


Sexual Health and Language Dominance Among Hispanic/Latino Women and Men: Analysis of a Nationally Representative Sample

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Abstract This study assessed the prevalence of sexual behaviors among a nationally representative sample of Latino men and women in the United States (US) (N = 432) including Spanish language data collection. Prior studies of sexual health among US Latinos have consisted of convenience samples, and focused mainly on assessing risk behaviors. We consider a broader range of sexual behaviors, subjective sexual experiences (e.g. pleasure and arousal), and STI testing behaviors. Analyses by language dominance and gender indicate a higher variability in sexual behaviors for English-dominant participants and a link between overall STI testing to regular medical examinations, especially women. Higher rates of pleasure, orgasms and arousal was reported by Spanish-dominant men and women, relative to the English-dominant group. Results represent a nuanced examination of internal differentiation among US Latinos and provides applicable data for reducing sexual health disparities in this population.

Keywords Sexual behaviors · Language dominance · Hispanic/Latino · Sexual health

Background

Approximately 54 million Hispanic or Latino men and women live in the US representing 17.4 % of the US population [1]. Latinos are at higher risk for adverse sexual health outcomes, among them higher incidence rates of HIV; higher rates of invasive cervical cancer and increased risk for sexually transmitted infections (STIs) [2]. Latinos are not a homogeneous group. Language dominance, understood as ‘language-of-everyday-use’, along with race, migratory status, and country of ancestry are common stratifying characteristics. Increased understanding of how these characteristics relate to Latino sexual health behaviors and outcomes are needed.

Prior research on sexual behaviors and health of US Latinos focused on assessment of small samples [3–5]; women [6, 7]; adolescents [8–10]; and at-risk behaviors [11–13]. Though national sexual health surveillance mechanisms exist [14], representative samples of Latino sexual behaviors are sparse. One study [15] based on the 2009 wave of the National Survey of Sexual Health Behavior (NSSHB) provides a baseline identifying sexual behaviors and STI testing for black and Hispanic men and women. Results suggest minor differences in Hispanic sexual health behaviors by age and gender. Another assessed partnered sexual behavior from the National Survey for Human Growth [16], which included Spanish language data collection but only analyzed males.

The growing incidence of HIV and STIs among US Hispanics has increased research on sexual health in this population. Study of correlates of sexual behaviors and

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their prevention are central to the reduction of health disparities. However, the current focus on risk as it relates to the activities of ethnic minorities can add to existing stigma [17]. Cultural factors, such as *marianismo* among women and *machismo* among men also affect Latino sexual health [18–20]. Considerations of non-risk behaviors, and pleasurable aspects of sexual behavior prove to be important in understanding sexual activities [18]. However, discussions of pleasure and other sex-positive behaviors are largely absent in Latino focused sexual health research.

Language dominance is frequently referred to as one measure of Hispanic acculturation [19–23]. Studies show that higher levels of English language dominance suggest a higher degree of incorporation into the host country culture [19]. Language dominance may indicate generational differences between primary immigrants—mostly Spanish-dominant—and a second generation of US-raised descendants [24, 25]. From a public health perspective, language dominance and its relationship to the diversity of sexual behaviors is key in understanding population variability and has direct translational implications for sexual health promotion and practice.

Extant research highlights the critical need for both larger samples and a broader consideration of sexual behaviors in the growing and diverse Hispanic community. An increasingly complex understanding of the cultural and gender differences within the Hispanic population is needed to design and implement effective sexual health interventions. This study addresses the need for broader research and seeks to understand if sexual behaviors among Latino men and women differ by language dominance. The objective of the study is to better capture internal differences to provide valuable information for researchers and health practitioners seeking to address Latino sexual health disparities.

Methods

Data presented here are from the 2012 National Survey of Sexual Health Behavior (NSSHB); from which previous data have been published [26–28]. The NSSHB is a population-based cross-sectional survey of adult women and men in the United States collected during October and November 2012, via national probability research panel samples, established by the Knowledge Panel of GfK Research (GfK) (Menlo Park, California). A total 3138 individuals completed the survey. This article is based on a subsample of 432 individuals (220 men, 212 women) who self-identified as Hispanic or Latino. Of these, 180 answered a Spanish language version of the instrument, and 252 the English version. The institutional review board

at Indiana University-Bloomington reviewed and approved all protocols associated with this study.

Outcome Measures

Participants were asked to describe sexual behaviors during their lifetime, in the past year, the past 90-days, and at last sexual event. Vaginal sex, insertive and receptive anal sex, receiving and giving oral sex, and solo and mutual masturbation were assessed for all time points. Additionally, kissing, cuddling, massaging and nipple stimulation were also assessed at last sexual event. Other variables assessed at last sexual event were orgasm, arousal, and desire. HIV and STI testing were also assessed. Each of the variables above were stratified by language dominance and gender. Participants self-reported the language of primary use, which we call language dominance, as: English-dominant, Bilingual, or Spanish-dominant.

Data Analysis

Data were analyzed with SPSS 23 (IBM, Chicago, 2013). Descriptive bivariate analyses are reported. Results were based on weighted values rounded to the nearest whole number for people and one decimal for percentages.

Results

Participant Characteristics

Sample characteristics are shown in Table 1. English-dominant individuals tended to be younger, more educated, and less likely to be married than Spanish and Bilingual Dominant individuals. English and Bilingual Dominant individuals reported higher income and better health status than Spanish-dominant. The sample was primarily heterosexual (88 %), lived in a metropolitan area (91.7 %) and approximately half lived in a household that included a child under the age of 18.

Sexual Behaviors by Gender and Language Dominance

Frequencies of sexual behaviors in the past 90-days, past year, and lifetime for Hispanic women and men, stratified by language dominance are shown in Table 2. Diversity and frequency of sexual behaviors in the lifetime, past year, and past 90-days differed for each of the language dominance groups. Differences were more pronounced for women than men. English-dominant women were more likely to engage in all sexual behaviors except for solo masturbation.

Table 1 Weighted Hispanic men and women descriptive statistics stratified by language dominance

Sample demographics	English dominant (N = 104)		Bilingual dominant (N = 169)		Spanish dominant (N = 159)		Total sample (N = 432)	
	%	N	%	N	%	N	%	N
Gender								
Male	52.9	55	50.9	86	49.1	78	50.9	220
Female	46.2	48	49.1	83	50.9	81	49.1	212
Age								
18–24	28.0	29	8.3	14	5.9	9	12.2	53
25–29	31.5	33	33.5	57	32.4	51	32.6	141
30–39	17.0	18	22.1	37	23.6	37	21.4	92
40–49	11.3	12	13.6	23	20.8	33	15.7	68
50–59	6.3	7	11.0	19	9.0	14	9.1	39
60–69	5.2	5	10.5	18	6.5	10	7.8	33
≥70	0.5	1	1.1	2	2.1	3	1.3	6
Education								
Less than high school	11.8	12	24.4	41	53.5	85	32.1	139
High school graduate	30.0	31	21.8	37	37.9	60	29.7	128
Some college	33.6	35	28.3	48	6.0	10	21.4	92
Bachelor's degree or higher	24.6	26	25.5	43	2.6	4	16.9	73
Sexual orientation								
Refused	3.8	4	3.1	5	8.9	14	5.4	23
Heterosexual	90.4	94	86.9	147	87.7	140	88.1	380
Bisexual	5.9	6	1.0	2	1.4	2	2.3	10
Homosexual	0.0	0	6.1	10	0.0	0	2.4	10
Other	0.0	0	3.0	5	2.0	3	1.9	8
Marital status								
Married	39.9	41	52.2	88	67.5	108	54.9	237
Widowed	1.1	1	4.9	8	1.2	2	2.6	11
Divorced	11.1	12	12.9	22	4.8	8	9.5	41
Separated	0.7	1	2.0	3	4.1	6	2.4	11
Never married	36.1	37	14.2	24	11.6	18	18.5	80
Living with partner	11.2	12	13.8	23	10.8	17	12.1	52
Relationship status								
Single, not dating	28.4	30	16.9	29	10.5	17	17.3	75
Single, dating one or more person	6.6	7	5.5	9	7.8	12	6.6	29
In relationship, not living together	10.0	10	11.2	19	1.9	3	7.5	32
In relationship, living together	13.9	14	14.0	24	13.9	22	13.9	60
Married, living together	38.6	40	52.1	88	63.8	102	53.2	230
Married, not living together	2.5	3	0.3	0	2.2	3	1.5	7
Geographic region of the United States								
Northeast	11.5	12	16.9	29	7.0	11	12.0	52
Midwest	24.5	25	6.2	10	10.3	16	12.1	52
South	41.7	43	37.8	64	28.3	45	35.3	152
West	22.3	23	39.1	66	54.3	87	40.7	176
Metropolitan statistical area status								
Metropolitan area	88.2	92	91.6	155	93.9	150	91.7	396
Non-metropolitan area	11.8	12	8.4	14	6.1	10	8.4	36
Annual household income								
Less than \$25,000	12.2	13	18.1	31	42.4	68	25.7	111

Table 1 continued

Sample demographics	English dominant (N = 104)		Bilingual dominant (N = 169)		Spanish dominant (N = 159)		Total sample (N = 432)	
	%	N	%	N	%	N	%	N
\$25,000–\$49,999	22.0	23	21.2	36	46.8	75	30.9	133
\$50,000–\$74,999	27.7	29	22.2	37	6.1	10	17.6	76
Over \$75,000	38.1	40	38.5	65	4.7	7	25.9	112
Children under 18 in household								
No	56.7	59	63.6	108	45.2	72	55.2	238
Yes	43.3	45	36.4	62	54.8	87	44.9	194
Health status								
Excellent	16.5	17	18.9	32	8.7	14	14.6	63
Very good	51.1	53	38.6	65	42.9	68	43.2	187
Good	21.8	23	35.4	60	31.6	50	30.8	133
Fair	8.8	9	6.3	11	13.7	22	9.6	42
Poor	1.8	2	0.0	0	3.0	5	1.5	7

Vaginal sex was the most common lifetime sexual event for women (73.2 %), followed by giving oral sex to a man, and receiving oral sex from a man. Solo masturbation was reported by the majority of women while partnered masturbation and receptive anal sex were less frequent. Men reported solo masturbation as the most common lifetime sexual event (83.6 %). Male lifetime frequency of giving oral sex to a woman (77.7 %) and lifetime frequency of receiving oral sex from a woman (76.1 %) were both more common than vaginal sex (71.5 %). Similar to Hispanic women, men reported lower lifetime frequencies of partnered masturbation (47.7 %) and insertive anal sex (39.3 %).

Stratification by language dominance resulted in large frequency disparities among women. English-dominant women reported the highest prevalence and variability of sexual behaviors than Spanish-dominant and Bilingual women. Differences in prevalence among the three language groups were especially large for lifetime (39.9 %) and 90-day (17.4 %) solo masturbation. Bilingual women reported higher lifetime and 90-day solo masturbation (71.4 and 47.4 %, respectively). English-dominant women reported a similar likelihood of lifetime and 90-day solo masturbation (64.1 and 47.6 %, respectively). Bilingual women had the highest frequency of lifetime anal sex (46 %) compared to Spanish-dominant women (31.1 %) and English-dominant women (33.9 %). However in the last 90-days and last year a higher number of Spanish-dominant women had engaged in anal sex (9 and 16.9 %, respectively) than English-dominant women (7.7 and 8.6 %, respectively).

Among men, stratification by language dominance revealed smaller frequency differences than women. Solo

masturbation rates demonstrated the largest disparities. English-dominant men reported high rates of solo masturbation at 90-days (71 %), year (79.3 %), and lifetime (93.8 %). Rates in the last 90-days and in the last year of solo masturbation for both Bilingual (49.8, 55.8 %) and Spanish-dominant men (40.4, 47.3 %) were considerably lower than women. Rates of partnered masturbation among men were similar at 90-day and year time points among all language categories. Bilingual men reported higher frequencies of receiving oral sex from a woman at all time points. Bilingual men reported the highest rates of giving oral sex to a woman at in the last 90-days (62.1 %) and last year (67.3 %) among language groups. Bilingual men reported the highest rates of lifetime insertive anal sex (47.0 %) compared to English-dominant men (43.5 %) and Spanish-dominant men (27.9 %).

Ninety-day, year, and lifetime rates of vaginal intercourse for Spanish-dominant women and Spanish-dominant men were substantially lower than other language groups and show discrepancies with last sexual event reports. As such they have been further analyzed below.

Sexual Behaviors at Last Sexual Event

The frequency and variability of sexual behaviors at last sexual event differ markedly than those described for past time points. At last sexual event, Spanish-dominant women and Spanish-dominant men report higher frequencies for more behaviors than other language groups. Details are shown in Table 3.

The most frequent sexual behaviors at last sexual event for both men and women in all language categories were kissing, cuddling and vaginal sex. Less common behaviors

Table 2 Weighted Hispanic language dominance and sexual behavior frequencies

Sexual behavior	Women							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
Solo masturbation								
90-days	47.6 (34–61.1)	48	47.4 (36.8–57.9)	83	17.4 (9.1–25.7)	81	36.1 (29.6–42.4)	212
Year	54.2 (40.7–67.7)	48	49.4 (38.8–59.9)	83	22.8 (13.6–31.8)	81	40.4 (33.8–46.9)	212
Lifetime	64.1 (50.9–77.1)	48	71.4 (61.8–81)	83	39.9 (29.5–50.3)	81	57.8 (51.2–64.4)	212
Partnered masturbation								
90-days	21.6 (10–33.1)	48	18.1 (9.7–26.4)	83	16.4 (8.2–24.5)	81	18.3 (13–23.5)	212
Year	27.7 (15.3–40)	48	27.6 (18–37.1)	83	20.3 (11.5–29)	81	24.9 (19–30.6)	212
Lifetime	52.3 (38.7–65.8)	48	44.3 (33.8–54.8)	83	31.7 (21.6–41.6)	81	41.4 (34.8–47.9)	212
Gave oral sex to a man								
90-days	51.4 (37.8–64.9)	48	35.5 (25.4–45.6)	83	32.0 (22–41.9)	81	37.9 (31.3–44.3)	212
Year	67.1 (54.2–79.9)	48	43.9 (33.4–54.4)	83	44.3 (33.7–54.8)	81	49.5 (42.7–56.1)	212
Lifetime	79.2 (67.7–90.5)	48	70.5 (60.8–80.1)	83	69.7 (59.8–79.5)	81	72.3 (66.3–78.3)	212
Received oral sex from a man								
90-days	47.7 (34.1–61.2)	48	35.1 (25–45.2)	83	34.1 (23.9–44.1)	81	37.7 (31.1–44.1)	212
Year	61.3 (48–74.5)	48	48.3 (37.7–58.8)	83	37.1 (26.7–47.3)	81	47.1 (40.4–53.7)	212
Lifetime	75.2 (63.1–87.1)	48	71.2 (61.5–80.8)	83	63.3 (53–73.5)	81	69.2 (63–75.3)	212
Vaginal sex								
90-days	70.6 (58–83.1)	48	55.2 (44.7–65.6)	83	49.1 (38.4–59.7)	81	56.5 (49.8–63.1)	212
Year	78.9 (67.4–90.3)	48	56.4 (45.9–66.8)	83	59.5 (49–69.9)	81	62.9 (56.4–69.3)	212
Lifetime	81.2 (70.1–92.2)	48	74.6 (65.3–83.8)	83	66.7 (56.6–76.7)	81	73.2 (67.2–79.1)	212
Receptive anal sex								
90-days	7.7 (–0.6 to 16.1)	48	20.7 (11.9–29.4)	83	9.0 (2.4–15.6)	81	13.3 (8.6–17.9)	212
Year	8.6 (0–17.3)	48	21.7 (12.8–30.5)	83	16.9 (8.6–25)	81	16.9 (11.8–21.9)	212
Lifetime	33.9 (20.9–46.8)	48	46.0 (35.5–56.5)	83	31.1 (21.1–40.9)	81	37.6 (31.1–44)	212

Table 2 continued

Sexual behavior	Men							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behaviors (95 % CI)	N	% Engaged in behaviors (95 % CI)	N	% Engaged in behaviors (95 % CI)	N	% (95 % CI)	Total N
Solo masturbation								
90-days	71.0 (59.2–82.6)	55	49.8 (39.4–60.1)	86	40.4 (29.7–51.0)	78	51.7 (45.1–58.2)	220
Year	79.3 (68.6–89.9)	55	55.8 (45.4–66.0)	86	47.3 (36.5–58.1)	78	58.6 (52.1–65.0)	220
Lifetime	93.8 (86.5–101.1)	55	82.4 (74.2–90.4)	86	77.7 (68.5–86.9)	78	83.6 (78.6–88.4)	220
Partnered masturbation								
90-days	25.0 (13.7–36.2)	55	24.5 (15.5–33.5)	86	25.1 (15.5–34.6)	78	24.9 (19.1–30.5)	220
Year	33.5 (21.4–45.6)	55	33.7 (23.9–43.5)	86	33.3 (23.0–43.6)	78	33.5 (27.3–39.7)	220
Lifetime	57.6 (45.0–70.2)	55	47.7 (37.3–57.9)	86	40.9 (30.2–51.5)	78	47.7 (41.1–54.2)	220
Gave oral sex to a woman								
90-days	35.9 (23.5–48.1)	55	62.1 (52.0–72.1)	86	43.3 (32.5–54.0)	78	48.8 (42.2–55.3)	220
Year	51.6 (38.8–64.3)	55	67.9 (58.1–77.5)	86	56.4 (45.6–67.1)	78	59.7 (53.2–66.1)	220
Lifetime	82.1 (71.9–92.2)	55	79.5 (71.0–88.0)	86	72.6 (62.8–82.4)	78	77.7 (72.1–83.1)	220
Received oral sex from a woman								
90-days	39.6 (27.1–52.1)	55	53.0 (42.7–63.3)	86	34.1 (23.7–44.3)	78	42.9 (36.4–49.3)	220
Year	50.4 (37.6–63.1)	55	63.9 (53.9–73.8)	86	54.1 (43.2–64.8)	78	56.9 (50.4–63.4)	220
Lifetime	76.9 (65.9–87.9)	55	80.4 (71.9–88.7)	86	71.0 (61.0–80.8)	78	76.1 (70.4–81.7)	220
Vaginal sex								
90-days	62.6 (50.2–74.9)	55	60.9 (50.7–70.9)	86	44.7 (33.9–55.5)	78	55.5 (49.0–62.0)	220
Year	69.3 (57.3–81.1)	55	69.7 (60.1–79.2)	86	48.3 (37.4–59.0)	78	61.9 (55.5–68.2)	220
Lifetime	87.3 (78.1–96.4)	55	76.5 (67.5–85.3)	86	55.0 (44.2–65.7)	78	71.5 (65.5–77.4)	220
Insertive anal sex								
90-days	14.2 (4.7–23.6)	55	12.4 (5.2–19.5)	86	15.9 (7.6–24.1)	78	14.1 (9.4–18.7)	220
Year	26.4 (14.9–37.7)	55	21.8 (13.1–30.5)	86	18.2 (9.5–26.7)	78	21.7 (16.2–27.1)	220
Lifetime	43.5 (30.8–56.1)	55	47.0 (36.6–57.2)	86	27.9 (18.0–37.6)	78	39.3 (32.8–45.6)	220

Table 3 Weighted Hispanic language dominance and last sexual event behaviors

Sexual behavior	Women							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
Kissing	90.6 (81.6–99.4)	48	79.3 (70.5–88)	83	91.3 (84.6–980)	78	82.0 (76.7–87.2)	209
Cuddling	65.5 (52.5–78.5)	48	61.3 (51.0–71.5)	83	88.1 (80.6–95.5)	78	68.6 (62.3–74.8)	209
Massaging	25.2 (13.2–37.2)	48	12.9 (5.4–20.3)	83	18.5 (9.8–27.2)	78	16.9 (11.8–22)	209
Breast and/or nipple stimulation	71.4 (58.9–83.8)	48	58.0 (47.5–68.3)	83	69.5 (59.4–79.5)	78	62.1 (55.5–68.5)	209
Received oral sex from partner	34.5 (21.4–47.4)	48	29.0 (19.3–38.6)	83	44.0 (33.1–54.7)	78	34.0 (27.6–40.4)	209
Gave oral sex to partner	18.9 (7.8–29.9)	48	32.9 (22.9–42.8)	83	27.1 (17.3–36.8)	78	26.1 (20.1–32.0)	209
Genital rubbing	23.9 (12.0–35.7)	48	12.4 (5.0–19.7)	83	31.2 (21.0–41.3)	78	20.9 (15.4–26.4)	209
Partnered masturbation	68.4 (55.6–81.1)	48	63.6 (53.4–73.7)	83	70.9 (60.9–80.8)	78	64.0 (57.5–70.4)	209
Vaginal sex	75.1 (63.0–87.0)	48	65.1 (54.9–75.1)	83	78.3 (69.1–87.4)	78	68.7 (62.4–74.9)	209
Anal sex	0.0 (–5.1 to 5.1)	48	6.1 (0.3–11.8)	83	11.8 (4.3–19.2)	78	6.4 (2.9–9.9)	209
Sexual Behavior	Men							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
Kissing	86.0 (76.6–95.4)	55	90.2 (83.5–96.8)	85	82.5 (73.8–91.0)	76	85.1 (80.3–89.8)	216
Cuddling	74.1 (62.7–85.5)	55	60.8 (50.5–70.9)	85	86.5 (78.6–94.3)	76	72.1 (66.1–78.0)	216
Massaging	38.4 (25.9–50.8)	55	22.1 (13.2–30.8)	85	17.8 (9.1–26.4)	76	24.3 (18.6–30.0)	216
Breast and/or nipple stimulation	61.7 (49.2–74.1)	55	61.0 (50.8–71.1)	85	64.4 (53.9–74.9)	76	61.5 (55.0–67.8)	216
Received oral sex from partner	21.6 (10.8–32.4)	55	38.6 (28.4–48.7)	85	29.8 (19.7–39.8)	76	30.7 (24.5–36.8)	216
Gave oral sex to partner	37.1 (24.7–49.5)	55	27.6 (18.2–37.0)	85	27.3 (17.4–37.1)	76	29.5 (23.4–35.5)	216
Genital Rubbing	25.4 (14.0–36.7)	55	35.7 (25.6–45.6)	85	38.4 (27.7–49.0)	76	33.5 (27.2–39.7)	216
Partnered Masturbation	62.2 (49.7–74.5)	55	66.6 (56.7–76.4)	85	57.4 (46.5–68.2)	76	61.3 (54.8–67.7)	216
Vaginal Sex	62.6	55	64.5	85	69.3	76	64.7	216

Table 3 continued

Sexual Behavior	Men							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
	(50.1–74.9)		(54.4–74.4)		(59.0–79.4)		(58.3–71.0)	
Anal Sex	6.9 (–0.6 to 14.4)	55	9.6 (3.0–16.2)	85	17.3 (8.7–25.9)	76	11.5 (7.1–15.7)	216

were receiving oral sex from a partner, giving oral sex to a partner, genital rubbing, massaging, and receptive/insertive anal sex.

Spanish-dominant women reported the highest frequencies in 7 sexual behaviors during the last sexual event. English-dominant women reported the highest frequency in 2 sexual behaviors during the last sexual event and Bilingual women reported the highest frequency in one sexual behavior during the last sexual event. The largest frequency difference between language groups was cuddling with Spanish-dominant women (26.8 %) reporting more cuddling than Bilingual women, and 22.6 % reporting more cuddling than English-dominant women. Reports of vaginal sex at last sexual event were highest for Spanish-dominant women (78.3 %).

Spanish-dominant men reported the highest frequencies in five sexual behaviors during the last sexual event. Spanish-dominant men reported 25.7 % more cuddling than Bilingual men, and 12.4 % more cuddling than English-dominant men. Spanish-dominant men reported 4.8 % more vaginal sex than Bilingual men and 6.7 % more vaginal sex than English-dominant men.

Compared to women, Hispanic men reported higher frequencies of massages (24.3 %) and genital rubbing (33.5 %) than Hispanic women (16.9 and 20.9 %, respectively). Hispanic men and women reported similar frequencies of vaginal sex during the last sexual event (64.7 and 68.7 %, respectively). Anal sex was uncommon among both Hispanic men and women, though Spanish-dominant men and women had the highest frequency of anal sex (17.3 and 11.8 %, respectively) followed by Bilingual men and women (9.6 and 6.1 %, respectively), and then English-dominant men and women (0.0 and 6.9 %, respectively).

Stimulation, Pleasure and Arousal at Last Sexual Event

Appraisal of levels of stimulation, arousal and pleasure by language dominance show more variability among women compared to men (Table 4). Spanish-dominant women

reported the largest percent of high sexual arousal, sexual desire/interest, sexual pleasure, and one or more orgasms. Spanish-dominant women reported high sexual arousal during 77.7 % of last sexual events compared to 72.4 % of English-dominant women and 62.7 % of Bilingual women. Sexual desire was similarly absent or moderate among all language groups. High sexual pleasure was more common with Spanish-dominant women. This group also reported higher frequencies of one or more orgasms.

Findings for men were similar across language groups, with the exception of sexual arousal, sexual pleasure, and one or more orgasms (Table 4). Over 80 % of Bilingual men reported high sexual arousal during their last sexual event compared to 73.1 % of English-dominant men and 62.6 % of Spanish-dominant men. High sexual pleasure was reported by 75.3 % of Bilingual men, 69.1 % of Spanish-dominant men, and 63.3 % of English-dominant men. Spanish-dominant men reported the highest frequency of one or more orgasms.

Men and women reported similar frequencies of pleasure and arousal behaviors. Both men and women reported low prevalence of high sexual desire/interest during last sexual events (3.8 and 5.4 % for men and women respectively). The differences of frequency of high sexual pleasure varied from group to group. High sexual pleasure at last sexual event frequency was 18.3 % greater for Spanish-dominant women than Spanish-dominant men. Bilingual men reported 10.2 % more high sexual pleasure during last sexual event than Bilingual men. English-dominant men reported only 2.2 % more high sexual pleasure during last sexual event than English-dominant men. Spanish-dominant men and women reported the greatest frequencies of one or more orgasm followed by Bilingual men and women, and then English-dominant men and women.

Vaginal Sex Lifetime and Last Sexual Event Subgroup Analysis

Spanish-dominant women reported the lowest lifetime frequency of vaginal sex (66.7 %) compared to Bilingual

Table 4 Weighted Hispanic language dominance and pleasure and arousal behaviors at last sexual event

Last sexual event behavior	Women							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
Sexual arousal								
Refused	0.0 (−5.1 to 5.1)	48	8.3 (1.9–14.6)	83	0.0 (−3.2 to 3.2)	78	3.1 (0.4–5.7)	209
No to moderate	27.6 (15.2–39.8)	48	29.0 (19.3–38.6)	83	22.3 (13.1–31.5)	78	24.9 (19.0–30.7)	209
High	72.4 (60.1–84.7)	48	62.7 (52.4–72.9)	83	77.7 (68.4–86.8)	78	66.9 (60.6–73.2)	209
Sexual desire/interest								
Refused	0.0 (−5.1 to 5.1)	48	0.0 (−3.0 to 3.0)	83	0.0 (−3.2 to 3.2)	78	0.0 (−1.2 to 1.2)	209
No to moderate	95.4 (88.0–102.6)	48	97.4 (92.9–101.8)	83	90.5 (83.6–97.4)	78	89.6 (85.3–93.8)	209
High	4.6 (−2.6 to 11.9)	48	2.6 (−1.8 to 7.0)	83	9.5 (2.5–16.3)	78	5.4 (2.1–8.5)	209
Sexual pleasure								
Refused	0.0 (−5.1 to 5.1)	48	3.1 (−1.5 to 7.7)	83	0.2 (−3.2 to 3.6)	78	1.2 (−0.7 to 3.1)	209
No to moderate	38.9 (25.6–52.1)	48	31.8 (21.8–41.6)	83	12.4 (4.8–20.0)	78	24.9 (19–30.7)	209
High	61.1 (47.8–74.3)	48	65.1 (55–75.2)	83	87.4 (79.7–94.9)	78	68.8 (62.5–75.0)	209
Orgasm								
Refused	0.0 (−5.1 to 5.1)	48	3.1 (−1.5 to 7.7)	83	0.3 (−3.1 to 3.7)	78	1.3 (−0.6 to 3.2)	209
No orgasm or unsure	36.7 (23.5–49.7)	48	22.5 (13.5–31.4)	83	14.5 (6.4–22.4)	78	21.6 (16.0–27.2)	209
One or more orgasms	63.3 (50.2–76.4)	48	74.4 (65.0–83.7)	83	85.2 (77.1–93.2)	78	72.0 (65.9–78.0)	209
Last sexual event behavior	Men							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
Sexual arousal								
Refused	1.2 (−4.0 to 6.4)	55	2.5 (−1.8 to 6.7)	85	0.0 (−3.3 to 3.3)	76	1.3 (−0.6 to 3.1)	216
No to moderate	25.7 (14.3–37)	55	16.6 (8.6–24.6)	85	37.4 (26.8–48.0)	76	25.9 (20.0–31.6)	216
High	73.1 (61.6–84.6)	55	80.9 (72.5–89.3)	85	62.6 (51.9–73.1)	76	71.4 (65.3–77.3)	216
Sexual desire/interest								
Refused	0.0 (−4.5 to 4.5)	55	2.5 (−1.8 to 6.7)	85	0.0 (−3.3 to 3.3)	76	0.9 (−0.8 to 2.7)	216
No to moderate	96.9 (90.7–103)	55	92.1 (85.9–98.2)	85	97.4 (92.7–102.1)	76	93.8 (90.4–97.1)	216

Table 4 continued

Last sexual event behavior	Men							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
High	3.1 (−3 to 9.2)	55	5.4 (0.0–10.8)	85	2.6 (−2.1 to 7.2)	76	3.8 (1.0–6.5)	216
Sexual pleasure								
Refused	0.0 (−4.5 to 4.5)	55	2.5 (−1.8 to 6.7)	85	0.0 (−3.3 to 3.3)	76	0.9 (−0.8 to 2.7)	216
No to moderate	36.7 (24.3–49.0)	55	22.3 (13.4–31.0)	85	30.9 (20.7–41.0)	76	28.6 (22.5–34.5)	216
High	63.3 (50.9–75.6)	55	75.3 (66.1–84.3)	85	69.1 (58.9–79.2)	76	69.0 (62.8–75.1)	216
Orgasm								
Refused	1.2 (−4.0 to 6.4)	55	3.3 (−1.3 to 8.0)	85	0.0 (−3.3 to 3.3)	76	1.6 (−0.4 to 3.6)	216
No orgasm or unsure	33.7 (21.5–45.8)	55	24.1 (15.0–33.1)	85	11.6 (4.1–19.0)	76	21.8 (16.3–27.3)	216
One or more orgasms	65.0 (52.8–77.2)	55	72.5 (63.1–81.9)	85	88.4 (80.9–95.8)	76	75.1 (69.3–80.8)	216

(74.6 %) and English-dominant women (81.2 %). Similarly low rates of reported vaginal sex over lifetime were reported by Spanish-dominant men (55 %) in comparison with Bilingual (76.5 %) and English-dominant men (87.3 %). However, frequencies of vaginal sex reported at last sexual event were considerably higher for both Spanish-dominant women (78.3 %) and men (69.3 %).

Individuals who reported no vaginal sex during their lifetimes but did report vaginal sex during the last sexual event were analyzed further (results not shown). Of the 26 participants with the discrepancy, 68.7 % were men ($n = 18$) composed of 72.2 % of Spanish-dominant men, 16.7 % of Bilingual men, and 11.1 % of English-dominant men. Spanish-dominant women and Bilingual women both composed 50 % of the eight women who had a discrepancy between lifetime vaginal sex and vaginal sex during last sexual event. Of the participants who had the vaginal sex discrepancy, one participant reported being asexual, but none reported being homosexual or bisexual. Spanish-dominant participants with the vaginal sex discrepancy all had a high school education or less. Bilingual dominant participants with the vaginal sex discrepancy had a varied education background with 68.3 % having a high school education or less. No English-dominant participants with a vaginal sex discrepancy had a high school education or less. Based on the subgroup analysis, it is possible that

translation issues and education level may account for the discrepancy between lifetime vaginal sex and vaginal sex at the last sexual event among Spanish-dominant participants.

Sexually Transmitted Infections (STI) Testing Behavior by Gender and Language Dominance

STI testing behaviors, including HIV, among men and women in our sample are shown in Table 5. Compared to men, women had higher rates of HIV testing (59.2 vs 49.0 %) and Other STI testing (49.8 vs 43.3 %). Of those tested for HIV ($n = 131$), 39.1 % of the women and 31.7 % ($n = 108$) of the men reported being tested for HIV within the past year.

Analyses by language dominance show divergent results for different gender groupings. Spanish-dominant women reported the highest HIV testing rate (59.2 %) compared to English-dominant women (59.1 %) and Bilingual women (50.5 %). However, frequency of Other STI testing is similar among all female language groups. For the males, English-dominant men reported highest HIV (59.1 %) testing, Bilingual men reported a higher Other STI (52.9 %) testing, whereas Spanish-dominant men reported the lowest frequencies for both (HIV 43.5 % and STI 38.5 %).

Table 5 Weighted Hispanic language dominance and STI testing behaviors

Sexual behavior	Women							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
Tested for HIV	59.1 (45.7–72.4)	48	50.5 (39.9–61)	82	73.9 (64.3–83.3)	81	59.2 (52.5–65.7)	212
Frequency of HIV testing								
Refused	13.6 (0.5–26.7)	29	0.0 (–5.8 to 5.8)	42	0.0 (–4.1 to 4.1)	60	3.0 (–0.4 to 6.4)	131
90-days	10.0 (–2.1 to 22.1)	29	12.4 (1.8–22.9)	42	15.1 (5.8–24.3)	60	13.0 (7.1–18.8)	131
Year	37.0 (20.2–53.6)	29	47.4 (32.8–61.9)	42	34.5 (22.7–46.2)	60	38.9 (30.6–47.1)	131
Lifetime	86.4 (73.1–99.5)	29	100.0 (94.1–105.8)	42	100.0 (95.8–104.1)	60	96.4 (92.7–100)	131
Tested for other STI	48.9 (35.3–62.4)	48	52.9 (42.4–63.4)	83	51.8 (41.1–62.4)	81	49.8 (43.1–56.4)	212
Frequency of other STI testing								
Refused	8.0 (–4.7 to 20.8)	24	0.0 (–5.5 to 5.5)	44	0.0 (–5.8 to 5.8)	42	1.8 (–1.5 to 5)	110
90-days	19.0 (3.2–34.8)	24	10.7 (0.8–20.4)	44	18.4 (6.6–30.2)	42	15.4 (8.5–22.3)	110
Year	35.0 (16.9–53.0)	24	27.3 (14.3–40.1)	44	49.6 (35.1–64.0)	42	37.5 (28.5–46.4)	110
Lifetime	92.0 (79.0–104.8)	24	100.0 (94.4–105.5)	44	100.0 (94.2–105.7)	42	98.3 (94.9–101.5)	110
Reason for other STI testing								
Participant possibly had STI	4.3 (–7.1 to 15.6)	24	3.8 (–3.6 to 11.2)	44	9.4 (–0.2 to 19.0)	42	6.1 (1.1–10.9)	110
Partner possibly had STI	2.6 (–8.1 to 13.2)	24	3.8 (–3.6 to 11.2)	44	0.0 (–5.8 to 5.8)	42	2.1 (–1.4 to 5.5)	110
Wanted to be sure	24.1 (7.4–40.7)	24	34.5 (20.9–48)	44	20.1 (8.0–32.2)	42	26.9 (18.6–35.0)	110
Medical examination	69.1 (51.5–86.6)	24	58.0 (43.9–71.9)	44	70.5 (57.0–83.9)	42	65.4 (56.6–74.2)	110
Other	0.0 (–9.4 to 9.4)	24	0.0 (–5.5 to 5.5)	44	0.0 (–5.8 to 5.8)	42	0.0 (–2.3 to 2.3)	110
Sexual behavior	Men							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
Tested for HIV	52.1 (39.3–64.8)	55	52.9 (42.5–63.2)	85	43.5 (32.7–54.2)	78	49.0 (42.4–55.5)	220
Frequency of HIV testing								
Refused	0.0	29	0.0	45	0.0	34	0.0	108

Table 5 continued

Sexual behavior	Men							
	English dominant		Bilingual		Spanish dominant		Total sample	
	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% Engaged in behavior (95 % CI)	N	% (95 % CI)	Total N
	(-8.0 to 8.0)		(-5.4 to 5.4)		(-6.9 to 6.9)		(-2.4 to 2.4)	
90-days	5.6	29	19.8	45	6.0	34	11.6	108
	(-5.0 to 16.2)		(8.1-31.4)		(-3.7 to 15.7)		(5.4-17.8)	
Year	20.0	29	36.2	45	35.7	34	31.7	108
	(5.4-34.5)		(22.6-49.7)		(20.2-51.0)		(23.0-40.3)	
Lifetime	100.0	29	100.0	45	100.0	34	100.0	108
	(91.9-108)		(94.5-105.4)		(92.9-107.0)		(97.5-102.4)	
Tested for other STI	54.1	55	40.9	86	38.5	78	43.3	220
	(41.3-66.7)		(30.7-51.1)		(27.9-49.0)		(36.8-49.8)	
Frequency of other STI testing								
Refused	0.0	30	0.0	35	0.0	30	0.0	95
	(-7.7 to 7.7)		(-6.8 to 6.8)		(-7.7 to 7.7)		(-2.7 to 2.7)	
90-days	2.7	30	15.0	35	8.3	30	9.0	95
	(-6.5 to 11.8)		(2.8-27.1)		(-3.0 to 19.5)		(2.9-15.0)	
Year	15.0	30	33.4	35	35.1	30	28.1	95
	(1.7-28.2)		(18.4-48.2)		(18.8-51.3)		(19.2-37.0)	
Lifetime	100.0	30	100.0	35	100.0	30	100.0	95
	(92.1-107.8)		(93.2-106.7)		(92.2-107.7)		(97.2-102.7)	
Reason for other STI testing								
Participant possibly had STI	14.4	30	7.6	35	0.0	30	7.3	95
	(1.3-27.4)		(-2.5 to 17.7)		(-7.7 to 7.7)		(1.6-12.9)	
Partner possibly had STI	1.6	30	0.0	35	2.4	30	1.2	95
	(-7 to 10.2)		(-6.8 to 6.8)		(-6.6 to 11.3)		(-2.1 to 4.6)	
Wanted to be sure	40.3	30	31.3	35	31.3	30	34.0	95
	(23.6-56.8)		(16.4-46.0)		(15.4-47.2)		(24.6-43.3)	
Medical examination	39.0	30	61.1	35	66.3	20	48.6	95
	(22.4-55.5)		(45.7-76.5)		(47-85.6)		(38.7-58.4)	
Other	4.8	30	0.0	35	0.0	30	1.5	95
	(-5.2 to 14.8)		(-6.8 to 6.8)		(-7.7 to 7.7)		(-2.0 to 5.0)	

Overall the top two reasons for STI testing among Hispanic men and women were ‘medical examination’ and ‘wanted to be sure’ respectively. This holds true for women across language dominance groups. However, in males there is more variability. Approximately 66 % of Spanish-dominant men reported ‘medical examination’ as the reason for testing, similar to Bilingual men (61.1 %), but much less than English-dominant men (39.0 %). English-dominant men reported ‘wanted to be sure’ as the main reason (43 %). Furthermore they also reported higher frequencies of ‘possibly had an STI’ (14.4 %) and ‘partner possibly had an STI’ (6.8 %) than Spanish-dominant and Bilingual men.

Discussion

Consistent with prior studies [29] vaginal sex was the most frequently reported partnered behavior and anal sex the least commonly reported behavior for both men and women in the complete sample. Overall, Hispanic men reported higher rates for all behaviors than women but assessed as a whole, behavior trends were similar.

Stratification by language dominance demonstrated differences in sexual behavior frequency. Differences were more evident among women: English-dominant women reported higher variability of all behaviors except anal sex. Findings indicate the need to understand cultural factors,

including language use, as they relate to sexual behaviors among Latinos. Prior research suggests that increasing assimilation into US culture, overtly marked by a preference of English for everyday communication, also leads to an increase in potentially risky sexual behaviors [30, 31]. These studies suggest that increased proficiency in English indicate a cultural change towards a more varied sexual repertoire, exposing acculturated Latinos to excess risk for STIs and HIV.

However, critics of the acculturation premise argue that cultural change is not assimilation, but rather the creation of a unique US-Latino culture where in addition to language dominance, other contextual factors like place of family origin, documentation status, and interpersonal relationships are important distinguishing factors [20, 22, 32–34]. Though our study cannot assess place of migration or documentation status, understanding of varied sexual behaviors by language dominance indicates new areas of research and are directly applicable in the design and creation of sexual health education programs. For example, the reasons behind the higher levels of reporting of receptive anal sex among Bilingual and Spanish-dominant women should be further explored. This is an understudied area of heterosexual behavior as a whole [35]. Its practice in Spanish-dominant and Bilingual Latino women may point to other social factors affecting sexual health: such as lack of access to contraception or prevailing ideas of virginity. Additionally, practical implications of this finding suggest that discussion of safe practices of anal sex should be part of any female-focused Spanish language sexual health education program. Prior research among Hispanic non-heterosexual men has highlighted the importance of relationship status [36], culturally tailored approaches [37] and using existing social networks [38] for interventions, these aspects should also be assessed in other Hispanic populations.

The identified higher levels of arousal, pleasure and orgasms among Spanish-dominant participants provides data to support sex-positive interventions in sexual health promotion in this group. Positive sexuality education improved well-being [39] in diverse international interventions but has not been a focus of prevailing interventions in Latinos in the US.

Despite the advantages of a probabilistic sample, our study is limited by a lack of detailed analysis on immigration, time as a resident in the US, ancestry or nativity status, all important stratifying characteristics in the US Latino population. Some of these variations may be captured by language dominance but it is not possible to determine their specific effects based on existing data. Further, age grouping was not assessed due to the sparsity of the data. Lastly, low education levels of Spanish-dominant participants who answered the Spanish data

collection instrument may have hindered understanding of questions as suggested by the vaginal sex frequency discrepancy discussed above.

New Contributions to the Literature

Data presented here provide a nuanced description of sexual health measures for Hispanic women and men in the US. We provide a novel viewpoint in analyzing sexual health behaviors by accounting for language dominance and gender, and including Spanish language data collection in a nationally representative sample. The results of this study extend the understanding of sexual health in this population by reporting on a broader variability of sexual behaviors including perceptions of pleasure, which have not been previously reported in representative samples of Hispanics living in the US. We provide key data on sexual variability among Hispanics; addressing the needs of programs seeking to reduce sexual health disparities in this population.

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Compliance with Ethical Standards

Conflict of interest The authors have no conflicts of interest to disclose.

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