the variance of counts is greater than that of a Poisson distribution), negative binomial regression was chosen over Poisson. Bivariate analyses were conducted to assess associations of engagement in key tasks with all explanatory variables and covariates. All models accounted for clustering within physician using robust variance estimates. To ensure adjustment for potential confounders, final models used the recommended strategy of including all covariates associated in bivariate models with engagement outcomes at $p<0.2$ [63]. Visit length, which is highly collinear with measures of engagement, does not substantially influence results when modeled as a covariate and thus was not included.

To examine how any associations of race with engagement were influenced by education or income, results were reported for two parallel multivariate models for each engagement outcome. The first model compared engagement by race with the referent category being White, non-Latino parents (race only model). The second model included education and income (race and SES model). Incidence rate ratios (IRRs) or odds ratios (ORs) with 95% confidence intervals (CI) and p values were computed. To ease reader burden, results are presented as IRR or OR with p value (CI's are available from the authors). For each task, IRR describes the ratio of the number of utterances compared to the reference group or associated with a one-unit change in the explanatory variable. Using physician gender and information giving as an example, an IRR of 2.0 indicates that female physicians made twice as many information giving utterances as male physicians. When education and income explain the association between communication outcomes and race/ethnicity, we also reported the results of models adjusting for education or income alone. All analyses were performed in Stata version 11 [64].

3. Results

3.1. Participant and visit characteristics

Nearly one half of parents were Latino; 30% were White, non-Latino; 13% were African American; and 8% were Asian. The median age of White, non-Latino parents was 37 (IQR 34–41) years; 32 (27–37) years for Latino parents; 35 (28–41) years for African American parents; and 37 (33–42) years for Asian parents. As is typical in pediatric visits, usually the mother alone accompanied the child. Household income and parent education varied widely, with higher education and income seen mostly among the White, non-Latino families. Most children were visiting their primary doctor. Most children's illnesses had been present 2–7 days, with parents most often being "somewhat worried" about the child's health. (Table 1) Of the 32 physicians, eight were female, about half (47%) were non-White and most (61%) were between 40 and 65 years of age (data not shown).

3.2. Interrater reliability for engagement in key visit tasks as assessed from visit video

Almost perfect interrater reliability was achieved for assessments of family engagement in relationship building (kappa=0.89) and information giving (kappa=0.89) as well as for both physician and family engagement in information gathering (0.88 and 0.89, respectively). Substantial interrater reliability was demonstrated for physician relationship building (0.73) and information giving (0.73) as well as for number of plans proposed (0.80), while moderate reliability was achieved for family involvement in decision making (0.55) [65].

3.3. Key visit tasks

For relationship building, the median number of physician utterances was 27 (interquartile range (IQR) 17–39), for families 31 (IQR 20–42). For information exchange, a median of 20 (IQR 12–30) information giving utterances and 13 (IQR 9–20) information gathering utterances were spoken by physicians; for families a median of 33 (IQR 22–48) information giving utterances and 3 (IQR 1–6) information gathering utterances were spoken. For decision making, a median of 3 (IQR 2–4) plans were considered and the family was actively involved by raising plans, risks or benefits in 31% of visits.

3.4. Relationship building

After adjustment, significant differences in relationship building were found by race. (Table 2) Specifically, the "race only" model demonstrated that the physicians of Asian families spoke 24% fewer relationship building utterances in comparison to physicians of White, non- Latino families ($p<0.05$). The "race and SES" model demonstrated that including

adjustments for education and household income did not impact the significance or magnitude of this finding. Relationship building by the family was not significantly different by race but the "race and SES" model demonstrated significant influences of income on a family's relationship building. Specifically, compared to families with a household income between $40,001 and $80,000, those families with very low incomes (less than $20,000) do 29% less relationship building ($p<0.01$) while families with high incomes (>$80,000) do 21% more relationship building ($p<0.05$).

3.5. Information exchange

After adjustment, no significant differences in physician information exchange existed by race. (Table 3) The "race and SES" model indicated that the physician gave significantly less information to families with lower incomes, compared to medium income families (29% and 21% less, for very low and low income, respectively, $p<0.01$ for each comparison). No significant differences in the family's information giving were found by race, education or income in either model.

For information gathering, the adjusted "race only" model indicates Latino families gathered 24% less information than White, non-Latino families ($p<0.05$). When education and income are added to the model, the "race and SES" model demonstrated no significant racial/ethnic differences in information gathering. In models that contained either education or income alone, no significant racial/ethnic differences existed in families' information gathering (data not shown). In addition, no significant racial/ethnic differences were noted for information gathering by physicians in either model. The "race and SES" model indicated families with incomes >$80,000 gathered significantly more information than families with medium incomes (61% more utterances, $p<0.001$).

3.6. Decision making

In adjusted models, the number of plans suggested by the physician was not significantly associated with race/ethnicity. (Table 4) In the "race only" model, African American families were significantly less likely to be actively involved in the decision making (OR=0.32, $p<0.05$), compared to White, non-Latino families. In the "race and SES" model, this association was no longer significant. Further, in models that contained either education or income alone, only income explained racial/ethnic differences in active family involvement with decision making (data not shown). In addition, high income families were significantly more likely to be actively involved in decision making, compared to medium income families (OR=2.91, $p<0.01$).

4. Discussion and conclusion

4.1. Discussion

We found that families of various minority racial/ethnic groups do experience reduced engagement in key visit tasks during pediatric primary care visits, compared to White, non-Latino families. Specifically, Asian families experience less relationship building by their physicians, while Latino families engage in less information gathering and African American families engage less in decision making. In the latter two instances, controlling for disadvantaged status eliminates the association of race/ethnicity with engagement. In addition, income is significantly associated with engagement across all three of the key tasks, with lower income families experiencing less engagement and higher income families experiencing greater engagement in comparison to medium income families. Findings suggest that effective targeting of interventions to reduce health disparities through improving engagement will need to focus beyond race/ethnicity alone to consider the influence of other factors such as disadvantaged status among minority families. Further,

research should employ a robust approach to understanding the mechanisms through which race/ethnicity influence engagement, perhaps starting from a conceptual model to ensure comprehensive consideration of the potential influences.

To explain the effect of race/ethnicity on engagement, some authors have suggested that physicians communicate differently with patients of various races [23, 35]. We found physicians did interact differently with minority families for the relationship building task in these visits, with physicians engaged in significantly less relationship building with Asian families. Although relationship building is often expected to be mutual (i.e., one person's joke or talk about personal topics engenders the other person's laughter or continued personal conversation), Asian families in our study did not do significantly less relationship building, as one might expect. While we cannot determine from this study the reasons why physicians do less relationship building with these families, several possible explanations exist. First, it is possible that the physicians who serve these families adapt to the families' preferences or cultural styles with regard to communicating during the visit. One such preference could be a focus on information exchange and deliberating, rather than on building a relationship. Alternatively, the language challenges in visits with Asian families could exceed those of the African American and Latino families, causing physicians to focus communicative energy on the child's illness and its management.

In contrast to prior published studies, we found that physicians communicate similarly with patients of all races with regard to information giving and gathering tasks as well as the number of plans proposed during decision making. Yet, we still found differences in information exchange by minority families. For example, Latino families gathered less information compared to White, non-Latino families. One could postulate that Latino families were spontaneously given more information by physicians so the family did not need to actively gather more information. Alternatively, perhaps Latino families require less information or are simply less likely to ask questions of a physician. Further, the amount of physician information giving was significantly related only to family income and not to race or education. Any of these explanations is consistent with our finding that this association is influenced by socioeconomic status, such that controlling for income eliminates this racial/ethnic association with engagement.

With regard to decision making, active family engagement was reduced for African American families, but this association was also eliminated by considering socioeconomic status as occurred for the association between Latinos and reduced information gathering. In fact, in adjusted models, income was the only significant predictor of *family* engagement in any of the three key visit tasks. Prior work has suggested that patients engage more when they perceive themselves as similar to the physician on various characteristics [4]. Perhaps higher income families perceive themselves as more similar to the physician, regardless of race, and therefore were more engaged in information gathering and decision making. Based on these results, using race/ethnicity alone to target engagement-based interventions to reduce health disparities may not be the most effective strategy and could even be seen negatively in light of the complex influence of disadvantaged status and other factors (e.g., culture and illness concepts) on engagement. Instead, recognizing and addressing the risk of reduced patient engagement among all families of disadvantaged backgrounds could be more effective and acceptable.

As with all observational studies, findings must be interpreted as associations rather than as indicators of causality. Of note, data were collected nearly a decade ago, which could result in questions about the applicability of study findings. Yet prior work has suggested that parent communication in pediatric visits did not change significantly over twenty years of accrued audiotapes of visits [66]. In addition, the recommendations for care of URIs by

physicians and the incentives related to this care (e.g., reimbursement policies) have not changed substantially since the study data were collected. Thus, our findings about how parents engage in the study visits are likely applicable today. Our sample size, while large in the realm of communication studies, may have limited our ability to detect some associations and did prohibit an analysis of racial/ethnic concordance between families and physicians, particularly given the relatively small number of minority physicians. The study excluded non-English speaking minorities, which could bias study results by excluding a population at risk for decreased engagement based on communication challenges presented in visits of patients with English as a second language. This exclusion led to potential overestimation of engagement by minority families in our study.

4.2. Conclusion

Significant disparities exist in the engagement of minority families in key tasks of the pediatric primary care visit. Many, but not all of these disparities, appeared to result from differences in socioeconomic status, especially family income.

4.3. Practice implications

We found that minority families experience significantly less engagement in key visit tasks during pediatric primary care visits, yet many of these racial/ethnic disparities were eliminated by considering SES. Our results suggest that future studies consider a broader model of the ways that race/ethnicity can influence communication. For example, the ecologic model as described by Street et al, or Schouten's model of the influence of race and culture on engagement could be operationalized [67, 68]. Only through studies that consider a broad range of potential mechanisms and influences of race/ethnicity will we be able to develop interventions with the highest likelihood of addressing racial/ethnic disparities in engagement as a pathway to reducing health disparities. Further, additional studies are needed that explicitly link engagement by minorities to health outcomes. A future study will examine how outcomes in these children's URI visits are influenced by family engagement and by parent race and SES.

I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

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Table 1

Parent, Child, and Visit Characteristics by Race/Ethnicity (n=405)[a]

	White, non-Latino (n=123)	Latino (n=199)	African American (n=52)	Asian (n=31)
Parent characteristics				
Median age in years (IQR)	37(34–41)	32(27–37)	35(28–41)	37(33–42)
Only mother present	67.5	68.8	59.6	51.6
Education				
<9th grade	0.0	5.5	0.0	0.0
Some high school	0.0	19.1	17.3	0.0
High school graduate or some college	52.9	65.8	67.3	45.2
Bachelors degree or greater	47.2	9.6	15.4	54.8
Income				
<$20,000	5.5	22.5	35.6	3.2
$20,000–$39,999	8.2	37.9	26.7	9.7
$40,000–$79,999	36.4	32.0	26.7	48.4
≥$80,000	50.0	7.7	11.1	38.7
Child characteristics				
Median age in years (IQR)	3.4(1.8–6.8)	4.1(1.3–6.6)	3.5(2.1–7.6)	3.9(1.7–8.7)
Visiting regular physician	75.4	75.4	71.2	71.0
Length of relationship with physician				
First visit	22.7	22.2	19.6	22.6
<1 year	11.8	36.9	25.5	35.5
1 to 2 years	16.8	10.6	11.8	9.7
2 to 4 years	21.9	11.1	25.5	16.1
>4 years	26.9	19.2	17.7	16.1
Has chronic or recurrent illness	36.6	28.6	44.2	12.9
Visit characteristics				
When child got sick				
Today	3.3	6.1	7.7	6.5
One day ago	16.4	25.9	21.2	16.1
2–7 days ago	54.9	52.8	50.0	64.5
More than a week ago	25.4	15.2	21.2	12.9
Parent worry about illness				
Not very	17.2	11.6	17.3	6.5
Somewhat	65.6	47.5	40.4	67.7
Very	14.8	29.3	28.9	12.9
Extremely	2.5	11.6	13.5	12.9

	White, non-Latino (n=123)	Latino (n=199)	African American (n=52)	Asian (n=31)
Visit characteristics				
Day of week of visit				
Monday	13.8	20.6	15.4	25.8
Tuesday	18.7	26.1	34.6	29.0

	White, non-Latino (n=123)	Latino (n=199)	African American (n=52)	Asian (n=31)
Wednesday	19.5	15.1	15.4	16.1
Thursday	18.7	16.1	21.2	16.1
Friday	25.2	22.1	13.5	12.9
Saturday	4.1	0.0	0.0	0.0

[a]Value represents percent unless otherwise noted. Some percentages may not add to 100% due to rounding.

Table 2

Adjusted Association[a] (IRR) of Relationship Building with Race/Ethnicity, Education, and Income

	Physician		Family	
	Race only[b]	***Race and SES[c]***	***Race only[b]***	***Race and SES[c]***
Race/Ethnicity				
White, non-Latino	-	-	-	-
Latino	0.91	0.95	0.90	1.00
African American	0.96	1.04	0.91	1.06
Asian	**0.76** *	**0.76** *	0.94	0.91
Education				
<9th grade	-	1.12	-	1.16
Some high school	-	0.91	-	0.96
High school graduate or some college	-	-	-	-
Bachelors degree or greater	-	0.94	-	0.97
Income				
<$20,000	-	0.85	-	**0.71** **
$20,000-$39,999	-	0.99	-	0.92
$40,000-$79,999	-	-	-	-
≥$80,000	-	1.16	-	**1.21** *

[a] All models were adjusted for parent characteristics (age, mother present), child characteristics (age, visiting primary physician, length of relationship with physician, and presence of chronic illness), visit characteristics (when the child got sick, parent worry about current health, and the day of the week), and physician characteristics (age, gender, race).

[b] Race model includes race/ethnicity but not education or income.

[c] Race and SES model includes race/ethnicity, education, and income.

* p<0.05,

** p<0.01,

*** p<0.001

Table 3

Adjusted Association[a] (IRR) of Information Exchange with Race/Ethnicity, Education, and Income

	Information Giving				Information Gathering			
	Physician		Family		Physician		Family	
	Race only[b]	*Race and SES*[c]	*Race only*[b]	*Race and SES*[c]	*Race only*[b]	*Race and SES*[c]	*Race only*[b]	*Race and SES*[c]
Race/Ethnicity								
White, non-Latino	-	-	-	-	-	-	-	-
Latino	0.97	1.16	0.89	0.96	1.11	1.09	**0.76** *	1.03
African American	1.12	1.34	0.90	0.98	1.15	1.17	0.80	1.06
Asian	0.83	0.79	0.83	0.81	1.06	1.04	0.85	0.88
Education								
<9th grade	-	0.72	-	0.81	-	1.14	-	0.51
Some high school	-	0.96	-	0.94	-	0.98	-	0.96
High school graduate or some college	-	-	-	-	-	-	-	-
Bachelors degree or greater	-	1.00	-	1.07	-	1.01	-	1.17
Income								
<$20,000	-	**0.71** **	-	0.88	-	0.85	-	0.80
$20,000–$39,999	-	**0.79** **	-	0.92	-	1.02	-	1.21
$40,000–$79,999	-	-	-	-	-	-	-	-
≥$80,000	-	1.27	-	1.08	-	0.95	-	**1.61** ***

[a] All models were adjusted for parent characteristics (age, mother present), child characteristics (age, visiting primary physician, length of relationship with physician, and presence of chronic illness), parent characteristics (age, other present), visit characteristics (when the child got sick, parent worry about current health, and the day of the week), and physician characteristics (age, gender, race).

[b] Race model includes race/ethnicity but not education or income.

[c] Race and SES model includes race/ethnicity, education, and income.

* p<0.05,

** p<0.01,

*** p<0.001

Table 4

Adjusted Association[a] (IRR/OR) of Decision Making with Race/Ethnicity, Education, and Income

	Plans Proposed by Physician (IRR)		Active Family Engagement (OR)	
	Race only[b]	*Race and SES*[c]	*Race only*[b]	*Race and SES*[c]
Race/Ethnicity				
White, non-Latino	-	-	-	-
Latino	1.11	1.10	0.69	1.25
African American	0.98	0.91	**0.32** *	0.39
Asian	1.10	1.11	0.57	0.63
Education				
<9th grade	-	0.67	-	omitted
Some high school	-	0.84	-	0.54
High school graduate or some college	-	-	-	-
Bachelors or greater	-	0.98	-	1.01
Income				
<$20,000	-	1.11	-	1.55
$20,000–$39,999	-	1.12	-	1.05
$40,000–$79,999	-	-	-	-
≥$80,000	-	0.97	-	**2.91** **

[a] All models were adjusted for parent characteristics (age, mother present), child characteristics (age, visiting primary physician, length of relationship with physician, presence of chronic illness) visit characteristics (when the child got sick, parent worry about current health, day of the week), and physician characteristics (age, gender, race).

[b] Race model includes race/ethnicity but not education or income.

[c] Race and SES model includes race/ethnicity, education, and income.

* p<0.05,

** p<0.01,

*** p<0.001