

Health Care Providers' Implicit and Explicit Attitudes Toward Lesbian Women and Gay Men

Janice A. Sabin, PhD, MSW, Rachel G. Riskind, PhD, and Brian A. Nosek, PhD

Lesbian and gay individuals are typically mentally and physically healthy; however, sexual minority status is a marker of elevated risk for mental, physical, and sexual health problems.¹⁻⁴ The Institute of Medicine commission on lesbian, gay, bisexual, and transgender (LGBT) health recognizes that the sexual minority community is diverse and that the term LGBT is often used as a blanket term. In our review of the literature, we use the terms for the population studied described in each report, resulting in variation in terminology. The Institute of Medicine commission found that LGBT people are more likely than heterosexual people to smoke, use alcohol and illegal substances, attempt suicide, and experience depression.⁵ Chronic stress attributable to minority status, legal barriers to health insurance, providers who receive little training in culturally competent care of LGBT individuals, and experiences and expectations of discrimination within the health care system can all marginalize the health of LGBT people.^{5,6} Evidence suggests that discrimination, such as peer and family rejection and unfavorable legal decisions about the rights of sexual minorities, contributes to elevated health risk among sexual minorities.^{7,8}

Despite elevated health risk, lesbian women are more likely to avoid medical care and less likely to engage in preventive cancer screening than their heterosexual peers.⁶ Similar to racial and ethnic minority and overweight patients who experience discrimination in health care and delay seeking care,^{9,10} sexual minority patients who experience discrimination also delay seeking care. In one study, one quarter of lesbian patients reported that they delayed seeking timely Papanicolaou screening because they feared discrimination.¹¹ In a study of the Veterans Health Care Administration, 25% of sexual minority veterans reported avoiding seeking services because of concerns about stigma.¹²

Stigma is the co-occurrence of labeling, stereotyping, separation, status loss, and

Objectives. We examined providers' implicit and explicit attitudes toward lesbian and gay people by provider gender, sexual identity, and race/ethnicity.

Methods. We examined attitudes toward heterosexual people versus lesbian and gay people in Implicit Association Test takers: 2338 medical doctors, 5379 nurses, 8531 mental health providers, 2735 other treatment providers, and 214 110 nonproviders in the United States and internationally between May 2006 and December 2012. We characterized the sample with descriptive statistics and calculated Cohen *d*, a standardized effect size measure, with 95% confidence intervals.

Results. Among heterosexual providers, implicit preferences always favored heterosexual people over lesbian and gay people. Implicit preferences for heterosexual women were weaker than implicit preferences for heterosexual men. Heterosexual nurses held the strongest implicit preference for heterosexual men over gay men (Cohen *d*=1.30; 95% confidence interval=1.28, 1.32 among female nurses; Cohen *d*=1.38; 95% confidence interval=1.32, 1.44 among male nurses). Among all groups, explicit preferences for heterosexual versus lesbian and gay people were weaker than implicit preferences.

Conclusions. Implicit preferences for heterosexual people versus lesbian and gay people are pervasive among heterosexual health care providers. Future research should investigate how implicit sexual prejudice affects care. (*Am J Public Health.* 2015;105:1831-1841. doi:10.2105/AJPH.2015.302631)

discrimination in a situation in which power is exercised.¹³ Lesbian and gay people's awareness of biases against sexual minorities, even in the absence of personal experience with bias, can be described as "felt stigma."^{3,14} Through felt stigma, living in a biased society can influence the health of even those lesbian and gay people who have personally experienced little discrimination.

Felt stigma can prevent sexual minority patients from disclosing their sexual orientation to their providers,¹⁵ despite the fact that this information can help providers identify health risk.¹⁶ For example, in a study of men who have sex with men, primary care providers who were aware that their male patients had male sexual partners were more likely to recommend HIV testing (59% vs 13% who were unaware) and hepatitis A or B vaccination (32% vs 16% who were unaware).¹⁷

When members of sexual minority groups do seek medical care, many experience biased

treatment.^{5,18} In a 2008 study of Health Professionals Advancing LGBT Equality members, previously known as the Gay and Lesbian Medical Association, 34% of LGBT physicians reported observing discriminatory care of an LGBT patient.¹⁹ In another study, 26% of HIV-infected patients reported perceptions of provider discrimination.²⁰ These patients reported discrimination from physicians (54%), nurses and other staff (39%), dentists (32%), and case workers or social workers (8%). Similarly, many directors of assisted reproductive technology programs reported that they would decline to treat a gay couple (48%) or a lesbian couple (17%) who sought reproductive services.²¹ These numbers are similar to or greater than the number in the same study who reported that they would decline to treat a woman with bipolar disorder or a history of suicide attempts.

Existing research on health care providers' attitudes toward lesbian, gay, and other sexual

minority patients has focused on providers' explicit attitudes: those that individuals report and consciously endorse. In an Australian study, more than half of the primary care provider participants explicitly expressed discomfort with caring for sexual minority patients.²² This discomfort predicted providers' reporting constraints in their sexual history-taking and safe sex-counseling behaviors.²² Some research has shown that health care students express attitudes consistent with sexual prejudice.^{23,24} Sexual prejudice is defined by Herek as "a negative attitude toward an individual based on her or his membership in a group defined by sexual orientation."^{25(p312)} Few studies, however, have investigated nurses²⁶ and other types of providers' attitudes toward sexual minority patients.

In addition to self-reported attitudes, attitudes may be implicit, meaning that they may exist outside conscious awareness or conscious control.^{27,28} Meta-analyses of implicit attitude measures show that they predict a variety of behaviors, including discrimination.^{29,30} For example, providers who have strong implicit attitudes that favor White Americans over African Americans tend to provide less patient-centered clinic visits and are less likely to prescribe appropriate care for African American patients.³¹⁻³³ In-group membership and in-group favoritism are a basic component of human nature,³⁴ and psychologists believe that modern discrimination may be the result of "in-group" favoritism, rather than overt hostility.³⁵ Little research has been published about health care providers' implicit attitudes toward members of sexual minority groups. We found no studies of physicians', nurses', dentists', or other providers' implicit attitudes toward lesbian women and gay men. We found 1 study of substance abuse treatment providers' implicit attitudes toward lesbian and gay individuals. In the study, heterosexual providers held more negative implicit attitudes toward lesbian women and gay men than did sexual minority providers.³⁶ Overall, these providers reported positive explicit attitudes toward lesbian and gay people.³⁶

The purpose of the current exploratory study was to describe implicit and explicit attitudes toward lesbian women and gay men among health professionals. We aimed to explore the scope of sexual prejudice among

providers. We conducted a secondary data analysis of a large sample of people who took the Sexuality Implicit Association Test (IAT)³⁷ by accessing the Project Implicit virtual laboratory. Because the data did not directly address attitudes toward bisexual, transgender, or other sexual and gender minority people, these analyses focused on attitudes toward lesbian women and gay men.

We explored implicit and explicit attitudes toward lesbian women and gay men among medical doctors, nurses, mental health providers, other treatment providers, and people who worked outside the health professions. We examined bivariate correlations between age and each of the 3 attitude measures within each provider group.

Previous research on implicit race and weight attitudes shows that provider gender and race/ethnicity are associated with strength of implicit biases.³⁸⁻⁴⁰ Therefore, we explored whether providers' preferences for heterosexual people would vary as a function of gender, race/ethnicity, and provider type. Greater knowledge about specific groups' attitudes toward lesbian and gay people will help target educational interventions. On the basis of research focusing on the general public,⁴¹ we hypothesized that, on average, providers would hold strong implicit preferences for heterosexual rather than lesbian or gay people and that explicit attitudes would be weaker than implicit attitudes.

METHODS

Participants were test takers who voluntarily accessed a public Web site, Project Implicit (<https://implicit.harvard.edu>), between May 2006 and December 2012 and selected the Sexuality IAT. Participants were not recruited to this site, and once they arrived at the site, they voluntarily chose to take the Sexuality IAT. Participants accessed the Project Implicit site because of a classroom or employer assignment, recommendations from others, media coverage, random Web surfing, and many other mechanisms. Researchers have established the validity of Project Implicit data sets in dozens of peer-reviewed articles across a variety of topics, including implicit and explicit measures of attitudes about sexual orientation.^{41,42-45}

Test takers were asked their age, gender, race, ethnicity, sexual identity, country of

residence, highest level of education, occupation, and additional demographic characteristics that we did not analyze in this study (Appendix A, available as a supplement to the online version of this article at <http://www.ajph.org>). Race and ethnicity is asked of all IAT test takers, and responding is optional. We included only participants who reported an age of 22 years or older. The IAT contains many categories of occupation and the following post-high school educational degrees: some college, associate's degree, bachelor's degree, some graduate school, master's degree, MBA, JD, MD, PhD, and "other advanced degree." If participants reported that their occupation was in the category "Healthcare – Diagnosing and Treating Practitioners (MD, Dentist)" and reported that their education level was "MD," we identified them as medical doctors (MDs). If participants reported that their occupation was "Healthcare – Diagnosing and Treating Practitioners (MD, Dentist)," and their education level was not "MD" but their education level was a bachelor's degree or higher, we identified them as "other diagnostic and treating professionals." If participants reported that their occupation was "Healthcare – Nursing and Home Health Assistants" and their education level was an associate's degree or higher, we identified them as nurses. If participants reported that their occupation was "Social Service – Counselors, Social Workers, Community Specialists," and their education level was a bachelor's degree or higher, we identified them as mental health providers. If participants reported that their occupation was not "Healthcare – Diagnosing and Treating Practitioners (MD, Dentist)," "Healthcare – Nursing and Home Health Assistants," "Social Service – Counselors, Social Workers, Community Specialists," or "Social Service – Religious Workers," we identified them as nonproviders.

During the 6-year period of data collection, 351 044 Sexuality IAT sessions were started. Table 1 presents the demographic characteristics of the sample (n = 247 030) after we excluded participants with disqualified IAT scores and those who failed to complete either the measure of explicit attitudes or the measure of implicit attitudes. Many participants identified themselves as lesbian, gay, or bisexual (LGB), including 17.3% of female MDs, 29.4% of male MDs, 12% of female nurses, 41.8% of

TABLE 1—Characteristics of Sexuality Implicit Association Test-Taker Sample, May 2006–December 2012

Characteristic	No.	Gender, % Female	Age, Years		Reside in United States, %
			Mean (95% CI)	SD	
Gender					
MD					
Male	1 467	...	37.59 (36.97, 38.21)	12.15	79.7
Female	997	...	34.91 (34.27, 35.55)	10.31	82.7
Nurse					
Male	756	...	35.92 (35.21, 36.63)	10.01	86.3
Female	4 945	...	37.08 (36.79, 37.37)	10.48	91.8
Mental health provider					
Male	1 716	...	36.52 (36.00, 37.04)	10.97	85.7
Female	7 235	...	33.92 (33.68, 34.16)	10.26	89.5
Other diagnostic provider					
Male	1 170	...	34.16 (33.53, 34.79)	11.02	79.0
Female	1 681	...	33.78 (33.23, 34.33)	11.51	83.0
Nonprovider					
Male	96 100	...	34.39 (34.32, 34.46)	10.68	76.0
Female	130 963	...	33.59 (33.53, 33.65)	10.17	84.9
Sexual orientation					
Medical doctor					
Heterosexual or straight	1 870	44.3	36.24 (35.71, 36.77)	11.65	81.8
Lesbian or gay	463	22.3	37.43 (36.46, 38.40)	10.58	77.5
Bisexual	140	49.6	37.40 (35.34, 39.46)	12.42	79.9
Nurse					
Heterosexual or straight	4 830	90.7	37.00 (36.71, 37.29)	10.46	91.6
Lesbian or gay	529	50.5	37.89 (37.01, 38.77)	10.34	86.4
Bisexual	363	87.0	34.62 (33.61, 35.63)	9.79	91.9
Mental health provider					
Heterosexual or straight	6 607	83.4	34.17 (33.92, 34.42)	10.48	89.3
Lesbian or gay	1 392	62.3	36.69 (36.13, 37.25)	10.62	88.6
Bisexual	996	87.2	32.82 (32.23, 33.41)	9.48	85.6
Other diagnostic provider					
Heterosexual or straight	2 200	60.9	33.18 (32.72, 33.64)	11.02	82.1
Lesbian or gay	418	42.0	37.00 (35.97, 38.03)	10.72	77.7
Bisexual	247	68.3	35.24 (33.83, 36.65)	11.28	78.6
Nonprovider					
Heterosexual or straight	175 288	59.4	33.95 (33.90, 34.00)	10.46	81.5
Lesbian or gay	31 948	37.5	35.04 (34.92, 35.16)	10.49	80.0
Bisexual	20 824	71.7	31.99 (31.86, 32.12)	9.43	78.7
Race/ethnicity					
Medical doctor					
White	1 611	39.1	38.16 (37.57, 38.75)	12.11	82.9
Black/African American	114	59.6	35.37 (33.51, 37.23)	10.12	88.4
Asian	312	41.9	31.20 (30.31, 32.09)	8.01	81.7
Hispanic	154	38.3	34.02 (32.51, 35.53)	9.54	76.5

Continued

male nurses, 23.8% of female mental health providers, 38.1% of male mental health providers, 20.5% of female other diagnostic providers, 27.1% of male other diagnostic providers, 20.5% of female nonproviders, and 26.8% of male nonproviders (Table A, available as a supplement to the online version of this article at <http://www.ajph.org>). By contrast, population estimates suggest that 2.8% of people living in the United States,⁴⁶ and 1.5% to 3.7% of people living in the United States, United Kingdom, Australia, and Canada identify themselves as LGB.⁴⁷ We attribute the high proportion of LGB participants relative to the LGB population to self-selection, as sexual orientation attitudes are likely to be of particular interest to nonheterosexual people. There was no significant difference between provider versus nonprovider groups.

Measures

The Implicit Association Test. We assessed implicit attitudes toward lesbian women and gay men with the Sexuality IAT.⁴¹ The IAT assesses associations between 2 concepts (i.e., gay people and heterosexual people) and 2 attributes (i.e., good and bad).³⁷ Words or images representing each of the categories appear 1 at a time in the middle of the computer screen, and participants sort them into 1 of the 4 categories as quickly as possible, using 2 computer keys (“e” and “i”). There are 2 critical response blocks in the task. In the first, gay people and good words are categorized with one key, and heterosexual people and bad words are categorized with the other key. In the second critical block, heterosexual people and good words are categorized with one key, and gay people and bad words are categorized with the other key. People who make correct responses faster, on average, in the first response block compared with the second are said to have an implicit preference for gay people compared with heterosexual people. People who make correct responses faster, on average, in the second response block compared with the first are said to have an implicit preference for heterosexual people compared with gay people.

In this study, “lesbian” and “gay” categories were represented by images of wedding cake toppers: 2 brides for lesbian women and 2 grooms for gay men and gender-neutral words

TABLE 1—Continued

Nurse					
White	4 247	87.6	37.37 (37.05, 37.69)	10.65	91.7
Black/African American	420	88.0	36.65 (35.75, 37.55)	9.38	94.9
Asian	133	70.7	32.77 (31.24, 34.30)	9.02	82.6
Hispanic	280	82.7	34.46 (33.38, 35.54)	9.18	95.7
Mental health provider					
White	6 308	80.8	34.82 (34.55, 35.09)	10.85	89.2
Black/African American	827	82.5	33.81 (33.21, 34.41)	8.82	97.1
Asian	189	81.4	30.69 (29.66, 31.72)	7.22	81.3
Hispanic	664	78.8	31.95 (31.29, 32.61)	8.64	93.9
Other diagnostic provider					
White	2 031	60.2	34.94 (34.43, 35.45)	11.63	83.4
Black/African American	90	67.8	31.83 (30.01, 33.65)	8.82	94.3
Asian	246	55.3	28.57 (27.75, 29.39)	6.58	83.0
Hispanic	154	50.6	31.74 (30.33, 33.15)	8.92	58.8
Nonprovider					
White	153 107	56.2	34.57 (34.52, 34.62)	10.77	81.9
Black/African American	15 902	71.0	33.76 (33.61, 33.91)	9.37	95.4
Asian	8 943	49.5	29.75 (29.59, 29.91)	7.52	65.8
Hispanic	18 544	59.7	31.34 (31.22, 31.46)	8.56	83.4

Note. CI = confidence interval.

(e.g., “homosexual”). The “straight” category was represented by a heterosexual wedding cake topper, and gender-neutral words (e.g., “heterosexual”). Attribute concepts were represented by a series of words representing the concepts of “good” (e.g., “happy”) and “bad” (e.g., “awful”).⁴⁸

Project Implicit data have been studied in detail, and the validity of results is comparable to that of similar data collected in experimental laboratory settings.^{48,49} The IAT has been used in more than 2000 empirical studies across a variety of topics.²⁷ The IAT has become widely accepted as a measure of implicit social cognition because it (1) captures attitudes that are related to but distinct from self-report,⁵⁰ (2) achieves good reliability when compared with other implicit measures,^{51,52} (3) shows stronger psychometric qualities than other implicit measures,⁵³ and (4) has predictive validity across a variety of topics.²⁹

The IAT effect is calculated as the standardized difference in mean response time on 2 key conditions of the IAT, known as the IAT *D* score.⁴⁹ The IAT design followed the standard format⁴⁸ and was analyzed using the recommended *D* scoring algorithm.⁵⁴ In

addition, following recommended practice, we disqualified IAT scores for any of the following criteria: (1) going too fast (< 300 milliseconds) on more than 10% of the total test trials or (2) making more than 30% erroneous responses across the critical blocks of the IAT. The IAT *D* score ranges from -2 to +2, with zero indicating no relative preference between lesbian or gay people and heterosexual people. Positive scores indicate an implicit preference for straight people, and negative scores indicate an implicit preference for lesbian or gay people.

Explicit measure. Test takers reported their preferences for straight people and gay people by endorsing 1 answer from the following list:

1. I strongly prefer straight people to gay people,
2. I moderately prefer straight people to gay people,
3. I slightly prefer straight people to gay people,
4. I prefer straight people and gay people equally,
5. I slightly prefer gay people to straight people,
6. I moderately prefer gay people to straight people, and

7. I strongly prefer gay people to straight people.

We recoded the 7-point response scale to range from -3 to +3, with zero indicating no relative preference for heterosexual versus lesbian and gay people. For this study, an explicit measure mean significantly higher than zero indicated an explicit preference for heterosexual people over lesbian and gay people.

Sexual orientation. The researchers asked test takers “What is your sexual orientation?” Responses were heterosexual or straight, gay or lesbian, bisexual, and asexual.

Some items that appeared in the data collection were not analyzed for this research. Full materials and data are available at <https://osf.io/ctqxo>.

Statistical Analyses

We compared means for the implicit and explicit measures for 4 categories of health providers and nonproviders as a function of gender, sexual identity, and race/ethnicity. Because large samples result in all effects being statistically significant, this report emphasizes reporting of effect size.

We calculated Cohen *d*, a standardized effect size measure,⁵⁵ with 95% confidence intervals (CIs) for each of the implicit and explicit measures within each group. We used Pearson correlation coefficient (*r*) to characterize associations between implicit and explicit measures.

RESULTS

We report implicit and explicit attitudes by provider type, gender, and sexual identity in Table 2. Generally, heterosexual men showed a stronger implicit preference for heterosexual people than did heterosexual women. However, heterosexual male and female nurses both showed strong preferences for heterosexual over lesbian and gay people. Heterosexual providers’ implicit preferences always favored heterosexual over lesbian and gay people, similar to nonproviders. In contrast, lesbian and gay providers held implicit and explicit preferences for lesbian and gay people over heterosexual people. Patterns of implicit preferences were mixed among bisexual providers and nonproviders.

Among all providers, heterosexual male nurses held strong implicit preferences for

TABLE 2—Implicit and Explicit Sexual Orientation Attitude Measures: Provider Type, Gender, and Sexual Orientation, Sexuality Implicit Association Test, May 2006–December 2012

Characteristic	No.	Implicit Toward Lesbian Women		Implicit Toward Gay Men			Explicit Toward Lesbian Women or Gay Men		
		Mean ^a (SD)	Cohen <i>d</i> ^b (95% CI)	No.	Mean (SD)	Cohen <i>d</i> (95% CI)	No.	Mean ^c (SD)	Cohen <i>d</i> (95% CI)
Medical doctor									
Female	465	0.14 (0.5)	0.30 (0.26, 0.34)	485	0.31 (0.5)	0.69 (0.65, 0.73)	965	0.36 (1.02)	0.35 (0.29, 0.42)
Male	705	0.32 (0.5)	0.67 (0.63, 0.70)	674	0.33 (0.5)	0.69 (0.65, 0.72)	1 392	0.65 (1.42)	0.46 (0.38, 0.53)
Heterosexual woman	388	0.21 (0.4)	0.48 (0.43, 0.52)	402	0.37 (0.4)	0.88 (0.84, 0.92)	799	0.55 (0.94)	0.59 (0.52, 0.65)
Heterosexual man	504	0.45 (0.4)	1.07 (1.03, 1.11)	478	0.47 (0.4)	1.09 (1.05, 1.13)	985	1.16 (1.15)	1.01 (0.94, 1.08)
Lesbian woman	40	-0.27 (0.5)	-0.59 (-0.73, 0.44)	54	-0.04 (0.5)	-0.09 (-0.21, 0.04)	102	-0.64 (0.98)	-0.65 (-0.84, -0.46)
Gay man	165	-0.07 (0.5)	-0.15 (-0.22, 0.08)	169	-0.05 (0.4)	-0.12 (-0.18, -0.06)	338	0.77 (-0.8)	-0.99 (-0.90, -1.07)
Bisexual woman	37	-0.09 (0.5)	-0.18 (-0.34, 0.03)	29	0.09 (0.4)	0.23 (0.09, 0.37)	64	-0.36 (0.74)	-0.49 (-0.67, -0.31)
Bisexual man	36	0.21 (0.4)	0.54 (0.41, 0.67)	27	0.2 (0.4)	0.56 (0.42, 0.69)	69	0.27 (0.97)	0.28 (0.05, 0.51)
Nurse									
Female	2 353	0.34 (0.5)	0.72 (0.70, 0.74)	2 301	0.48 (0.4)	1.12 (1.10, 1.13)	4 713	0.65 (1.17)	0.56 (0.52, 0.59)
Male	353	0.26 (0.6)	0.47 (0.42, 0.53)	352	0.31 (0.5)	0.57 (0.52, 0.63)	703	0.43 (1.54)	0.28 (0.17, 0.39)
Heterosexual woman	2 079	0.4 (0.4)	0.93 (0.91, 0.95)	2 031	0.52 (0.4)	1.30 (1.28, 1.32)	4 158	0.8 (1.12)	0.71 (0.68, 0.75)
Heterosexual man	208	0.5 (0.5)	1.06 (1.00, 1.13)	205	0.58 (0.4)	1.38 (1.32, 1.44)	413	1.21 (1.2)	1.01 (0.89, 1.12)
Lesbian woman	131	-0.21 (0.4)	-0.48 (-0.55, 0.40)	119	-0.02 (0.4)	-0.05 (-0.12, 0.03)	255	-0.73 (1.12)	-0.65 (-0.79, -0.51)
Gay man	119	-0.13 (0.4)	-0.30 (-0.38, 0.23)	127	-0.14 (0.4)	-0.33 (-0.40, -0.25)	245	-0.8 (1.25)	-0.64 (-0.80, -0.48)
Bisexual woman	143	-0.02 (0.5)	-0.04 (-0.12, 0.05)	151	0.21 (0.4)	0.48 (0.41, 0.55)	300	-0.16 (0.76)	-0.21 (-0.30, -0.12)
Bisexual man	26	0.11 (0.5)	0.21 (0.00, 0.41)	20	0.33 (0.4)	0.83 (0.65, 1.00)	45	0 (1.11)	0 (-0.32, 0.32)
Mental health provider									
Female	3 462	0.12 (0.5)	0.24 (0.23, 0.26)	3 418	0.31 (0.5)	0.67 (0.66, 0.69)	6 953	0.21 (1.09)	0.19 (0.17, 0.22)
Male	816	0.24 (0.5)	0.45 (0.42, 0.49)	791	0.28 (0.5)	0.55 (0.51, 0.58)	1 619	0.28 (1.4)	0.20 (0.13, 0.27)
Heterosexual woman	2 636	0.23 (0.5)	0.51 (0.49, 0.53)	2 603	0.4 (0.4)	0.93 (0.91, 0.95)	5 300	-0.49 (0.95)	-0.52 (-0.54, -0.49)
Heterosexual man	501	0.44 (0.5)	0.94 (0.90, 0.98)	508	0.47 (0.4)	1.07 (1.03, 1.11)	1 002	0.9 (1.10)	0.82 (0.75, 0.89)
Lesbian woman	449	-0.3 (0.4)	-0.68 (-0.72, 0.64)	372	-0.06 (0.4)	-0.15 (-0.19, -0.10)	822	-1 (1.07)	-0.93 (-1.01, -0.86)
Gay man	251	-0.14 (0.4)	-0.33 (-0.38, 0.27)	229	-0.09 (0.4)	-0.21 (-0.26, -0.15)	497	-0.82 (1.22)	-0.67 (-0.78, -0.56)
Bisexual woman	377	-0.1 (0.4)	-0.23 (-0.27, 0.18)	443	0.14 (0.5)	0.31 (0.27, 0.35)	831	-0.36 (0.86)	-0.42 (-0.48, -0.36)
Bisexual man	64	0.12 (0.5)	0.22 (0.09, 0.35)	54	0.1 (0.5)	0.19 (0.05, 0.33)	120	-0.29 (1.18)	-0.25 (-0.46, -0.03)
Other diagnostic provider									
Female	842	0.1 (0.5)	0.21 (0.18, 0.24)	767	0.29 (0.5)	0.60 (0.57, 0.64)	1 618	0.24 (1.00)	0.24 (0.19, 0.29)
Male	552	0.33 (0.5)	0.67 (0.63, 0.71)	561	0.36 (0.5)	0.73 (0.69, 0.78)	1 116	0.7 (1.37)	0.51 (0.43, 0.59)
Heterosexual woman	673	0.18 (0.5)	0.40 (0.37, 0.43)	604	0.36 (0.5)	0.80 (0.76, 0.84)	1 289	0.45 (0.89)	0.51 (0.46, 0.55)
Heterosexual man	404	0.45 (0.4)	1.02 (0.98, 1.07)	406	0.5 (0.4)	1.19 (1.15, 1.23)	811	1.14 (1.16)	0.98 (0.90, 1.06)
Lesbian woman	83	-0.27 (0.4)	-0.63 (-0.72, 0.54)	89	-0.07 (0.5)	-0.13 (-0.24, -0.03)	169	-0.88 (1.07)	-0.82 (-0.98, -0.66)
Gay man	104	-0.11 (0.4)	-0.25 (-0.33, 0.17)	124	-0.05 (0.5)	-0.11 (-0.19, -0.02)	232	-0.67 (1.19)	-0.56 (-0.72, -0.41)
Bisexual woman	86	-0.15 (0.5)	-0.33 (-0.42, 0.23)	74	0.11 (0.4)	0.25 (0.15, 0.35)	160	-0.29 (0.75)	-0.39 (-0.50, -0.27)
Bisexual man	44	0.22 (0.5)	0.49 (0.36, 0.62)	31	0.19 (0.5)	0.42 (0.26, 0.58)	73	0.15 (0.81)	0.19 (0.00, 0.37)
Nonprovider									
Female	61 863	0.2 (0.5)	0.40 (0.40, 0.40)	61 959	0.38 (0.5)	0.83 (0.82, 0.83)	125 406	0.41 (1.17)	0.35 (0.34, 0.36)
Male	44 851	0.35 (0.5)	0.69 (0.68, 0.69)	44 512	0.39 (0.5)	0.80 (0.79, 0.80)	90 947	0.79 (1.44)	0.55 (0.54, 0.56)
Heterosexual woman	49 176	0.3 (0.5)	0.67 (0.66, 0.67)	49 403	0.45 (0.4)	1.07 (1.07, 1.08)	99 674	0.65 (1.08)	0.60 (0.60, 0.61)
Heterosexual man	32 804	0.49 (0.4)	1.14 (1.13, 1.14)	32 698	0.54 (0.4)	1.29 (1.28, 1.29)	66 469	1.24 (1.22)	1.02 (1.01, 1.03)
Lesbian woman	5 633	-0.29 (0.5)	-0.64 (-0.66, 0.63)	5 627	-0.03 (0.5)	-0.07 (-0.08, -0.05)	11 518	-0.87 (1.16)	-0.75 (-0.77, -0.73)
Gay man	9 305	-0.12 (0.5)	-0.27 (-0.28, 0.26)	9 112	-0.07 (0.5)	-0.16 (-0.16, -0.15)	18 934	-0.64 (1.23)	-0.52 (-0.54, -0.50)
Bisexual woman	7 054	-0.07 (0.4)	-0.18 (-0.19, 0.18)	6 929	0.18 (0.5)	0.39 (0.38, 0.40)	14 214	-0.2 (0.83)	-0.24 (-0.25, -0.23)
Bisexual man	2 742	0.18 (0.5)	0.37 (0.35, 0.39)	2 702	0.26 (0.5)	0.55 (0.54, 0.57)	5 544	0.17 (1.07)	0.16 (0.13, 0.19)

Note. CI = confidence interval.

^aImplicit and explicit measures range from -2 to +2, with zero indicating no bias. A positive mean indicates some degree of preference for heterosexual persons; a negative mean indicates some degree of preference for lesbian or gay persons.

^bEffect size: Cohen *d* is a standardized effect size, comparing the mean to mean = 0 (no bias), interpreted as *d* of 0.2 = small effect; *d* of 0.5 = medium effect; and *d* of 0.8 or greater = large effect.

^cExplicit measures range from -3 to +3, with zero indicating no bias. A positive mean indicates some degree of preference for heterosexual persons; a negative mean indicates some degree of preference for lesbian or gay persons.

heterosexual women (Cohen $d=1.06$; 95% CI=1.00, 1.13) and heterosexual men (Cohen $d=1.38$; 95% CI=1.32, 1.44). Nonproviders showed a similar pattern. Heterosexual female nurses and heterosexual male MDs held strong implicit preferences for heterosexual women (Cohen $d=0.93$; 95% CI=0.91, 0.95 and Cohen $d=1.07$; 95% CI=1.03, 1.11, respectively) and gay men (Cohen $d=1.30$; 95% CI=1.28, 1.32 and Cohen $d=1.09$; 95% CI=1.05, 1.13, respectively). Similarly, heterosexual female MDs held a strong preference for heterosexual men (Cohen $d=0.88$; 95% CI=0.84, 0.92); however, their preference for heterosexual women was moderate (Cohen $d=0.48$; 95% CI=0.43, 0.52). Heterosexual male mental health providers and other diagnostic providers held strong implicit preferences for heterosexual over gay men.

By contrast, lesbian providers in all categories held strong implicit preferences for lesbian women over heterosexual women. Gay male providers in all categories held weak implicit preferences for gay men over heterosexual men.

Heterosexual, lesbian, and gay people in almost all provider groups reported moderate to strong explicit preferences for people who shared their own sexual identity. There was 1 exception: heterosexual female mental health providers explicitly reported favoring lesbian women and gay men over heterosexual people (Cohen $d=-0.52$; 95% CI=-0.54, -0.49). For heterosexual participants in all professions, explicit attitude effect sizes were similar to or weaker than implicit attitude effect sizes.

Table 3 reports implicit and explicit preferences by participant race and ethnicity. Among most groups, implicit and explicit preferences for heterosexual over lesbian and gay people were strong. Generally, however, White test takers showed less implicit and explicit preference for heterosexual over lesbian and gay people than most groups of Black/African American, Asian, and Hispanic test takers. Asian mental health providers showed little implicit preference for heterosexual women (Cohen $d=0.15$; 95% CI=0.05, 0.25), and no explicit preference for heterosexual people (Cohen $d=0.04$; 95% CI=-0.13, 0.21).

Table 4 shows correlations of implicit with explicit measures as a function of type of health profession and demographic characteristics.

Correlations between implicit and explicit preferences were statistically significant for almost all groups.

We examined bivariate correlations between age and each of the 3 attitude measures within each provider group. Age was not strongly associated with implicit or explicit attitudes in any provider group. Among nurses, age was correlated with explicit attitudes ($r=0.04$; $P=.003$) and with implicit attitudes toward lesbian women ($r=0.06$; $P=.001$). Among other diagnostic and treatment providers, age was correlated with explicit attitudes ($r=-0.06$; $P=.004$). Among nonproviders, age was correlated with implicit attitudes toward gay men ($r=0.01$; $P=.001$), lesbian women ($r=0.03$; $P<.001$), and with explicit attitudes toward lesbian and gay people ($r=0.02$; $P<.001$). All other possible correlations between age and attitude measures were not statistically reliable (all $P>.05$).

DISCUSSION

Ours is the first study to our knowledge to examine both implicit and explicit preferences about sexual orientation in a large, international sample of health providers in diverse fields, and thus adds another cognitive dimension to examining sexual prejudice among health care providers. We found that moderate to strong implicit preferences for straight people over lesbian women or, in particular, gay men, are widespread among heterosexual providers. In contrast, lesbian and gay providers held implicit and explicit preferences for lesbian women and gay men over straight people, and bisexual providers held mixed preferences. Of provider types, mental health providers generally held the weakest implicit preferences toward heterosexual people, and nurses held the strongest. This may reflect differences in professional training, political affiliation, socioeconomic status, or other factors, which will be important directions for future research.

Our findings have several implications. Widespread provider implicit preferences about sexual orientation may contribute to health and health care disparities among sexual minority populations. In a recent study, clinicians' implicit preferences about racial groups predicted the quality of patient-provider communication in real-world clinical interactions.³³

Implicit preferences about race predict treatment recommendations in some instances.^{31,32} Providers' implicit preferences about sexual orientation may function in the same way and contribute to disparities in care for sexual minority patients. Future research should explore the association between health providers' implicit preferences and existing health disparities among sexual minorities.

Although most groups exhibited bias, LGB health professionals generally held weaker biases than their heterosexual peers. In 2 studies of implicit preferences about race, African American physicians showed little preference toward either White Americans or African Americans.^{32,38} Similar weak implicit sexual orientation preferences may indicate one potential benefit of diversity in the health workforce. In health care systems and organizations that employ LGB professionals, "in-group" favoritism, which advantages people through acts of favoritism, rather than overt hostility,³⁵ may help reduce discrimination in health care toward lesbian and gay people.

We found that implicit preference toward heterosexual over lesbian or gay people was particularly widespread among nurses, a neglected area in nursing research. A 2010 review of nursing articles found that just 8 of the 5000 reviewed focused on LGBT health.⁵⁶ Nursing educators agree that it is important to teach nursing students about patient care of sexual minorities, but they report that they are unprepared to teach LGBT content.⁵⁷ In a recent study of New Mexico school health professionals, school nurses were less likely than social workers or counselors to report moderate or high knowledge of health risks for lesbian, gay, bisexual, transgender, or questioning youths.⁵⁸ Curriculum about sexual minority issues developed specifically for nurses and nursing students, such as the one provided at the Web site for the Howard Brown Health Center, may be beneficial. Other resources for health care providers can be found on Web sites of the National LGBT Health Education Center, the American Medical Association LGBT Health Resources, the Health Resources Service Administration, and other government and health services organizations.

Our findings highlight the importance of effective training in sexual minority health care issues in varied health disciplines. Previous

TABLE 3—Implicit and Explicit Sexual Orientation Attitudes Measures: Provider Type and Race and Ethnicity, Sexuality Implicit Association Test, May 2006–December 2012

Characteristic	Implicit Toward Lesbian Women			Implicit Toward Gay Men			Explicit Toward Lesbian Women or Gay Men		
	No.	Mean ^a (SD)	Cohen <i>d</i> ^b (95% CI)	No.	Mean ^a (SD)	Cohen <i>d</i> ^b (95% CI)	No.	Mean ^c (SD)	Cohen <i>d</i> (95% CI)
Medical doctor									
White	780	0.21 (0.49)	0.43 (0.40, 0.46)	753	0.29 (0.47)	0.62 (0.59, 0.65)	1 542	0.44 (1.25)	0.35 (0.29, 0.41)
Black/African American	49	0.32 (0.47)	0.68 (0.55, 0.81)	55	0.43 (0.50)	0.86 (0.73, 0.99)	113	0.80 (1.3)	0.62 (0.38, 0.86)
Asian	138	0.40 (0.45)	0.89 (0.81, 0.97)	158	0.38 (0.43)	0.88 (0.81, 0.95)	298	0.90 (1.31)	0.69 (0.54, 0.84)
Hispanic	83	0.25 (0.45)	0.56 (0.46, 0.66)	58	0.37 (0.38)	0.97 (0.87, 1.07)	148	0.37 (1.35)	0.27 (0.05, 0.49)
Nurse									
White	2 036	0.30 (0.47)	0.64 (0.62, 0.66)	1 976	0.43 (0.45)	0.96 (0.94, 0.98)	4 053	0.55 (1.18)	0.47 (0.43, 0.51)
Black/African American	205	0.59 (0.45)	1.31 (1.25, 1.37)	176	0.62 (0.40)	1.55 (1.49, 1.61)	390	1.26 (1.39)	0.91 (0.77, 1.05)
Asian	50	0.47 (0.42)	1.12 (1.00, 1.24)	72	0.45 (0.46)	0.98 (0.87, 1.09)	128	0.91 (1.35)	0.67 (0.44, 0.90)
Hispanic	129	0.33 (0.54)	0.61 (0.52, 0.70)	134	0.44 (0.41)	1.07 (1.00, 1.14)	267	0.65 (1.21)	0.54 (0.39, 0.69)
Mental health provider									
White	3 017	0.1 (0.48)	0.21 (0.19, 0.23)	2 985	0.28 (0.46)	0.61 (0.59, 0.63)	6 043	0.15 (1.08)	0.14 (0.11, 0.17)
Black/African American	380	0.43 (0.52)	0.83 (0.78, 0.88)	378	0.53 (0.46)	1.15 (1.10, 1.20)	794	0.81 (1.41)	0.57 (0.47, 0.67)
Asian	102	0.08 (0.52)	0.15 (0.05, 0.25)	82	0.25 (0.45)	0.56 (0.46, 0.66)	185	0.05 (1.17)	0.04 (0.13, 0.21)
Hispanic	319	0.23 (0.49)	0.47 (0.42, 0.52)	308	0.35 (0.48)	0.73 (0.68, 0.78)	639	0.33 (1.18)	0.28 (0.19, 0.37)
Other diagnostic providers									
White	1 009	0.18 (0.49)	0.37 (0.34, 0.40)	934	0.3 (0.49)	0.61 (0.58, 0.64)	1 938	0.36 (1.17)	0.31 (0.26, 0.36)
Black/African American	44	0.32 (0.50)	0.64 (0.49, 0.79)	37	0.51 (0.39)	1.31 (1.18, 1.44)	83	0.69 (1.15)	0.60 (0.35, 0.85)
Asian	113	0.28 (0.49)	0.57 (0.48, 0.66)	127	0.33 (0.46)	0.72 (0.64, 0.80)	240	0.67 (1.18)	0.57 (0.42, 0.72)
Hispanic	64	0.21 (0.41)	0.51 (0.41, 0.61)	77	0.4 (0.47)	0.85 (0.75, 0.95)	153	0.52 (1.29)	0.40 (0.20, 0.60)
Nonproviders									
White	72 478	0.23 (0.50)	0.46 (0.46, 0.46)	72 073	0.36 (0.47)	0.77 (0.77, 0.77)	146 161	0.50 (1.26)	0.40 (0.39, 0.41)
Black/African American	7 337	0.49 (0.49)	1.00 (0.99, 1.01)	7 375	0.56 (0.46)	1.22 (1.21, 1.23)	15 135	0.97 (1.47)	0.66 (0.64, 0.68)
Asian	4 163	0.34 (0.48)	0.71 (0.70, 0.72)	4 119	0.40 (0.47)	0.85 (0.84, 0.86)	8 654	0.79 (1.39)	0.57 (0.54, 0.60)
Hispanic	8 591	0.31 (0.50)	0.62 (0.61, 0.63)	8 687	0.41 (0.47)	0.87 (0.86, 0.88)	17 718	0.61 (1.34)	0.46 (0.44, 0.48)

Note. CI = confidence interval.

^aImplicit and explicit measures range from -2 to +2, with zero indicating no bias. A positive mean indicates some degree of preference for heterosexual persons; a negative mean indicates some degree of preference for lesbian or gay persons.

^bEffect size: Cohen *d* is a standardized effect size, comparing the mean to mean = 0 (no bias), interpreted as *d* of 0.2 = small effect; *d* of 0.5 = medium effect; and *d* of 0.8 or greater = large effect.

^cExplicit measures range from -3 to +3, with zero indicating no bias. A positive mean indicates some degree of preference for heterosexual persons; a negative mean indicates some degree of preference for lesbian or gay persons.

research in this area suggests many areas for improvement. Professionals in dentistry, social work, and medicine report that they lack the knowledge and clinical skills to work with LGBT patients.^{59–61} In the single relevant study we found about dental students, just 13.3% reported that their dental school prepared them well to deliver care to LGBT patients.⁶² In another study, master's-level social work students at a Midwestern US university reported a low level of cultural competence in serving LGBT clients, despite positive explicit attitudes toward the LGBT population.⁶³ In a 2010 survey of physicians of an Upstate New

York medical university, 43% of physicians reported that they were unaware of the association between lesbian, gay, bisexual, transgender, or questioning adolescents and suicide.⁶⁴ Fewer than half of the physicians agreed that they have the skills to address issues related to sexual orientation with their adolescent patients.⁶⁴ According to a study of 150 medical schools in the United States and Canada, deans of medical schools reported in 2009–2010 that their programs devoted an average of just 5 hours in the entire medical school program to LGBT content.⁶¹ Yet, a 2004 study of medical students suggests that students

who have clinical exposure to LGBT patients were more likely to take a sexual history with LGBT patients, reported more positive attitudes toward LGBT patients, and demonstrated greater knowledge of LGBT health concerns.⁶⁵

Education to reduce sexual prejudice is a growing area of intervention. A meta-analytic review studied educational interventions from around the world, mostly targeting undergraduates, to reduce sexual prejudice.⁶⁶ These interventions included information on sexual orientation, LGB lives, and prejudice through lectures, films, and scientific readings.⁶⁶ The review found that education was highly

TABLE 4—Intercorrelation Between Implicit and Explicit Sexuality Measures: Sexuality Implicit Association Test, May 2006–December 2012

Implicit or Explicit Attitude Correlation	Correlation Between Implicit and Explicit Attitudes Toward Lesbian Women			Correlation Between Implicit and Explicit Attitudes Toward Gay Men		
	No. ^a	r ^b	P	No.	r	P
Medical doctor						
Gender						
Male	673	0.505	< .001	631	0.459	< .001
Female	446	0.377	< .001	472	0.398	< .001
Sexuality						
Heterosexual or straight	854	0.377	< .001	845	0.313	< .001
Lesbian or gay	199	0.275	< .001	208	0.192	.005
Bisexual	70	0.383	.001	54	0.469	< .001
Race/ethnicity						
White	743	0.469	< .001	721	0.402	< .001
Black/African American	48	0.462	.001	55	0.300	.026
Asian	132	0.376	< .001	150	0.523	< .001
Hispanic	80	0.564	< .001	55	0.489	< .001
Nurse						
Gender						
Male	323	0.460	< .001	329	0.529	< .001
Female	2 240	0.398	< .001	2 182	0.360	< .001
Sexuality						
Heterosexual or straight	2 178	0.316	< .001	2 121	0.293	< .001
Lesbian or gay	236	0.199	.002	231	0.118	.074
Bisexual	161	0.218	.005	165	0.225	.004
Race/ethnicity						
White	1 941	0.411	< .001	1 877	0.407	< .001
Black/African American	191	0.249	.001	160	0.263	.001
Asian	49	0.304	.034	68	0.433	< .001
Hispanic	122	0.382	< .001	128	0.468	< .001
Mental health provider						
Gender						
Male	765	0.481	< .001	745	0.446	< .001
Female	3 324	0.401	< .001	3 274	0.390	< .001
Sexuality						
Heterosexual or straight	3 013	0.296	< .001	2 979	0.293	< .001
Lesbian or gay	671	0.204	< .001	577	0.174	< .001
Bisexual	426	0.305	< .001	480	0.264	< .001
Race/ethnicity						
White	2 856	0.393	< .001	2 881	0.376	< .001
Black/African American	365	0.473	< .001	360	0.391	< .001
Asian	100	0.429	< .001	80	0.423	< .001
Hispanic	310	0.399	< .001	292	0.362	< .001
Other diagnostic provider						
Gender						
Male	523	0.432	< .001	536	0.462	< .001
Female	805	0.385	< .001	741	0.381	< .001

Continued

TABLE 4—Continued

Sexuality						
Heterosexual or straight	1 034	0.375	< .001	974	0.317	< .001
Lesbian or gay	180	0.124	.097	205	0.247	< .001
Bisexual	122	0.293	.001	103	0.304	.002
Race/ethnicity						
White	955	0.434	< .001	895	0.429	< .001
Black/African American	40	0.460	.003	34	0.149	.4
Asian	109	0.405	< .001	125	0.368	< .001
Hispanic	64	0.367	.003	76	0.414	< .001
Nonprovider						
Gender						
Male	42 351	0.475	< .001	41 859	0.469	< .001
Female	59 128	0.430	< .001	59 137	0.376	< .001
Sexuality						
Heterosexual or straight	78 160	0.356	< .001	78 125	0.310	< .001
Lesbian or gay	14 335	0.193	< .001	14 102	0.180	< .001
Bisexual	9 412	0.302	< .001	9 214	0.283	< .001
Race/ethnicity						
White	69 084	0.468	< .001	68 521	0.422	< .001
Black/African American	6 912	0.387	< .001	6 966	0.372	< .001
Asian	4 012	0.438	< .001	3 981	0.402	< .001
Hispanic	8 204	0.439	< .001	8 248	0.401	< .001

^aNo. represents total test takers for whom we have both implicit and explicit measures.

^bPearson correlation (*r*).

effective in increasing knowledge about homosexuality, and moderately effective in reducing negative attitudes toward sexual minorities.⁶⁶ Intergroup contact was also moderately effective in reducing negative attitudes toward sexual minorities.⁶⁶ The review found that education combined with intergroup contact had a medium effect on reducing sexual prejudice.⁶⁶ These strategies should be incorporated into health professional education and continuing education. Education for health providers should include a greater focus on clinical competence and exposure to care of sexual minority patients. Notably, organizations such as Fenway Health and Health Professionals Advancing LGBT Equality provide free resources to increase LGBT cultural competence among health care providers.⁶⁷

Limitations

The sample for this study is not representative of a definable population, so the sample means and distributions are not general parameter estimates. However, the size, diversity,

and interdisciplinary nature of the sample provide the unique opportunity to extend findings from laboratory investigations of implicit preferences. Many people who visited the Project Implicit virtual laboratory to take the Sexuality IAT were encouraged to complete this task as part of a work or school assignment. Others were interested in the topic and open to learning about their attitudes. Therefore, these estimates of implicit preferences may be underestimates or overestimates for the population of health providers. We were not able to determine how doctors with foreign degrees or nurse practitioners classified their degree or occupations. Another limitation to this study is that providers' attitudes toward bisexual and transgender people were beyond the scope of the Sexuality IAT, which only addresses the categories of lesbian women and gay men. Furthermore, the data set lacks a measure of gender identity that can detect transgender participants.

Future research should examine how providers' implicit and explicit preferences toward sexual orientation affect delivery of care to

members of lesbian, gay, and other sexual minority populations. Research is also needed to evaluate and continue to refine sexual minority curriculum content for varied clinical and continuing education programs. Recommendations for curricular reform and for ways in which to provide diverse clinical experience are under discussion in nursing⁶⁸ and dentistry,⁶⁰ and guidelines have been developed for primary care.⁶⁹ These primary care guidelines include standards for patient-provider communication, staff training, sensitive documentation of sexual orientation, and creating inclusive environments.⁶⁹ Future research that will be critical to improving health care for members of sexual minority populations should include assessing health care providers' attitudes toward bisexual and transgender people, who represent 2 groups particularly likely to experience stigma and health disparities.⁵

Conclusions

Historical, global, national, community, and individual factors affect health across the life

course, through interactions among exposure, susceptibility, and resistance.⁷⁰ Sexual prejudice is pervasive in many domains of society and cuts across demographic characteristics. We found that implicit preferences for heterosexual over lesbian and gay people are pervasive among a majority of health care providers. Research is needed to determine the link between implicit preferences and actual clinical outcomes. For health care organizations that aim to serve these populations, these data suggest an opportunity to examine methods likely to mitigate implicit biases, such as eliminating discretion from decision-making, use of clinical guidelines, awareness of personal bias as self-caution, organizational policies that promote objective decision-making, and inclusion of counter-stereotypical experiences in educational programs.^{35,71} It is possible that these methods may improve patient-provider communication, patient trust and satisfaction, continuity and timeliness of care, and other areas that can maximize quality of care for all. ■

About the Authors

Janice A. Sabin is with Department of Biomedical Informatics and Medical Education, University of Washington, Seattle. Rachel G. Riskind is with Department of Psychology, Guilford College, Greensboro, NC. Brian A. Nosek is with Department of Psychology, University of Virginia, Charlottesville. Correspondence should be sent to Janice A. Sabin, PhD, MSW, University of Washington, Box 357240, Health Sciences Building H226, Seattle, WA 98195 (e-mail: sabinja@uw.edu). Reprints can be ordered at <http://www.aph.org> by clicking the "Reprints" link.

This article was accepted on February 5, 2015.

Contributors

J. A. Sabin took the lead in writing the article and contributed to conceptualization of the research, interpretation of the data, and writing the article. R. G. Riskind analyzed the data and contributed to conceptualization of the research, interpretation of the results, and writing the article. B. A. Nosek contributed to conceptualization of the research, interpretation of the results, and writing the article.

Acknowledgments

This project was supported by Project Implicit Inc.

Thanks to undergraduate research assistant, Samantha Karp.

Note. B. Nosek is an officer of Project Implicit.

Human Participant Protection

The University of Virginia institutional review board for the Social and Behavioral Sciences approved all procedures for the protection of human participants in this study.

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