

Mostly Heterosexual and Mostly Gay/Lesbian: Evidence for New Sexual Orientation Identities

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Abstract A sample of 1,784 individuals responded to an online survey advertised on the Facebook social networking website. We explored the sexual orientation continuum by focusing on three components: self-reported sexual orientation identity, sexual attraction, and sexual partners. Results supported a 5-category classification of identity (heterosexual, mostly heterosexual, bisexual, mostly gay/lesbian, gay/lesbian) in that two added identity labels (mostly heterosexual and mostly gay/lesbian) were frequently chosen by participants and/or showed unique patterns of attraction and partners, distinct from their adjacent identities (heterosexual and bisexual, and bisexual and gay/lesbian, respectively). Those who reported an exclusive label (heterosexual, gay/lesbian) were not necessarily exclusive in other components; a significant minority of heterosexuals and the majority of gays/lesbians reported some attraction and/or partners toward their nonpreferred sex. The five identity groups differed in attraction and partners in a manner consistent with a continuous, rather than a categorical, distribution of sexual orientation. Findings also supported a sexual orientation continuum as consisting of two, rather than one, distinct dimensions (same- and other-sex sexuality). Having more same-sex sexuality did not necessarily imply having less other-sex sexuality, and vice versa. More men than women were at the exclusive ends of the continuum; however, men were not bimodally distributed in that a significant minority reported nonexclusivity in their sexuality.

Keywords Sexual orientation · Heterosexual · Gay/lesbian · Sexual identity · Sexual behavior

Introduction

Consistent with the prevailing literature, we define sexual orientation as the sexual attraction, identity, arousals, fantasies, and behaviors individuals have for one sex, the other sex, or both sexes (LeVay & Baldwin, 2012). Although these components are theoretically understood as existing on a continuum (Sell, 1997), in practice researchers often place participants into one of three discrete sexual categories (heterosexual, bisexual, or gay/lesbian), and this is particularly true of sexual identity. These three categories have become so culturally and politically entrenched in contemporary societies that they have achieved the status of “natural kinds,” that is, naturally occurring rather than socially constructed distinctions. Consequently, individuals are expected to summarize their sexual orientation components as belonging to and consistent with one of these three categories. For example, a man who selects “gay” as his sexual orientation label is presumed to identify as gay, feel attraction to and fantasies about men (but not women), and have (or desire) sexual and romantic relationships with men (but not women). In recent years, however, it has become increasingly evident that the traditional 3-category method of sexual orientation identity classification does not adequately describe individuals who, if given the option, choose a more nuanced identity status (Morgan, Steiner, & Thompson, 2010; Morgan & Thompson, 2011). Furthermore, these “in-between” individuals possess unique sexual and psychological profiles, distinct from those who fit traditional categories (Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2010). If sexual orientation exists on a continuum from exclusive other-sex to exclusive same-sex, then more options should be available to research participants (Kinsey, Pomeroy, & Martin, 1948; Savin-Williams, 2005; Sell, 1997).

Given these findings, our primary goal in this study was to assess the adequacy of the traditional, 3-category system of sexual orientation identity. In this, we sought to contribute to the ongoing

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question regarding the conceptualization of sexual orientation as either a true continuum or as naturally occurring in three discrete categories (Sell, 1997). We did this in two steps. First, we expanded the 3-category to a 5-category system by examining the viability of two “intermediate” sexual orientation identities that exist along a sexual orientation continuum: “mostly heterosexual,” presumably situated between heterosexual and bisexual, and “mostly gay/lesbian,” presumably situated between bisexual and gay/lesbian. We did this by comparing the number of participants who chose one of these intermediate categories as their identity label with those who chose the adjacent traditional labels, and by assessing the distinctiveness of these two intermediate categories from adjacent traditional sexual orientation identity groups in terms of self-reported sexual attraction and sexual partners.

Second, we examined in the expanded 5-category system whether the two exclusive sexual orientation identity groups (heterosexual, gay/lesbian) were consistently exclusive and whether the three nonexclusive groups (mostly heterosexual, bisexual, mostly gay/lesbian) were consistently nonexclusive in regard to sexual attraction and partners across individuals comprising each group. If the two intermediate identities emerge as personally meaningful and distinct categories, then the scientific understanding of sexual orientation would benefit from a 5-category system in which mostly heterosexual and mostly gay/lesbian individuals are studied separately from heterosexuals, bisexuals, and gays/lesbians. More importantly, if the 3-category system can be more accurately replaced with a finer, 5-category one, and if the latter system also fails to produce entirely consistent categories (exclusive or nonexclusive), this would imply that sexual orientation is a continuously distributed trait. That is, attempts to categorize sexual orientation regardless of the exact number of proposed categories is ultimately an arbitrary imposition, even if a useful or necessary one.

The continuous nature of sexual orientation has been challenged primarily among men. Studies assessing genital arousal suggest that male sexuality is best characterized as exclusive and bimodal, that is, men show either heterosexual or homosexual arousal patterns (Rieger, Chivers, & Bailey, 2005). This research is consistent with the view that categories which include levels of both same-sex and other-sex sexuality are rare or nonexistent among men. In fact, bisexual-identified men are often believed to be either heterosexual or homosexual in their sexual orientation, but not bisexual in their sexual attraction, arousal, and behavior (Bailey, 2009). Although recent research has identified men with bisexual arousal patterns (Cerny & Janssen, 2011; Rosenthal, Sylva, Safron, & Bailey, 2011a), the view that such men are extremely rare persists (Rosenthal, Sylva, Safron, & Bailey, 2011b).

Research using the 3-category system demonstrates that sexual orientation identities are frequently inconsistent with other sexual orientation components. Although sexual attraction and behavior are generally positively correlated with each other and

with identity labels (Bailey, 2009), significant discrepancies are found in many individuals across all three sexual categories (Savin-Williams, 2009). Decades of research on nonheterosexual populations have revealed that many lesbian- and gay-identified individuals are not exclusively same-sex oriented in that they report at least some other-sex attraction and/or partners (Diamond, 2008; Rosario, Schrimshaw, Hunter, & Braun, 2006; Savin-Williams, 2005). Bisexually identified women and men vary widely in the balance of their same- and other-sex attraction and behavior, ranging from almost exclusively heterosexual to almost exclusively homosexual (Diamond, 2008; Weinberg, Williams, & Prior, 1994; Weinrich & Klein, 2002). Similar inconsistencies exist among heterosexually identified individuals (Dunne, Bailey, Kirk, & Martin, 2000; Ellis, Robb, & Burke, 2005; Hoberg, Konik, Williams, & Crawford, 2004; Vrangalova & Savin-Williams, 2010). For example, although 95% of participants in a large Australian twin registry identified as heterosexual, only 80% were exclusively heterosexual in that they reported no same-sex attraction or behavior (Dunne et al., 2000). In a convenience sample of heterosexually identified U.S. college students, 84% of women and 51% of men reported at least some same-sex attraction, fantasies, or partners (Vrangalova & Savin-Williams, 2010).

One possible explanation for discrepancies among sexual orientation components is the limited range of identity options offered by the traditional 3-category system, which is only moderately successful at capturing the range of sexual attraction and behavior along the sexual orientation continuum. For example, recent investigations across various countries have shown that up to 25% of women and 10% of men report “a small degree” of same-sex attraction, fantasies, or behavior (Austin et al., 2004; Bailey, Dunne, & Martin, 2000; Bogaert, 2010; Busseri, Willoughby, Chalmers, & Bogaert, 2008; Fergusson, Horwood, Ridder, & Beautrais, 2005; Skegg, Nada-Raja, Dickson, Paul, & Williams, 2003; Wichstrøm & Hegna, 2003). This prompted several investigators to suggest that these individuals form a distinct “mostly heterosexual” group (Austin, Conron, Patel, & Freedner, 2007; Savin-Williams, 2005; Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2010). Although we are unaware of any initiatives to treat those with a small degree of other-sex sexuality as a distinct “mostly gay/lesbian” identity, such a category can be hypothesized.

In the few investigations that used the extended 5-category sexual orientation identification system, mostly heterosexual emerged as the single largest nonheterosexual identity group, larger than all other nonheterosexual groups combined. For example, in the just released Wave 4 data from the U.S. National Longitudinal Survey of Adolescent Health, a nationally representative study of U.S. young adults, 16% of women and 3% of men selected mostly heterosexual; in contrast, 4% of women and 3% of men identified as bisexual, mostly gay/lesbian, or gay/lesbian combined. There were nearly as many mostly lesbian (0.8%) as lesbian (0.9%); among men, 0.6% identified as

mostly gay and 2% as gay (Savin-Williams, Joyner, & Rieger, 2012). Beyond basic prevalence, little is known about the intermediate identity categories. Mostly heterosexual and mostly gay/lesbian sexual orientation labels are rarely offered to survey participants and, when they are, individuals choosing these options are seldom separated for analysis and are either combined with one of the adjacent groups or dropped from analyses (Bogaert, 2005; Morgan, Steiner, & Thompson, 2010; Morrison & Bearden, 2007; Pedersen & Kristiansen, 2008; Poon & Saewyc, 2009).

A few recent studies examined the distinctiveness of the mostly heterosexual and/or the mostly gay/lesbian identity in one or more aspects of sexual orientation. In Wave 3 of Add Health, mostly heterosexual youth did not differ from heterosexuals, and mostly gay/lesbians did not differ from gay/lesbians in regard to percent of same-sex relationship partners; both groups, however, differed from bisexuals (Loosier & Dittus, 2010). Among British Columbia high school students, mostly heterosexual girls and boys were in between heterosexual and bisexual girls and boys in their likelihood of having had at least one other-sex as well as a same-sex partner; the only non-significant difference was between mostly heterosexual and heterosexual boys in terms of other-sex partners (Saewyc et al., 2009). Mostly heterosexual Black and Latina women aged 18–24 had more sexual partners than their heterosexual peers (Austin, Roberts, Corliss, & Molnar, 2008). Finally, mostly heterosexual college women were more same-sex oriented than heterosexual women, but less so than bisexual women in terms of attraction and fantasies; mostly heterosexuals were also less same-sex oriented than bisexuals, but did not differ from heterosexuals in terms of sexual relationships (Thompson & Morgan, 2008).

Although these studies provide some answers as to the viability and distinctiveness of mostly heterosexuals and mostly gays/lesbians, they have a number of limitations. They include only a mostly heterosexual, but not a mostly gay/lesbian group; focus only on women or combine men and women in analyses; examine behavioral but not attraction components of sexual orientation; and/or focus specifically on adolescents. In the present research, we build and extend this previous work by including both mostly heterosexual and mostly gay/lesbian groups; analyzing men and women separately; examining both sexual attraction and behavior; and investigating a somewhat older, yet large and diverse sample of U.S. adults. We also address two additional issues relevant to determining the continuous versus discrete nature of sexual orientation. First, we explored whether those identifying with an exclusive label (heterosexual, gay/lesbian) in an expanded 5-category system report *complete* exclusivity in their attraction and behavior once those with a small degree of same- or other-sex sexuality were offered a nonexclusive label (mostly heterosexual, mostly gay/lesbian). These are presumably more appropriate than the only nonexclusive label offered in the 3-category system (bisexual). Second, we examined whether the three nonexclusive identity groups (mostly heterosexual, bisexual, mostly gay/lesbian) are composed of truly nonexclusive

individuals in terms of reported sexual attraction and partners or whether they only appear nonexclusive due to a mix of exclusive same-sex and exclusive other-sex oriented individuals.

An additional goal was to clarify whether sexual orientation is best conceptualized as one-dimensional that exists along a single (bipolar) dimension ranging from exclusively heterosexual to exclusively homosexual (Kinsey et al., 1948; Klein, Sepekoff, & Wolf, 1985) or as two-dimensional that exists along two independently varying (unipolar) dimensions of same-sex and other-sex, each ranging from “nonexistent” to “strongly present” (Shively & DeCecco, 1977; Storms, 1980). The one-dimensional approach, which implies that having more same-sex sexuality by necessity means having less other-sex sexuality (or vice versa), has been criticized by researchers who noted that, although it may accurately describe some people, it fails to describe those who are simultaneously high (or low) on both same-sex and other-sex sexuality (Bullough, 1990; Storms, 1980). Despite the criticism, the one-dimensional approach has largely dominated sexual orientation assessment (Sell, 1997). In the current study, we addressed this issue by using independent assessments of same-sex and other-sex attraction and behavior when comparing sexual orientation identity groups.

Hypotheses

Based on the conceptualization of sexual orientation as a continuum, our first hypothesis was that intermediate labels (mostly heterosexual, mostly gay/lesbian) will be chosen by at least as many participants as the least frequently chosen traditional labels in the sample, with mostly heterosexual emerging as the most frequently chosen nonheterosexual label.

Our second hypothesis was that, at the group level, mostly heterosexuals would be more same-sex and less other-sex oriented in attraction and partners than heterosexuals, but less same-sex and more other-sex than bisexuals. Correspondingly, mostly gays/lesbians would be more same-sex and less other-sex oriented than bisexuals, but less same-sex and more other-sex oriented than gays/lesbians. Given the paucity of two-dimensional sexual orientation assessments, we did not make specific predictions whether differences would emerge in both same-sex and other-sex attraction and partners, but considered a difference in either dimension as supportive of this hypothesis. If the groups differ in both same-sex and other-sex sexuality in parallel patterns, it would support a one-dimensional conceptualization of sexual orientation; a difference in only one, but not the other dimension, would support a two-dimensional conceptualization.

Our third hypothesis was that heterosexual and gay/lesbian identified groups will not be entirely exclusive. That is, some heterosexuals will report same-sex attraction and/or partners and some gays/lesbians will report other-sex sexuality. Our fourth hypothesis was that the vast majority of individuals in the nonexclusive groups will be nonexclusive in their attraction and partners.

We expected these findings to emerge in both women and men. However, given the bimodal perspective of male sexual orientation, we expected that this continuous distribution of sexual orientation will be less pronounced among men across all four hypotheses. Specifically, compared to women, fewer men will identify as mostly heterosexual and mostly gay/lesbian; the differences between the intermediate and their adjacent categories will be less pronounced among men; there will be fewer nonexclusive heterosexual and gay men; and there will be more exclusive men among the three nonexclusive identity groups.

Method

Participants

A total of 1,784 individuals responded to an online survey advertised using the Facebook social networking website. At the time of data collection, Facebook was the largest social networking website in the world, with over 40 million users in the U.S. (Corbett, 2009). We excluded 108 surveys for the following reasons: empty surveys (eight cases), duplicate cases (three cases), younger than 18 (four cases), joke or dishonest responding (seven cases), and not currently residing in the U.S. (86 cases). Of the remaining 1,676 participants, 836 (50%) were women, and 819 (49%) were students. The sample ranged in age from 18 to 74 years ($M = 28.8$; $SD = 10.8$); however, 75% of participants were between the ages of 18 and 35 ($Mdn = 25$).

The U.S. geographical distribution of the sample was broad (38% Northeast, 25% South, 19% West, and 18% Midwest), as was the religious background of participants (34% nonbelievers, 35% Protestant, 17% Catholic, 5% Jewish, and 8% other). The vast majority (73%) had some college education or a college degree, with 16% reporting a post-graduate degree and 11% reporting a high school degree or less. In terms of race/ethnicity, 79% of the sample was white, 6% was Asian American, 6% was Latino/Hispanic, 5% was mixed race, and 4% was African American. The sample was somewhat religious ($M = 2.46$, $SD = 1.3$, on a scale of 1–5, with higher scores indicating greater religiosity) and somewhat more politically liberal than conservative ($M = -1.47$, $SD = 3.48$, on a scale of -6 to 6, with higher scores indicating greater conservatism).

There were no significant sex differences in racial/ethnic background, education, geographical region, or religiosity. However, compared to women, men were somewhat older ($M_{men} = 30.1$ years; $M_{women} = 27.7$ years), $t(1,626) = 4.51$, $p < .001$, and more conservative ($M_{men} = -.91$; $M_{women} = -1.99$), $t(1,597) = 6.27$, $p < .001$.¹

¹ Given these sex differences in our sample, all analyses of sex differences were run both without controls (using t -tests and χ^2 analyses) and controlling for age and conservatism (using linear and logistic regression analyses). Controlling for these two variables did not significantly change any analyses. Because 43 participants were missing data for either age or

Measures

Sexual Orientation Identity

Participants chose one of six labels to identify their sexual orientation: heterosexual, mostly heterosexual, bisexual, mostly gay/lesbian, gay/lesbian, questioning/uncertain. An “other” category was also presented.

Sexual Attraction

Same-sex and other-sex attraction were assessed using two separate questions: “How sexually attracted are you to women?” and “How sexually attracted are you to men?” Participants were asked to rate their attraction on a scale of 1 (not at all) to 5 (very much).

Sexual Partners

Participants provided in two separate questions the total number of male and female partners with whom they have had a genital sexual experience, defined as including penile-vaginal penetration, oral sex, anal sex, and mutual masturbation.

Procedure

Participants were recruited for a study on sexual morality. An advertisement banner was placed on the Facebook social networking website for 5 days in November 2008. The banner was titled “How Wrong Is It To...Have Sex With Your Boss?” followed by a short explanation that this is a survey on sexual morality. Those clicking on the ad were taken to a page containing a detailed description of the study, including a link to the online survey. The survey was described as a study on sexual attitudes, beliefs, and behaviors; no mention was made that the study was also about sexual orientation. The ad was targeted to a random sample of individuals aged 18 or older and residing in the U.S. Most participants (88%) learned about the study through Facebook, 7% responded after receiving an email from a friend, and 5% learned about it through a website other than Facebook (a link to the study had been posted on several other blogs and websites at the initiative of members/owners of those sites).

The non-Facebook sample differed from the Facebook sample in that it was more female, 68 vs. 47%, $\chi^2(1, n = 1,675) = 51.59$, $p < .001$, and slightly older ($M = 30.5$ years, $SD = 11.7$ vs. $M = 28$ years, $SD = 9.9$), $t(1,659) = 3.28$, $p < .001$. There were no significant differences between the two groups in race, education, religious background, sexual orientation identity, sexual partners, or sexual attraction (all $ps > .10$). The two groups

Footnote 1 continued

conservatism and in order to avoid adding unnecessary complexity, we present the simple analyses without controls. The regression analyses are available from the corresponding author upon request.

were therefore combined. The survey was anonymous and participants were offered a chance to enter a lottery to win one of 20 \$15 prizes by entering their contact information on a separate website unrelated to the survey.

Missing Data

Excluded from analyses were 31 cases of uncertain sexual orientation labels. Five women did not provide sexual orientation labels and an additional 16 women and 10 men chose a label other than the five labels of interest in this study (pansexual, asexual, uncertain, or no label). Also excluded from analyses were five cases that reported illogical patterns of sexual orientation identity, attraction, and partners: three women and one man identified as heterosexual but reported an exclusively homosexual pattern of attraction and partners and one woman identified as lesbian, but reported an exclusively heterosexual pattern of attraction and partners. An additional 64 cases were missing a rating of either same-sex or other-sex attraction. Of these, six did not provide consistent patterns of the non-missing attraction and partners and were, therefore, excluded from further analyses; 55 cases were heterosexually identified individuals who failed to provide same-sex attraction information, but otherwise reported a consistent heterosexual pattern. Based on other responses, these participants were categorized as exclusively heterosexual and the missing same-sex attraction value was substituted with 1 (absence of same-sex attraction). Three cases with missing data showed the opposite pattern, with individuals identified as mostly or exclusively gay/lesbian missing other-sex attraction in the presence of strong same-sex attraction and partners. All also reported at least one other-sex partner and were therefore assigned a 2 for other-sex attraction. Two heterosexual women were missing attraction data toward both same- and other-sex, and one heterosexual man was missing partner data regarding both sexes. In order to maintain a constant number of respondents across all analyses, these individuals were excluded.² The final analytical sample (including these three individuals) consisted of 1,631 participants (803 women, 828 men). Descriptive data for all variables used in the study and their correlations are shown in Tables 1 and 2.

Results

Mostly Heterosexual and Mostly Gay/Lesbian Categories

Our first set of hypotheses stated that the intermediate categories, mostly heterosexual and mostly gay/lesbian, would be

² Analyses were initially run without substituting missing values, with listwise deletion of all cases with missing values, and with missing values for the 58 cases substituted as described above. Substitution did not significantly impact results of analyses reported below. To retain as many participants as possible, we report the results of analyses with substituted values. The results from the other two analyses are available on request from the corresponding author.

Table 1 Self-reported sexual orientation identity by sex

| | Men (<i>n</i> = 828) | Women (<i>n</i> = 803) |
|---------------------|-----------------------|-------------------------|
| Heterosexual | 81% (670) | 71% (568) |
| Mostly heterosexual | 9% (72) | 20% (158) |
| Bisexual | 3% (25) | 6% (49) |
| Mostly gay/lesbian | 2% (15) | 1% (10) |
| Gay/lesbian | 5% (46) | 2% (18) |

Excludes five women who did not provide sexual orientation labels, and 16 women and 10 men who chose a label not included in this study (pansexual, asexual, uncertain, no label)

chosen by at least as many participants as the least frequently chosen traditional labels, that mostly heterosexual would emerge as the most frequently chosen nonheterosexual label, and that more women than men would choose intermediate identity categories.

Table 1 shows the number and percentage of participants in each of the sexual orientation identity categories. Our predictions were confirmed in regard to the mostly heterosexual group. Mostly heterosexual was the most frequently chosen nonheterosexual label in both sexes; among women, this group was larger than the three other nonheterosexual identity groups combined. As expected, the sex difference in the number of women compared to men choosing the mostly heterosexual label was highly significant, $\chi^2(1, n = 1,631) = 40.58, p < .001$. Expectations were not confirmed in regard to the mostly gay/lesbian group, which was the smallest sexual orientation identity category for both sexes. More participants identified as bisexual or gay/lesbian than as mostly gay/lesbian. Furthermore, the difference in percentage of men versus women selecting the mostly gay/lesbian label was not significant, $\chi^2(1, n = 1,631) < 1$. Overall, more women (27%) than men (14%) chose a nonexclusive identity label (mostly heterosexual, bisexual, or mostly gay/lesbian) over an exclusive identity (heterosexual or gay/lesbian), $\chi^2(1, n = 1,631) = 46.12, p < .001$.

Distinctiveness of Mostly Heterosexual and Mostly Gay/Lesbian Groups

Our second set of hypotheses stated that the intermediate groups would differ from their adjacent identity groups in sexual attraction and sex partners in a manner supportive of a two-dimensional continuous conceptualization of sexual orientation, and that more such differences would emerge among women than men.

Attraction

To test these predictions regarding sexual attraction, we conducted a series of analyses of variance (ANOVAs), separate by sex, with sexual orientation identity as an independent variable and other-sex and same-sex attraction as dependent variables. Four planned comparisons were tested with each ANOVA: heterosexual

Table 2 Correlations among sexual orientation identity, attraction, and partners separately for men and women

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | M | SD |
|---------------------------------------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| 1. Identity ^a | 1 | .91** | -.84** | .57** | -.42** | .42** | -.05 | 1.42 | 1.04 |
| 2. Same-sex attraction ^b | .78** | 1 | -.79** | .54** | -.41** | .41** | -.09* | 1.57 | 1.15 |
| 3. Other-sex attraction ^b | -.65** | -.44** | 1 | -.43** | .51** | -.46** | .13** | 4.63 | .96 |
| 4. Any same-sex partner ^c | .54** | .59** | -.27** | 1 | -.14** | – | .16** | .20 | |
| 5. Any other-sex partner ^c | -.19** | -.07* | .27** | .02 | 1 | -.11 | – | .87 | |
| 6. # Same-sex partners ^d | .25** | .36** | -.26** | – | .07 | 1 | -.12 | 11.85 | 22.99 |
| 7. # Other-sex partners ^d | .07 | .10** | .05 | .30** | – | .27** | 1 | 14.57 | 20.31 |
| <i>M</i> | 1.45 | 2.02 | 4.71 | .23 | .91 | 3.29 | 11.42 | | |
| <i>SD</i> | .85 | 1.16 | .72 | | | 5.57 | 15.46 | | |

Female data are shown below the diagonal; male data are shown above the diagonal. For variables 1–5, analyses include all women ($n = 803$) and men ($n = 828$). For variable 6 and 7, analyses include only those participants with at least one same-sex partner (women = 188; men = 168) and other-sex partner (women = 734; men = 724), respectively

^a Ranges from 1 (heterosexual) to 5 (gay/lesbian)

^b Ranges from 1 (not at all) to 5 (very much)

^c Coded as 1 (yes) and 0 (no)

^d Ranges from 0 to 100 (values higher than 100 were assigned a value of 100)

* $p < .05$; ** $p < .01$

and mostly heterosexual, mostly heterosexual and bisexual, bisexual and mostly gay/lesbian, and mostly gay/lesbian and gay/lesbian. Given that the assumption of homogeneity of variance among the sexual orientation identity groups was violated for both other- and same-sex attraction (based on Levene's test significance at $p < .01$), the contrasts were evaluated under the assumption of unequal variances (Table 3).

In the sample as a whole (Table 2), women and men reported similar levels of other-sex attraction, $t(1,629) = 1.88$, but women reported stronger same-sex attraction than men, $t(1,629) = 7.80$, $p < .001$. Overall ANOVAs for other-sex attraction among the five sexual orientation identity groups were highly significant for both men, $F(4, 823) = 707.61$, $p < .001$, and women, $F(4, 798) = 267.25$, $p < .001$, and there was a linear decrease in other-sex attraction from heterosexual to gay/lesbian groups in both men, $F(1, 823) = 2364.56$, $p < .001$, and women, $F(1, 798) = 975.72$, $p < .001$. Similarly, overall ANOVAs for same-sex attraction among the five sexual orientation identity groups were highly significant for both men, $F(4, 823) = 1047.76$, $p < .001$, and women, $F(4, 798) = 353.56$, $p < .001$, and there was a linear increase in same-sex attraction from heterosexual to gay/lesbian groups in both men, $F(1, 823) = 2854.47$, $p < .001$, and women, $F(1, 798) = 476.11$, $p < .001$.

Planned comparisons (Table 3) indicated that mostly heterosexual men and women did not significantly differ from heterosexuals in other-sex attraction. In both groups men and women reported close to the maximum other-sex attraction (range = 4.78–4.90). The two groups differed in same-sex attraction, with mostly heterosexual men and women reporting significantly higher same-sex attraction than heterosexuals. The mostly heterosexual group differed from the bisexual group in both other-

sex and same-sex attraction, with mostly heterosexuals reporting higher other-sex attraction, but lower same-sex attraction compared to bisexual women and men. Similarly, mostly gays/lesbians differed from bisexuals in both other- and same-sex attraction, reporting lower other-sex attraction but higher same-sex attraction compared to bisexual women and men. Finally, mostly gay/lesbian men and women did not differ significantly from gays/lesbians in same-sex attraction, with both groups reporting close to the maximum same-sex attraction (range = 4.70–4.94). The two groups differed, however, in other-sex attraction, with mostly gay/lesbian women and men reporting higher other-sex attraction than gays/lesbians.

Sex Partners

The number of other-sex partners ranged from 0 to 500 among men and from 0 to 200 among women, and the number of same-sex partners ranged from 0 to 1,000 among men and 0 to 50 among women. All values higher than 100 (nine men and four women for other-sex partners, and four men for same-sex partners) were considered extreme outliers and were assigned a value of 100. All subsequent analyses were based on these Winsorized variables.³

To test predictions regarding group differences in sexual behavior between intermediate and adjacent traditional sexual

³ Although descriptive data changed slightly when outliers were excluded from analyses (i.e., using trimming of means), results of the inferential analyses were identical. The Winsorization approach was favored in order to increase statistical power of analyses.

Table 3 Means and SD for other-sex and same-sex attractions separate by sex for the five sexual orientation groups

| | <i>n</i> | Other-sex | | | | Same-sex | | | |
|---------------------|----------|------------------------|-----------|-------------------------------|-------|------------------------|-----------|-------------------------------|-------|
| | | Strength of attraction | | Group difference ^a | | Strength of attraction | | Group difference ^a | |
| | | <i>M</i> | <i>SD</i> | <i>t</i> -test | df | <i>M</i> | <i>SD</i> | <i>t</i> -test | df |
| <i>Men</i> | | | | | | | | | |
| Heterosexual | 672 | 4.90 | .37 | | | 1.15 | .40 | | |
| Mostly heterosexual | 72 | 4.78 | .56 | 1.71 | 78.6 | 2.03 | .75 | 9.83*** | 75.3 |
| Bisexual | 25 | 4.24 | .97 | 2.62* | 29.8 | 3.56 | 1.12 | 6.36*** | 31.8 |
| Mostly gay/lesbian | 15 | 2.40 | .74 | 6.77*** | 35.7 | 4.87 | .35 | 5.40*** | 31.1 |
| Gay/lesbian | 46 | 1.43 | .62 | 4.57*** | 20.9 | 4.93 | .25 | <1 | 18.8 |
| <i>Women</i> | | | | | | | | | |
| Heterosexual | 568 | 4.86 | .41 | | | 1.49 | .66 | | |
| Mostly heterosexual | 158 | 4.80 | .45 | 1.47 | 235.9 | 2.79 | .84 | 18.07*** | 213.9 |
| Bisexual | 49 | 4.20 | .84 | 4.73*** | 56.7 | 4.08 | .76 | 10.14*** | 87.3 |
| Mostly gay/lesbian | 10 | 2.80 | .79 | 5.07*** | 13.5 | 4.70 | .68 | 2.58* | 14.1 |
| Gay/lesbian | 18 | 1.61 | .70 | 3.98** | 16.8 | 4.94 | .24 | 1.11 | 10.2 |

Based on all men ($n = 828$) and women ($n = 803$). Same- and other-sex attraction assessed separately on a scale of 1 (not at all) to 5 (very much). Higher scores indicate stronger attraction

^a Tests of group differences (*t*-test) based on four planned contrasts per four ANOVA analyses (other-sex and same-sex attraction, separate for men and women). Due to violations of the assumption of homogeneity of variances among the sexual orientation identity groups, contrasts are evaluated under the assumption of unequal variances (with the respective df for each contrast provided)

* $p < .05$; ** $p < .01$; *** $p < .001$

orientation identity groups, we conducted two sets of analyses, one categorical and one continuous. Categorically, we tested whether mostly heterosexual and mostly gay/lesbian groups differed from adjacent sexual orientation identity groups in the *percent* of those who had at least one other-sex or same-sex partner versus no such partners. This was done in a series of χ^2 analyses, each testing one of the four comparisons of interest. Continuously, we tested whether groups differed in the *number* of other-sex and same-sex partners among those who had at least one partner of each type. Similar to analyses regarding sexual attraction, this was done by conducting ANOVAs with sexual orientation identity as an independent variable and other-sex and same-sex partners as dependent variables, each ANOVA followed by four planned comparisons. Depending on whether the assumption of homogeneity of variance among the sexual orientation identity groups was violated (based on Levene's test significance at $p < .01$), the contrasts were evaluated under the assumption of either equal or unequal variances. Due to severe non-normality of the number of partner variables, ANOVAs were

conducted after log-transforming these variables.⁴ Analyses, both categorical and continuous, were conducted separately for women and men.

Results from the categorical analyses are presented in Table 4 and for the continuous analyses in Table 5. The means and *SD* for number of sex partners provided in the text and in Table 5 are based on the original, non-transformed variables for better interpretability; all ANOVAs and *t*-tests reported in the text and Table 5 are based on the log-transformed variables.

In the total sample, significantly more women than men reported at least one other-sex partner (91 and 87%, respectively), $\chi^2(1, n = 1,631) = 6.76, p = .009$. The percentages of women and men with at least one same-sex partner were similar (23 and 20%, respectively), $\chi^2(1, n = 1,631) = 2.33$. The overall χ^2 for the

⁴ Similar results were obtained when the number of partner variables was analyzed using a series of non-parametric, median-based, Mann–Whitney tests for each of the four comparisons of interest. We report the ANOVA results; non-parametric analyses are available from the corresponding author on request.

Table 4 Percent and number in each sexual orientation identity group who had at least one other-sex and same-sex partner

| | Other-sex | | | | Same-sex | | | |
|---------------------|-------------------------------------|----------|-------------------------------|----------|-------------------------------------|----------|-------------------------------|----------|
| | Had at least 1 partner ^a | | Group difference ^b | | Had at least 1 partner ^a | | Group difference ^b | |
| | % | <i>n</i> | χ^2 | <i>n</i> | % | <i>n</i> | χ^2 | <i>n</i> |
| <i>Men</i> | | | | | | | | |
| Heterosexual | 92 | 616 | | | 10 | 66 | | |
| Mostly heterosexual | 90 | 65 | <1 | 742 | 46 | 33 | 72.80*** | 742 |
| Bisexual | 84 | 21 | <1 | 97 | 56 | 14 | <1 | 97 |
| Mostly gay/lesbian | 60 | 9 | 2.88 | 40 | 87 | 13 | 4.02* | 40 |
| Gay/lesbian | 28 | 13 | 4.94* | 61 | 91 | 42 | <1 | 61 |
| <i>Women</i> | | | | | | | | |
| Heterosexual | 92 | 524 | | | 9 | 52 | | |
| Mostly heterosexual | 96 | 151 | 2.08 | 726 | 45 | 71 | 112.47*** | 726 |
| Bisexual | 90 | 44 | 2.28 | 207 | 86 | 42 | 25.09*** | 207 |
| Mostly gay/lesbian | 78 | 8 | <1 | 59 | 90 | 9 | <1 | 59 |
| Gay/lesbian | 39 | 7 | 4.04* | 28 | 78 | 14 | <1 | 28 |

^a Based on all women ($n = 803$) and men ($n = 828$)

^b Each χ^2 analysis compares the two adjacent groups in terms of the number of respondents with and without at least one partner of each type. Df for all χ^2 analyses are 1

* $p < .05$; ** $p < .01$; *** $p < .001$

five sexual orientation identity groups was highly significant regarding other-sex partners in men, $\chi^2(4, n = 828) = 170.12$, $p < .001$, and women, $\chi^2(4, n = 803) = 69.032$, $p < .001$, and same-sex partners in men, $\chi^2(4, n = 828) = 278.20$, $p < .001$, and women, $\chi^2(4, n = 803) = 265.68$, $p < .001$. Among those with at least one other-sex partner, men reported more other-sex partners than women, $t(1,456) = 2.15$; $p < .05$, and men reported more same-sex partners than women, $t(354) = 5.32$, $p < .001$. Overall, ANOVAs for other-sex partners among the five sexual orientation identity groups were highly significant for both men, $F(4, 719) = 6.13$, $p < .001$, and women, $F(4, 729) = 5.67$, $p < .001$, and there was a linear decrease in other-sex partners from heterosexual to gay/lesbian groups in men, $F(1, 719) = 22.50$, $p < .001$, but not in women, $F(1, 729) = 2.09$. Similarly, overall ANOVAs for same-sex partners among the five groups were highly significant for both men, $F(4, 163) = 22.57$, $p < .001$, and women, $F(4, 183) = 7.73$, $p < .001$, and there was a linear increase in same-sex partners from heterosexual to gay/lesbian groups in both men, $F(1, 163) = 78.79$, $p < .001$, and women, $F(1, 183) = 19.80$, $p < .001$.

In both sexes, similar proportions of heterosexual and mostly heterosexual individuals had at least one other-sex partner

(Table 4). Contrary to expectations, however, sexually experienced mostly heterosexual men and women had somewhat more (rather than fewer) other-sex partners than heterosexual men and women (Table 5). More mostly heterosexual than heterosexual men and women had at least one same-sex partner and they had more total same-sex partners than heterosexual men and women. Mostly heterosexual men did not differ from bisexual men in sexual behavior. Mostly heterosexual women did not differ from bisexual women in the percentage or number of other-sex partners, but fewer mostly heterosexual women had a same-sex partner compared to bisexual women; the number of same-sex partners among those with at least one such partner did not differ significantly between the two groups.

Mostly gay men did not differ from bisexual men in the likelihood of having at least one other-sex partner or the number of such partners. Mostly gay men differed from bisexual men in their same-sex behavior: more mostly gay than bisexual men had at least one same-sex partner and they had more total same-sex partners than bisexual men. Mostly lesbian women differed from bisexual women in one aspect: among those with at least one same-sex partner, mostly lesbians had more same-sex

Table 5 Number of other-sex and same-sex partners across five sexual orientation identity groups among those with at least one partner of each type

| | Other-sex | | | | | Same-sex | | | | | | |
|---------------------|---------------------------------|-----------|------------|----------|-------------------------------|----------|---------------------------------|-----------|------------|----------|-------------------------------|-----|
| | Number of partners ^a | | | | Group difference ^b | | Number of partners ^a | | | | Group difference ^b | |
| | <i>M</i> | <i>SD</i> | <i>Mdn</i> | <i>n</i> | <i>t</i> -test | df | <i>M</i> | <i>SD</i> | <i>Mdn</i> | <i>n</i> | <i>t</i> -test | df |
| <i>Men</i> | | | | | | | | | | | | |
| Heterosexual | 14.4 | 19.5 | 7 | 616 | | | 3.9 | 12.4 | 1 | 66 | | |
| | | | | | 2.05* | 719 | | | | | 2.48* | 163 |
| Mostly heterosexual | 19.7 | 27.4 | 10 | 65 | | | 5.5 | 8.8 | 3 | 33 | | |
| | | | | | 1.23 | 719 | | | | | <1 | 163 |
| Bisexual | 15.1 | 23.1 | 5 | 21 | | | 11.1 | 25.9 | 3.5 | 14 | | |
| | | | | | 1.90 | 719 | | | | | 2.26* | 163 |
| Mostly gay/lesbian | 3.8 | 3.1 | 4 | 9 | | | 20.6 | 24.9 | 11 | 13 | | |
| | | | | | <1 | 719 | | | | | <1 | 163 |
| Gay/lesbian | 3.2 | 4.2 | 1 | 13 | | | 26.9 | 32.6 | 10.5 | 42 | | |
| <i>Women</i> | | | | | | | | | | | | |
| Heterosexual | 10.2 | 14.2 | 5 | 524 | | | 1.7 | 1.2 | 1 | 52 | | |
| | | | | | 4.48*** | 729 | | | | | 3.85*** | 121 |
| Mostly heterosexual | 15.4 | 18.8 | 8 | 151 | | | 3.3 | 6.0 | 2 | 71 | | |
| | | | | | 1.09 | 729 | | | | | <1 | 80 |
| Bisexual | 13.3 | 17.1 | 9 | 44 | | | 3.2 | 2.9 | 3 | 42 | | |
| | | | | | <1 | 729 | | | | | 2.29* | 10 |
| Mostly gay/lesbian | 9.4 | 12.6 | 5.5 | 8 | | | 8.6 | 12.0 | 4 | 9 | | |
| | | | | | <1 | 729 | | | | | 1.21 | 19 |
| Gay/lesbian | 5.9 | 6.8 | 3 | 7 | | | 6.2 | 9.6 | 2.5 | 14 | | |

Includes participants who had at least one partner of each type (other-sex or same-sex). Both other-sex and same-sex number of partners variables have been Winsorised to a maximum of 100 partners

^a Descriptive information based on the original, non-transformed other-sex and same-sex partner variables

^b Tests of group differences (*t*-test) based on planned contrasts of four ANOVA analyses (other-sex and same-sex partners, separate by sex) using log-transformed variables. The assumption of homogeneity of variances among the five groups was only violated for number of same-sex partners among women; therefore, these contrasts were evaluated under the assumption of unequal variances. The other three sets of contrasts were evaluated under the assumption of equal variances

* $p < .05$; ** $p < .01$; *** $p < .001$

partners than bisexual women. The two groups did not differ in the percentage of those with at least one same-sex partner, or in the percentage or number of other-sex partners. Among both men and women, the mostly gay/lesbian group differed from the gay/lesbian group in one aspect: fewer mostly gays/lesbians had at least one other-sex partner. The two groups did not differ in the percentage of those with at least one same-sex partner or in the number of other-sex or same-sex partners.

Table 6 summarizes findings presented thus far regarding differences in sexual orientation components (sexual attraction and partners) between mostly heterosexual and mostly gay/lesbian groups and adjacent sexual orientation identity categories. Both intermediate groups differed from each adjacent category in at least one component, with all but one pair of groups differing from each other in at least one attraction aspect (same-sex and/or other-sex attraction) and at least one behavior aspect (percentage or number of same-sex and/or other-sex partners). The

sole exception was mostly heterosexual men who differed from bisexual men in attraction but not in partners. Taken together, these findings confirmed our second hypothesis that the two intermediate sexual orientation groups would be distinct from adjacent traditional sexual orientation identity groups.

Contrary to expectations, differences were not more pronounced among women than men (Table 6). The pattern of significant group differences was similar for women and men, with two exceptions (percentage of same-sex partners between mostly heterosexual and bisexual, and between mostly gay/lesbian and bisexual). In addition, the number of areas in which the four pairs of sexual orientation groups showed significant differences was the same for both sexes (12).

An additional goal in examining other-sex and same-sex attraction and behavior separately was to determine whether these are better conceptualized as two separate dimensions as opposed to a single continuum. In support of the two-dimensional

Table 6 Summary of sexual orientation components in which mostly heterosexual and mostly gay/lesbian groups differ significantly (✓) and do not differ (–) from adjacent sexual orientation identity categories

| | Sex attractions ^a | | Sex partners | | | |
|--------------|------------------------------|----------|-------------------------|----------|---------------------|----------|
| | Other-sex | Same-sex | At least 1 ^b | | Number ^c | |
| | | | Other-sex | Same-sex | Other-sex | Same-sex |
| <i>Men</i> | | | | | | |
| MHet–Het | – | ✓ | – | ✓ | ✓ | ✓ |
| MHet–Bi | ✓ | ✓ | – | – | – | – |
| MG/L–Bi | ✓ | ✓ | – | ✓ | – | ✓ |
| MG/L–G/L | ✓ | – | ✓ | – | – | – |
| <i>Women</i> | | | | | | |
| MHet–Het | – | ✓ | – | ✓ | ✓ | ✓ |
| MHet–Bi | ✓ | ✓ | – | ✓ | – | – |
| MG/L–Bi | ✓ | ✓ | – | – | – | ✓ |
| MG/L–G/L | ✓ | – | ✓ | – | – | – |

✓ $p < .05$; – $p \geq .05$

^a Based on ANOVA analyses of strength of other- and same-sex attraction followed by planned contrasts (Table 3)

^b Based on categorical (χ^2) analyses of the percentage of individuals in each group who had at least 1 other-sex or same-sex partner compared to no such partners (Table 4)

^c Based on ANOVA analyses of the mean number of other-sex and same-sex partners (log-transformed) among those with at least 1 such partner in each group (Table 5)

conceptualization, Table 6 demonstrates that half of the 12 significant group differences in both sexes were not found in parallel same-sex and other-sex aspects of the same attraction or behavior component. In other words, half of the time the groups differed only in the same-sex or the other-sex aspect of each examined component, but not both. Another source of evidence for the two-dimensional conceptualization is provided by the correlations between the same-sex and other-sex aspects of each variable examined in our study (Table 2). A one-dimensional conceptualization would be supported by strong negative correlations between each pair; moderate or small negative correlations, or positive correlations would be evidence against it. In support of the two-dimensional approach, only one of the correlations exceeded .5 (the typical indicator of a large effect size, Cohen, 1988), that between same-sex and other sex attraction among men ($r = -.79$), and even that was far from the ideal 1. Other correlations ranged from moderately negative ($r = -.44$ for attraction among women) to null ($r = .02$ for having had at least one same-sex and other-sex partner among women) to moderately positive ($r = .27$ for number of same-sex and other-sex partners among women).

Exclusivity of Exclusive and Nonexclusive Sexual Orientation Identity Groups

Our third hypothesis was that the two exclusive sexual orientation identity groups (heterosexual, gay/lesbian) would not be entirely exclusive in sexual attraction and/or sex partners. As predicted, at least some individuals in each group reported sexual attraction and/or partners toward their “non-preferred” sex. Between 13 and 50% of exclusively identified individuals reported some attraction toward their non-preferred sex and between 9 and 39% reported at least one same-sex partner (Table 7). Taken together, 80% of heterosexual men, 57% of heterosexual women, 48% of gays, and 39% of lesbians reported complete exclusivity in both attraction and partners (Table 8).

Our fourth hypothesis stated that the three nonexclusive sexual orientation identity groups (mostly heterosexual, bisexual, mostly gay/lesbian) were not nonexclusive due to a mix of individuals with exclusive patterns of either same-sex or other-sex attraction and sex partners, but to individuals who report at least some same-sex and other-sex attraction or sex partners. As predicted, the majority of nonexclusive-identified individuals were nonexclusive in sexual orientation components, particularly in terms of attraction (Table 7). When both attraction and partners were taken into consideration, only six mostly heterosexual men (8%), and one mostly gay man (7%) reported complete exclusivity in both sexual orientation components. No bisexual men or mostly heterosexual, bisexual, or mostly lesbian women reported complete exclusivity (Table 8).

We also predicted that, among all sexual orientation identity groups, there would be more nonexclusive (in attraction or partners) women than men. These predictions were only partially confirmed. As expected, when taking attraction and partners together, there were more nonexclusive heterosexual women (43%) than men (20%), $\chi^2(1, n = 1,238) = 80.72, p < .001$, and more nonexclusive mostly heterosexual women (100%) than men (90%), $\chi^2(1, n = 230) = 15.84, p < .001$. Sex differences in the number of nonexclusive gays/lesbians (61 and 52%, respectively) and mostly gays/lesbians (100 and 99%, respectively) were not significant, $\chi^2(1, n = 64) < 1$, and $\chi^2(1, n = 25) < 1$, respectively, and there was no sex difference in the number of nonexclusive bisexuals (null set). In the sample as a whole, more women (59%) than men (32%) were nonexclusive in their sexual attraction or sex partners, $\chi^2(1, n = 1,631) = 125.69, p < .001$.

Discussion

Overview

We explored the nature of the sexual orientation continuum by focusing on three sexual orientation components: sexual orienta-

Table 7 Percent (*n*) of participants in the five sexual orientation identity groups whose sexual attraction and partners were nonexclusive (both same-sex and other-sex), exclusive (either only same-sex or only other-sex), or non-existent (neither same-sex nor other-sex)

| | Men | | | | Women | | | |
|--|---------------------------------------|------------------------------|-----------------------------|---------------------------|---------------------------------------|------------------------------|-----------------------------|---------------------------|
| | Both Other and Same % (<i>n</i>) | Other Only % (<i>n</i>) | Same Only % (<i>n</i>) | Neither % (<i>n</i>) | Both Other and Same % (<i>n</i>) | Other Only % (<i>n</i>) | Same Only % (<i>n</i>) | Neither % (<i>n</i>) |
| <i>Sexual attractions</i> ^a | | | | | | | | |
| Het | 13 (89) | 86 (579) | 0 | .1 (1) | 41 (234) | 59 (334) | 0 | 0 |
| MHet | 79 (57) | 21 (15) | 0 | 0 | 100 (158) | 0 | 0 | 0 |
| Bi | 100 (25) | 0 | 0 | 0 | 100 (49) | 0 | 0 | 0 |
| MG/L | 93 (14) | 0 | 7 (1) | 0 | 100 (10) | 0 | 0 | 0 |
| G/L | 37 (17) | 0 | 63 (29) | 0 | 50 (9) | 0 | 50 (9) | 0 |
| Total | 24 (202) | 72 (594) | 4 (31) | .1 (1) | 57 (460) | 42 (334) | 1 (9) | 0 |
| <i>Sex partners</i> ^b | | | | | | | | |
| Het | 10 (65) | 82 (551) | .1 (1) | 8 (53) | 9 (52) | 83 (472) | 0 | 8 (44) |
| MHet | 44 (32) | 46 (33) | 1 (1) | 8 (6) | 44 (70) | 51 (81) | 1 (1) | 4 (6) |
| Bi | 52 (13) | 32 (8) | 4 (1) | 12 (3) | 78 (38) | 12 (6) | 8 (4) | 2 (1) |
| MG/L | 53 (8) | 7 (1) | 33 (5) | 7 (1) | 70 (7) | 10 (1) | 20 (2) | 0 |
| G/L | 28 (13) | 0 | 63 (29) | 9 (4) | 39 (7) | 0 | 39 (7) | 22 (4) |
| Total | 16 (131) | 72 (593) | 4 (37) | 8 (67) | 22 (174) | 70 (560) | 2 (14) | 7 (55) |

All analyses based on all men (*n* = 828) and women (*n* = 803)

^a Same- and other-sex attraction assessed separately on a scale of 1 (not at all) to 5 (very much). “Both Other and Same” indicates a report of 2 or higher on both scales; “Other Only” indicates report of 2 or higher on other-sex, but 1 on same-sex scale; “Same Only” indicates report of 2 or higher on the same-sex, but 1 on the other-sex scale; “Neither” indicates a report of 1 on both scales

^b Sex partners assessed by the number of male and female genital sexual partners. “Both Other and Same” indicates at least 1 same- and 1 other-sex partner; “Other Only” indicates 1 or more other-sex, but 0 same-sex partners; “Same Only” indicates 1 or more same-sex, but 0 other-sex partners; “Neither” indicates no partners of either sex

Table 8 Percent (*n*) of participants in the five sexual orientation identity groups who reported nonexclusivity in both sexual attraction and sex partners, attraction but not partners, partners but not attraction, and neither attraction nor partners (exclusive)

| | Men | | | | Women | | | |
|-------|---|-----------------------------------|---------------------------------|-----------------------------|---|-----------------------------------|---------------------------------|-----------------------------|
| | Both attraction and partner % (<i>n</i>) | Attraction only % (<i>n</i>) | Partners only % (<i>n</i>) | Exclusive % (<i>n</i>) | Both attraction and partner % (<i>n</i>) | Attraction only % (<i>n</i>) | Partners only % (<i>n</i>) | Exclusive % (<i>n</i>) |
| Het | 3 (21) | 10 (68) | 7 (44) | 80 (537) | 7 (39) | 34 (195) | 2 (13) | 57 (321) |
| MHet | 33 (24) | 46 (33) | 11 (8) | 10 (7) | 44 (70) | 56 (88) | 0 | 0 |
| Bi | 52 (13) | 48 (12) | 0 | 0 | 78 (38) | 22 (11) | 0 | 0 |
| MG/L | 53 (8) | 30 (6) | 0 | 7 (1) | 70 (7) | 30 (3) | 0 | 0 |
| G/L | 13 (6) | 24 (11) | 15 (7) | 48 (22) | 28 (5) | 22 (4) | 11 (2) | 39 (7) |
| Total | 9 (72) | 16 (130) | 7 (59) | 68 (567) | 20 (159) | 37 (301) | 2 (15) | 41 (328) |

Based on all men (*n* = 828) and women (*n* = 803)

tion identity, sexual attraction, and sex partners. Our primary goal was to assess the adequacy of the traditional sexual orientation categorization based on three identity labels, heterosexual, bisexual, and gay/lesbian. We did this in two ways. First, we examined the viability of two intermediate sexual orientation identity categories (mostly heterosexual, mostly gay/lesbian) in terms of prevalence and distinctiveness when considering sexual attraction and sex partners. Second, we assessed the exclusivity in sexual attraction and partners of two presumably

exclusive sexual orientation identity groups (heterosexual, gay/lesbian) and the nonexclusivity of three presumably nonexclusive sexual orientation identity categories (mostly heterosexual, bisexual, mostly gay/lesbian). Additionally, we explored whether the sexual orientation continuum was best conceptualized as a one- or two-dimensional construct. In all matters, we considered sex differences, specifically whether male sexual orientation was more exclusive or categorical than female sexuality.

Our data indicated that sexual orientation categorized as five rather than three groups better reflected the nature of sexual orientation components. Although the sexual orientation identity individuals adopt is a relatively accurate representation of their sexual attraction and partners, it is not necessarily a *perfect* representation. Furthermore, we also found evidence for the notion of sexual orientation as a continuously distributed characteristic, with the two-dimensional conceptualization of this continuum better supported by the data than the one-dimensional conceptualization. Finally, we found mixed support for sex differences in the nature of sexual orientation.

Viability of “Mostly” Sexual Orientation Identities

The viability of a mostly heterosexual identity group was supported in that it was the most frequently chosen nonheterosexual identity label among both men and women. More women selected mostly heterosexual than all other nonheterosexual identities combined. Furthermore, mostly heterosexual men and women were distinct from heterosexuals and bisexuals in both sexual attraction and sex partners (except mostly heterosexual men who differed from bisexual men in attraction only). The viability of a fifth sexual orientation group was less clear, in large part because relatively few participants chose mostly gay/lesbian as a sexual orientation label. Fewer men identified as mostly gay than as bisexual and fewer women identified as mostly lesbian than as lesbian. These relative differences were consistent with findings from a recent nationally representative sample (Savin-Williams et al., 2012). Despite its low frequency, mostly gay/lesbians were unique from bisexuals and gays/lesbians in both attraction and partners. Taken together, these findings suggest that an expanded sexual orientation is an appropriate alternative to the traditional system and that sexual orientation identity labels are personally meaningful and relatively accurate.

Explanations for the low numbers of mostly gays/lesbians (as opposed to mostly heterosexuals) are unclear. One is that this difference is a direct result of the different prevalence in adjacent identities (heterosexual and gay/lesbian); exclusive same-sex interests and orientation are rarer than exclusive other-sex interests. Another possibility is that, although both mostly heterosexual and mostly gay/lesbian identity labels are relatively new in our culture, the latter is more socially unfamiliar and therefore chosen less frequently. Finally, the differential prevalence might be a product of the gay/lesbian identity formation process. Given that homosexuality is socially stigmatized in U.S. society, those who are predominantly gay/lesbian may have already invested considerable mental and physical effort in coming out and crafting their nonheterosexual identities; thus, gay/lesbian individuals may protect their identity by not diluting it with recalling other-sex interests.

Consistency of Sexual Orientation Components

Although chosen identity labels were generally consistent with reported attraction and behavior, identity labels were not perfect representations of the other sexual orientation components. Adopting an exclusive sexual orientation label did not necessarily imply exclusivity in other sexual orientation components, as demonstrated by the significant minority of heterosexuals and the majority of gays and lesbians who reported some attraction and/or behavior toward their non-preferred sex. Furthermore, although a nonexclusive label generally meant nonexclusivity in at least one other sexual orientation component, for many individuals this did not mean nonexclusivity in both sexual attraction and partners. In fact, nonexclusivity was more likely in relation to attraction than sex partners. Although virtually all nonexclusive-identified individuals (with the exception of a few mostly heterosexual men) were sexually attracted to both sexes, far fewer had sex partners of both sexes. People may rely less on sex than attraction to justify their chosen identity label. Alternatively, it also suggests that having sexual attraction toward one's non-preferred sex is easier to reconcile with an exclusive sexual orientation identity than is engaging in sexual relations with one's non-preferred sex.

Distributional Characteristics of Sexual Orientation

With one exception (discussed below), the five identity groups differed in attraction and partners in a manner consistent with a continuous distribution of sexual orientation. This was supported by the highly significant linear trends of decreasing or increasing attraction and sex partners across the five groups, as well as the direction of each pair of significant group differences. Specifically, mostly heterosexuals reported a more same-sex pattern of attraction and partners than did heterosexuals, but less so than bisexuals; correspondingly, mostly gays/lesbians reported a more same-sex pattern of attraction and partners than did bisexuals, but less so than gays/lesbians. The continuous nature of sexual orientation was further supported by the finding that exclusive identity categories were not entirely exclusive in the other two sexual orientation components. Nearly half of heterosexual women and a fifth of heterosexual men reported aspects of same-sex sexuality, and more than half of lesbians and gay men reported aspects of other-sex sexuality. Taken together, these data suggest that sexual orientation is a continuously distributed characteristic and decisions to categorize it into discrete units, regardless of how many, may be useful for particular research questions but are ultimately external impositions that are not consistent with reports of individuals.

We speculate that individuals with nonexclusive sexual orientation patterns may choose an exclusive identity label because their levels of same-sex attraction and partners are so low that

they are insufficient to tip the balance away from a heterosexual or gay/lesbian label. Perhaps if they were offered an even finer, 7-category system they would choose a label between “exclusive heterosexual/homosexual” and “mostly heterosexual/homosexual.” Alternatively, the prevalence of nonexclusivity in attraction or partners within exclusive sexual orientation identity groups may be artificially inflated because of societal attitudes. The stigma and sexual prejudice associated with same-sex sexuality (Herek, 2000) may have prevented some nonexclusive heterosexual-oriented individuals from choosing anything other than a heterosexual label. A reverse but parallel attitude may exist within gay/lesbian communities, discouraging nonexclusive gay/lesbian-oriented individuals from choosing nonexclusive labels in order to support the “gay/lesbian cause” (see Rodríguez Rust, 2002). Finally, some exclusive gays/lesbians may have engaged in other-sex behaviors due to social pressures to act heterosexual against their desire and attraction (Savin-Williams, 2005), further inflating the prevalence of nonexclusivity within the gay/lesbian group.

Although there was clear evidence of a continuous increase or decrease in sexual attraction and partners across the five sexual orientation identity groups, the between-group differences were not always found in same-sex and other-sex sexuality. The two intermediate, “mostly” identity groups differed from their adjacent “exclusive” groups primarily in their attraction and behavior directed toward their less preferred sex (same-sex for heterosexuals and mostly heterosexuals, and other-sex for gays/lesbians and mostly gays/lesbians). The mostly and exclusive groups generally did not differ in their sexual attraction and partners toward their preferred sex. That is, what most distinguished mostly heterosexual from heterosexual men and women was not their lack of other-sex attraction and partners, but their higher reported levels of same-sex attraction and partners. So, too, what distinguished mostly gay/lesbian from gay/lesbian men and women was not their lack of same-sex attraction and partners, but their higher reported levels of other-sex attraction and partners.

The absence of completely parallel patterns of group differences suggests that conceptualizing a sexual orientation continuum as consisting of two distinct unipolar dimensions (same- and other-sex sexuality) is more appropriate than conceptualizing it as consisting of one, bipolar dimension. As evidenced by the two “mostly” groups, having more same-sex sexuality does not necessarily mean having less other-sex sexuality, and vice versa. Individuals can be extremely high on one of these dimensions, as high as their exclusive peers, and yet in addition (rather than in the lieu of) they can also possess a non-zero level of the other dimension. Although traditionally the one-dimensional approach has been favored when assessing sexual orientation, we suggest that the two-dimensional model is a better fit to individual lives.

Nonexclusive individuals’ orientation along the two dimensions (other- and same-sex) may or may not be qualitatively

different from each other. As proposed by Beach (1976) and more recently by Diamond (2009), sexuality may be governed by both proceptivity (motivation to initiate sexual activity) and arousability (capacity to become aroused to sexual stimuli). “Mostly” individuals may have high proceptivity toward their “preferred” sex (e.g., mostly heterosexual males toward females) and low proceptivity toward the “non-preferred” sex (e.g., mostly heterosexual males toward males). Alternatively, “mostly” individuals may be proceptively oriented toward only one sex, but have higher arousability to a wider range of stimuli, including those of their non-preferred sex. Similarly, bisexual individuals may have (relatively) equal levels of proceptivity (and arousability) toward both sexes. Alternatively, they may have high proceptivity to one sex but high arousability to the other sex.

The only sexual orientation component that failed to show a consistent decreasing or increasing pattern as would be expected by the continuum hypothesis was the number of other-sex partners. Specifically, mostly heterosexual men and women had more, rather than fewer, other-sex partners than heterosexuals. This was in addition to their higher number of same-sex partners. These findings mirror past findings of greater other-sex sexual experience among mostly heterosexual women, but not men (Austin et al., 2008; Saewyc et al., 2009; Vrangalova & Savin-Williams, 2010). One reason for this could be a higher level of sex drive that is inherent in greater bisexuality, i.e., nonexclusivity. This conclusion was also supported for women, but not men, by Lippa (2006). However, if this were the case, then mostly gays/lesbians would be expected to have more same-sex and other-sex partners than gays/lesbians, which was not the case for our sample. Also, dissimilar to previous work, we found the same pattern in men as well as women. An alternative possibility that explains our findings is that both the greater sexual activity of mostly heterosexuals and their willingness to acknowledge same-sex sexuality could be a result of greater general sexual and/or social liberality that allows them to explore their sexuality in greater depths despite the stigma associated with both same-sex sexuality (Herek, 2000) and with highly sexually active behavior (Crawford & Popp, 2003). Additional analyses of our data indicated that while conservatism was linked to lower same-sex attraction, fewer other-sex partners, and lower likelihood of having a same-sex partner (among men), controlling for conservatism did not render non-significant the established differences in these variables between the mostly heterosexual and the heterosexual. The sole exception was the number of other-sex partners among men: after controlling for conservatism, mostly heterosexual and heterosexual men did not differ in this respect.⁵ These issues require further research.

Recently, several scholars challenged the perspective that sexual orientation is a continuously distributed characteristic among men, suggesting that men are bimodal in that they are either exclusively heterosexual or homosexual in their sexual

⁵ Tables available from the corresponding author on request.

arousal (Bailey, 2009; Chivers, Rieger, Latty, & Bailey, 2004; Rieger et al., 2005). Our results, based not on genital arousal but self-reports, found mixed evidence for this perspective. In support, half as many men as women chose a nonexclusive identity or reported nonexclusive attraction and partners. Two of the three nonexclusive identity categories among men (mostly gay and bisexual) represented together only 5% of the entire sample, which might be considered “too low” to corroborate a continuous distribution, as opposed to a bimodal one. However, although these two groups were indeed half the size of the gay group (5%), the mostly heterosexual group (9%) was almost twice as numerous as the gay group. With the inclusion of the other two components of sexual orientation examined in our study (attraction and behavior), 32% of all men reported at least one instance of nonexclusivity. Unless or until we have evidence that mostly heterosexual men (together with the other two non-exclusive groups and all reports of nonexclusivity in attraction and behavior among heterosexuals and gay men) are not “truly” nonexclusive (and can be explained by, for example, identity confusion, social pressures, or some other non-sexual orientation aspect), we consider them as a potentially legitimate and valid sexual orientation group—at least as much so as gay men.

A similar “number argument” could be applied to sexual orientation among women, albeit to argue for the non-existence of exclusivity, particularly homosexual exclusivity. Namely, the mostly lesbian and lesbian identity labels in our sample were chosen together by only 3% of participants, and only 41% of all women reported complete exclusivity in all three components. Yet, neither of these numbers is zero; thus, the same question of “how low is too low” also applies to women. It would be difficult (if not impossible) to set an absolute cutoff point that would answer this question appropriately as any such numeric would be highly arbitrary. We propose that any non-zero category, until or unless proven to be due to error needs to be considered for and incorporated into scientific theories. Furthermore, until those 41% complete exclusivity reports among women (heterosexual and lesbian) can be explained away by error, mistake, or inauthenticity, we believe it is too early to declare female sexual orientation as entirely nonexclusive.

Three additional findings in our study supported the view that the sexes are more similar than different in the nature of their sexual orientation. First, men who chose nonexclusive identity labels were just as frequently nonexclusive in their attraction and/or behavior as were the nonexclusively identified women (92 vs. 100%). Second, the sexual orientation groups among men differed from their adjacent groups in the exact same number of areas as they did among women. Finally, with only two exceptions, the pattern of these group differences among men and women was the same. Taken together, the data suggested that the best way to conceptualize sexual orientation is as a continuous variable that is heavily skewed toward heterosexuality in both men and women. Although more men than women are at the exclusive ends of the sexual orientation continuum, this

sex difference appears to be one of quantity rather than of quality.

Limitations

One limitation of our study was that data were self-reported and we had no independent or alternate means of verifying self-assessments of sexual orientation label, attraction, or partners. The reliance on self-report is often necessary in studies of sexuality, but the method is a liability—reports of behavior are not always accurate reflections of actual sexual behavior (McAuliffe, DiFranceisco, & Reed, 2007). For example, as others have shown (Chivers et al., 2004; Rieger et al., 2005), there can be a significant disagreement between self-reported indicators of sexual orientation and those recorded by genital measures of arousal. A comprehensive study using various methods of sexual orientation assessment in the extended 5-category system is needed in the future.

Related to this limitation was the possibility that different participants had variable understandings of what constituted sexual attraction or sexual partner. Perhaps some participants understood attraction to mean “who I want to have sex with” or “what I think about when I masturbate,” whereas others thought of it as “who I want to bond with/have a relationship with” or “who I am romantically attracted to,” while still others may have thought of it as “who I derive feelings of warmth and security from.” Future studies, both in-depth interviews and more objective assessments of attraction, should explore this issue—what attraction means, especially a small quantity of attraction, as frequently reported by mostly heterosexuals toward same-sex individuals. Furthermore, additional error in our measure of sexual partners may have been introduced if some participants, despite being provided with a definition of sex, nonetheless used their own definition.

Another limitation was the relatively small size of nonheterosexual identity groups, with the exception of the mostly heterosexual. Small sample size was particularly problematic with the mostly gay/lesbian group, bisexual men, and lesbian women. We presented these analyses because of the novelty of our approach, but conclusions are ultimately tentative until additional data from other labs are collected. This is particularly true of the sex partner analyses; the small size combined with high variability rendered estimates less reliable than desirable. Future research should make an effort to over-sample nonheterosexual individuals within general population samples.

A fourth limitation was our recruitment source and strategy. There is little evidence that Facebook users are representative of the U.S. population and even those who participated might not be representative of Facebook users. Specifically, although our initial ad was presented to a random selection of Facebook users, some participants learned about the survey through a friend’s profile or friends’ invites, thus leading to self-selection bias. However, at the time of data collection, 40% of U.S. residents

aged 18–35, the age range that represented the majority of our sample, owned a Facebook profile (Corbett, 2009). In addition, Facebook users are representative of the general Internet using population in the U.S. in terms of race/ethnicity (Backstrom, Chang, Marlow, & Rosenn, 2009). Furthermore, our study findings were consistent with previous research that reported substantial same-sex attraction and behavior among heterosexual women and men (Dunne et al., 2000; Ellis et al., 2005; Hoburg et al., 2004; Vrangalova & Savin-Williams, 2010) and the existence of mostly heterosexuals (Morgan & Thompson, 2008; Savin-Williams & Ream, 2007). However, our proportions of individuals in the various groups did not always map onto other data; thus, we caution imputing any significance to the prevalence rates of our various groups. In addition, our sample was also somewhat more socially liberal and less religious than the U.S. population as a whole (Chatters, Taylor, Bullard, & Jackson, 2008; Rostosky, Regnerus, & Wright, 2003; Saad, 2009). Future research should include representative samples of the U.S. population, as well as oversample racial/ethnic minorities so that any potential cultural differences in the meaning and acknowledgment of various sexual orientation components can be explored.

Implications

Despite its limitations, our study has several important implications for theory and research. First, it suggests sexual orientation components occur in a natural continuum in both women and men and, with the possible exception of sexual orientation identities, are best understood as a two-dimensional phenomenon. Thus, when the nature of sexual orientation is of primary interest, continuous, two-dimensional assessments of multiple sexual orientation components should be used. In addition, strategies for capturing expressions of sexual orientation components at lower levels should be implemented. For attraction and fantasy, this would imply using more sensitive scales (for example, a 1-to-10 rather than a 1-to-5 response scale). For sexual behavior, more inclusive definitions of sex and sex partners may be particularly useful. For example, mutual masturbation and oral sex contrary to one's sexual orientation identity are more likely to elicit endorsement from young adults than are vaginal or anal intercourse (Chandra, Mosher, & Copen, 2011; Savin-Williams, 2005).

The continuous nature of sexual orientation notwithstanding, in some cases assessing sexual orientation in a categorical manner-based on a finite number of identity categories-may be simpler or more useful. Our findings suggest that this approach is also warranted. Sexual labels appear to represent other sexual orientation components with relative, albeit not perfect, accuracy. However, when using a categorical approach, researchers would benefit from replacing the traditional three category system, with a finer five category one (perhaps even seven or nine categories) and to refrain from lumping intermediate categories with an

adjacent one. Learning more about these categories, in particular mostly heterosexual with its high numbers and clear distinctiveness from other categories, might critically alter traditional notions of sexuality (Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2010).

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