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The Diversity and Prevalence of Sexual Orientation Self-Labels in a New Zealand National Sample

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Abstract In this study, we asked participants to "describe their sexual orientation" in an open-ended measure of self-generated sexual orientation. The question was included as part of the New Zealand Attitudes and Values Study ($N = 18,261$) 2013/2014 wave, a national probability survey conducted shortly after the first legal same-sex marriages in New Zealand. We present a two-level classification scheme to address questions about the prevalence of, and demographic differences between, sexual orientations. At the most detailed level of the coding scheme, 49 unique categories were generated by participant responses. Of those who responded with the following, significantly more were women: bisexual (2.1 % of women, compared to 1.5 % of men), bicurious (0.7 % of women, 0.4 % of men), and asexual (0.4 % of women and less than 0.1 % of men). However, significantly fewer women than men reported being lesbian or gay (1.8 % of women, compared to 3.5 % of men). Those openly identifying as bicurious, bisexual, or lesbian/gay were significantly younger than those with a heterosexual orientation. This study shows diversity in the terms used in self-generated sexual orientations, and provides up-to-date gender, age, and prevalence estimates for the New Zealand population. Finally, results reveal that a substantial minority of participants may not have understood the question about sexual orientation.

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Introduction

Scholars describe sexual orientation as being comprised of three key concepts. One is sexual or romantic attraction, which is measured through ratings of one's desire to engage romantically and/or sexually with either men or women (e.g., see Laumann, Gagnon, Michael, & Michaels 1994; Savin-Williams, 2009a; Udry & Chantala, 2005). Self-reported behavior is also used as an indicator of sexual orientation: that is, the frequency or history of sexual behavior with different genders (e.g., Eskin, Kaynak-Demir, & Demir, 2005). The third concept, sexual identity, is usually measured by allowing participants to choose the sexual orientation that best represents their identity or who they are (which may be based on attractions, behavior, or something else entirely) (Black, Gates, Sanders, & Taylor,

2000; Eskin et al., 2005; Laumann et al., 1994; McCabe, Hughes, Bostwick, Morales, & Boyd, 2012; Savin-Williams, 2009a; Savin-Williams & Ream, 2007; Sell, Wells, & Wypij, 1995). However, it is unclear how the general population may respond when they are asked, without prompting, to describe their sexual orientation. Here, instead of asking participants specifically about one of these dimensions (attraction, behavior, or identity) we assessed sexual orientation as self-generated, using an open-ended measure. This allowed participants to write down whatever they thought described their sexual orientation—whether they personally chose to draw upon their attractions, behavior, or identity, a mixture of the three, or something else entirely.

In contrast to a forced choice measure, we sought to employ a qualitative method of assessing sexual orientation using an open-ended survey item that enabled participants to express their own sexual orientation using their own words or terms. Such an approach allowed for a broad range of terms to emerge in our sample. In the present study, we therefore asked participants: "How would you describe your sexual orientation?" We chose this open-ended measure to be able to first establish how people self-describe or generate their sexual orientation and second to allow for a sensitive (and compact) survey item to measure change over time in the sample. The New Zealand Attitudes and Values Study (NZAVS) is a 20-year panel survey, and a key goal of our long-term research is to track changes in individual self-generated sexual orientation and broader societal change in the terms used to describe sexual orientation. Even small changes in self-generated sexual orientation can be detected with this measure. However, using such a measure brings its own challenges: once thousands of open-ended responses have been provided, how does one determine inclusive, yet parsimonious orientation groupings for further analyses? Moreover, how does one determine who should be classified into each orientation?

To address this challenge, we created a two-level coding scheme that not only provides a base point for future research, but also provided a snapshot of the diversity of terms used by the population to describe their sexual orientations. We devised the coding scheme through grouping together responses into detailed themes at Level 2, and these were in turn folded into a less detailed level of categories which covered prominent sexual orientations at Level 1. Level 1 categories allowed us to find population estimates of the various sexual orientations, alongside gender and age differences across sexual orientations.

Population Prevalence, Age, and Gender

An estimate for the population prevalence of different sexual orientations, when assessed as a self-generated item, is difficult. This is, in part, because sexual orientation estimates change depending on the measure used (Savin-Williams, 2009a). For example, in a review of the US General Social Survey and National Health and Social Life Survey data, Black et al. (2000) found that twice as many people engaged in same-gender behavior as identified as gay or bisexual. Similarly, Wichstrøm and Hegna (2003) reported that, among Norwegian adolescents, 16 % had same-gender attraction, half as many (8 %) had made sexual contact with their same gender, yet only 3 % identified as bisexual/gay (Eskin et al., 2005; Laumann et al., 1994; Sell et al., 1995).

Several studies have, however, assessed the prevalence of different sexual orientations in large national samples by using a broad measure of sexual orientation. These studies consistently employed some sort of categorical measure and found that between 93 and 98 % of people identified as heterosexual, depending on how missing data were dealt with (Layte et al., 2006; Office for National Statistics, 2012; Smith, Rissel, Richters, Grulich, & De Visser, 2003). Of relevance to the present study, Wells, McGee, and Beautrais (2011) analyzed interviews with 12,992 New Zealanders in a 2003/2004 national household sample of those aged 16 and over. They included a question asking participants to choose from one of the five categories to express their sexual orientation. An overwhelming majority indicated that they were heterosexual (98 %), with 0.6 % reporting bisexuality, 0.8 % "homosexuality," 0.3 % indicating something else, and 0.1 % not being sure. However, this sample was collected over a decade ago, before the international movement toward marriage equality and the legalization of same-sex marriage in New Zealand. Wells et al. also did not allow participants to self-generate their sexual orientation. Thus, up-to-date prevalence estimates which use self-generated sexual orientation are called for.

In terms of gender differences in diverse sexual orientations, the literature largely finds that women are more likely than men to identify as asexual and bisexual, whereas men are more likely than women to say they are exclusively gay (or lesbian) (Layte et al., 2006; Savin-Williams & Diamond, 2000; Smith et al., 2003; Walton, Lykins, & Bhullar, 2016). Furthermore, Wells et al. (2011) have established the frequency of women and men identifying as bisexual in New Zealand. Of those who identified as bisexual, 80.8 % were women, whereas approximately half of participants who identified as lesbian/gay were women (47.6 %).

Turning to the relationship between sexual orientation and age, in a representative Australian sample, Smith et al. (2003) found that, among men, age was not associated with reporting a non-heterosexual orientation. Among women, however, age was negatively associated with reporting bisexuality. That is, younger women were more likely to report being bisexual relative to older women. Moreover, for both men and women, Wells et al. (2011) observed that those identifying as bisexual were largely in the 16–29 age group (36.1 %) followed by the 30–44 group (28.0 %) with only 12.9 % of those who self-identified as bisexual being in the 60+ age cohort. In contrast, only 23.7 % of those openly identifying as lesbian/gay were aged 16–29, with the majority being in the 30–44 (35 %) and

45–59 (29 %) age groups. Therefore, those who openly identify as lesbian/gay may be older than those who openly describe their sexual orientation as bisexual. This could support the idea of bisexuality as a transitional identity, reflecting generational differences in the way people describe sexual orientation. It may also reflect a modern reduction in pressure to identify as either exclusively heterosexual or lesbian/gay (see Layte et al., 2006).

Overview and Hypotheses

In the present research, we created a two-level coding scheme based on responses to a single open-ended item of self-generated sexual orientation from a large, national probability sample ($N =$ 18,261). Our goal here was to uncover the vast diversity of terms that a large, national sample may use to describe their sexual orientation. A second aim of this study was to document both the prevalence of these sexual orientations across New Zealand and differences across age and gender. In terms of overall prevalence, based on the literature reviewed above, and in light of the societal change that may have happened since the previous research, we expected those who self-generated a heterosexual orientation would comprise approximately 95 % of the sample. Additionally, we thought that around approximately 2 % of participants may have mentioned a lesbian or gay orientation, 2 % bisexual, with around 1 % generating some other sexual orientation such as pansexuality or asexuality.

We expected that a higher proportion of women than men would report a bisexual or bicurious sexual orientation (Savin-Williams & Diamond, 2000; Smith et al., 2003; Wells et al., 2011). Further, we expected those who identified as bisexual or bicurious would likely be younger than those who self-generated a lesbian or gay sexual orientation (Smith et al., 2003; Wells et al., 2011). Wells et al. also reported that more men identify as gay than women do as lesbian (see Layte et al., 2006). Thus, we expected that more men than women would generate a sexual orientation that could be coded in the lesbian/gay category.

As far as we are aware, there is no previous research exploring pansexuality or more fluid/open orientations in national probability surveys. Pansexuality is a term that refers to "a sexual attraction to all people, regardless of their gender identity or biological sex" (Lenning, 2009, p. 48). This differs from bisexuality which is typically defined as an attraction to men and women. The available research on pansexuality tends to be qualitative research focusing specifically on the identification of transgender individuals rather than the diverse array of people who may identify as pansexual (Elizabeth, 2013; Galupo, Davis, Grynkiewicz, & Mitchell, 2014; Kuper, Nussbaum, & Mustanski, 2012). Therefore, no predictions about the gender prevalence for those who identify as pansexual in a national sample could be made. However, when inspecting differences across age groups, it may be that "pansexual" as a description of sexual orientation is a fairly recent addition to the lexicon (Myers, 2008; Savin-Williams, 2009b). As such, younger people may tend to

adopt this term to a greater extent than older people. Indeed, Savin-Williams (2009b) suggested that younger people in recent years prefer not to label their sexual identity or to use less restrictive terms when describing sexual orientation and gender.

Another key group that has been largely overlooked in previous studies is those who identify as asexual: people who do not experience sexual attraction (Bogaert, 2004, 2012, 2013, 2015; Brotto, Knudson, Inskip, Rhodes, & Erskine, 2010; Walton et al., 2016). We expected that this group of participants would likely comprise less than 1 % of the sample, have a similar mean age to that of heterosexuals, and comprise of more women than men, consistent with results found in national probability studies in other nations (Bogaert, 2004, 2013; Brotto et al., 2010; Poston & Baumle, 2010; Prause & Graham, 2007).

Finally, it should be noted that we anticipated that a percentage of people would choose not to answer the question, answer the question indirectly, or respond in a nonsensical way. This prediction was based on Wells et al.'s (2011) interview data, wherein close to 30 % of the sample responded to a question about sexual orientation in this manner.

Method

Participants

The NZAVS is an ongoing 20-year longitudinal national probability panel study of social attitudes, personality, and health outcomes that started in 2009. Here, we focus our analyses on the 18,261 participants who participated in the 2013/2014 (Time 5 wave), the first wave to include the measure of sexual orientation. Detailed information about the sample procedures, overall retention rates, demographic characteristics, and items included in the questionnaires are provided on the NZAVS website (Sibley, 2015a). In sum, the NZAVS performs well in terms of representativeness, but the largest bias in the survey is that it oversamples women by about 10 % (since women tend to be more receptive to surveys than men), under samples people in their 20 s, and those of Asian ethnicity (for more information, see Sibley, 2014). Men have also been found to drop out of the NZAVS over time at higher rates than women (Satherley et al., 2015).

Time 5 (2013) of the NZAVS contained responses from 11,460 women and 6798 men (3 unreported) with a mean age of 47.66 years (range: 18–94, SD = 14.07). In terms of ethnicity, 85.5 % of the sample identified as New Zealand European ($n =$ 15,607), 12.7 % Māori ($n =$ 2328), 3.4 % of Pacific Nations descent ($n =$ 625), 4.5 % Asian ($n =$ 814), and 5.1 % reported another ethnicity or did not answer ($n =$ 931; participants could identify with more than one ethnicity). With regard to other demographics, 74.4 % of the sample ($n =$ 13,578) were employed, 72 % were parents ($n =$ 13,147), and 71.1 % were in a serious romantic relationship (i.e., a marriage or common law partnership; $n =$ 12,976). Less than half of participants (37.7 %, $n =$ 6879) identified with a religion or

spiritual group and 77.9 % were born in New Zealand ($n = 14,225$). The mean level of education in the sample was 4.91 (SD = 2.85) on the NZREG scale, where 0 is equivalent to no qualification and 10 is equal to a doctorate degree (Statistics New Zealand, 2016).

The NZAVS post-stratification weighting procedure (to ensure the sample was representative) followed Sibley (2015b), and weighted men and women from each of the four primary ethnic groups separately as well as region of residence.

Measures

The final question in the eight page NZAVS asked participants "How would you describe your sexual orientation?" Participants were provided with a small, empty box to write in their answer on the postal version, and a text box for the online version that had no character limit. Participants also provided gender (assessed categorically as "male" or "female") and their date of birth, from which we calculated their age.

Procedure

Answers to the self-generated sexual orientation question were used to create a two-level coding scheme. First, a coding scheme was devised at Level 2, the most detailed level. These codes were then grouped together and folded together into Level 1 (a code with the most common orientations, comparable to research that allows participants to select from a number of categories). With a careful reading of the responses sorted in alphabetical order, we first assigned three-digit codes to the most common responses (e.g., "heterosexual" and "straight,"). We left space in the coding scheme to add in the less common responses at Level 2 as we coded so that they grouped together numerically in a logical way (De Vaus, 2013). We then re-examined the responses that were not easily coded into the common responses and created codes for those who easily grouped together into a theme. On occasion, a participant's reported gender (participants could tick: "male," "female," or neither) was used to clarify the answer and incorporated into the subsequent codes.

For those who responded with multiple interpretable answers, we used a multiple-response coding strategy rather than choosing the first answer (De Vaus, 2013). We chose to priority code "lesbian" or "gay," then "homosexual," followed by bisexuality and then pansexuality (i.e., starting with the most specific non-heterosexuality). Very few participants in the non-heterosexual codes used terms that could fall under multiple categories to describe themselves (22/814 used two terms, 1/814 used three terms, the majority of these being a combination of two of: "gay," "lesbian," and/or "homosexual"). More common were those who used heterosexual responses with heteronormativity; these were priority coded over commonly used heterosexual responses (e.g., "straight," "heterosexual" when in combination with something that expressed heteronormativity like "normal (straight)," "normal/heterosexual" was coded in the heteronormative

category). The full coding scheme with Levels 1 and 2, with descriptions and example responses is presented in Appendix Table 4.

After devising the Level 2 coding scheme, we grouped together these codes into a less detailed Level 1. Level 1 groupings were based on previous research that grouped participants into categories (e.g., Wells et al., 2011), as well as research on orientations detailed in the recent literature (e.g., pansexuality, asexuality) that would not otherwise fit into those categories. The purpose of Level 1 was to provide codes that allowed for the comparison of the frequencies of the most commonly described sexual orientations. After we had devised the initial coding scheme, two coders independent of the creation of the coding scheme attempted to replicate coding in two random samples of 2000 cases. The coding scheme was revised where possible to make the descriptions of the codes less ambiguous (De Vaus, 2013; Weisberg, 2005).

To assess the coder reliability of sexual orientation using our proposed statistical standard, two independent coders scored 500 open-ended sexual orientation responses using the Level 2 codes. Cohen's kappa indicated that inter-rater reliably was extremely high (kappa = 0.99, SE = 0.006, $t = 49.17$, $p < .001$).

Results

Code Prevalence

Level 2

Several themes emerged for heterosexuality. These Level 2 codes (the more detailed level of coding) are given in Appendix Table 4. The vast majority of these participants stated that they were "heterosexual" (52.7 %) or "straight" (24.6 %). However, we also coded for heteronormative responses at Level 2, common responses consisted of: those who reported something like "normal" (10.3 % of the weighted estimate, including synonyms like "standard," "ordinary," "typical," "conventional," "mainstream"), a response like "normal" but with an explanation that normal means heterosexual/straight (e.g., "normal [straight]," "normal not homosexual"; 1.0 %), "normal" miscellaneous (0.5 %), a "normal" with confusion category (e.g., "not sure what you mean by this question—normal"; 0.2 %), and those who stated that they were "normal" and included their own gender: "normal for a man," "normal healthy male with healthy sex drive" (0.2 %).

Additionally, some of the heteronormative responses incorporated a heterosexual marriage or religious theme into their answers (e.g., "man marry woman," "a man who loves his wife regularly," "God made!," "natural," "God ordained—only with my husband," "married to wife with no deviations"; 0.9 %). Finally, one category of participants at Level 2 defined their sexual orientation as not being lesbian or gay (0.4 %): "not

gay," "homophobic male," "not homosexual, not bisexual," "normal human, not gay."

The lesbian/gay group consisted of those who stated the following sexual orientations at Level 2: "queer" (less than 0.1 %, $n = 14$). We placed "queer" in the lesbian and gay category since most mentions of "queer" additionally included either "homosexual," "lesbian," or "gay." However, we note that people identifying with the term "queer" could mean a number of things; it might include those who are attracted to people irrespective of gender or sex. We chose to include it in the broader lesbian or gay category due to the number of responses including other indicators mentioned above: "homosexual" (0.3 %), "lesbian" (0.4 %), "gay" (1.6 %), and miscellaneous descriptions of lesbian/gay (0.1 %).

Two bicurious categories emerged at Level 2: those who stated that they were bicurious (0.1 %) and those who reported being straight but suggested that this is not exclusive (e.g., "hetero with bi leanings," "hetro-flexible," "um, heterosexual sort of," "straight(-ish)"; 0.5 %). The pansexual group consisted of two codes at Level 2—the 13 participants who used the term "pansexual"—and a group that used terms reflective of being open-minded/fluid/flexible (0.4 %; "not what you love, but who you love. Open," "liberal," "anything goes"). Finally, the asexual group consisted of those who identified as asexual (0.3 %) and one individual who described themselves as "self-sexual."

Turning to the categories at Level 2 that ultimately counted as "missing data," the coding scheme included supplementary codes for those who did not respond and responses that could be described as refusal to answer or outside of the scope of the question (De Vaus, 2013). Within those who did not respond to the sexual orientation item (i.e., left the box blank), we created two codes: one for those who left that part of the survey incomplete (2.9 %; percentages for the rest of this section are of the total sample responses) and one for those who only did not answer the sexual orientation question (9.9 %). Together with these missing data codes for those who did not understand the question yet answered in a vaguely appropriate way (i.e., made some kind of reference to sex, gender, or relationships), and those who stated that they do not have an orientation, these responses comprised 22.8 % of the total sample. The full list of codes and examples are presented in Appendix Table 4.

A surprisingly large group to emerge within Level 2 of the coding scheme was those who seemed to not understand the question. These responses were broadly related to sexual behavior or gender, but did not reflect a clear response to sexual orientation. These include those who just specified their satisfaction (e.g., "happy!," "comfortable," "perfect"; 3.7 %), or dissatisfaction (e.g., "deprived," "dull," "bleak"; 0.2 %). Although these participants may be describing their sexual orientation in favorable or unfavorable terms, these responses may have related to the quality/frequency of the participant's sex lives rather than to whom they were attracted to or were having sex with.

Some participants in this group expressed that they were sexually active without alluding to orientation (e.g., "active," "kinky"; 0.6 %), or described their frustrations/a lack of sexual activity (e.g., "hopeful," "oral??? :-)," "haven't had it for ages lol [laugh out loud]"; 0.2 %). Others described their own gender/gender characteristics (e.g., "alpha male"; 0.1 %), just stated a gender (1.3 %) or stated both genders together ambiguously (e.g., "woman/man," "male and female"; 0.2 %). Because these participants could have been describing either themselves or the gender of those whom they were attracted to, it was impossible to code these participants into a definitive sexual orientation category. Others specified their marital status without describing the gender of their partner/preferred partner(s) (0.5 %).

As a final note, we felt that it was necessary to include those who simply reported that they were "transgender" in the outside scope/missing data category as we could not deduce from this which gender(s) these participants identified as being attracted to (<0.1 %). However, participants who reported that they were transgender and included an orientation that fit within the coding scheme were coded accordingly (i.e., those who reported "translesbian" were coded as lesbian). We note also that these responses in part prompted the inclusion of the open-ended gender question included in future iterations of the survey.

Level 1

The codes for Level 1 are shown in Table 1. The 49 Level 2 codes were folded into 6 categories at Level 1 (we excluded the missing data categories) to allow for parsimony and further analysis. Both the heterosexual and heteronormative themes together became the heterosexual category at Level 1, comprising a total of 94.2 % of the (weighted sample) responses. The other categories at Level 1 were: lesbian/gay (2.6 % of the weighted sample estimate from the homosexual, queer, lesbian, gay, and miscellaneous description Level 2 codes), bisexual (1.8 %), bicurious (0.6 %; from the bicurious and non-exclusive heterosexual codes at Level 2), pansexual/open (0.5 %; from the pansexual and the open/fluid/flexible Level 2 codes), and asexual (0.3 %; from the asexual and self-sexual Level 2 codes).

Gender Differences

Table 2 shows each of the Level 1 codes by gender and the results of each chi-square test. We also conducted chi-square tests to see whether gender differed over Level 1 categories. The chi-square test for heterosexual orientations showed no significant gender difference in heterosexuality. The chi-square test for lesbian/gay sexual orientations was significant, $\chi^2(1, n = 14{,}066) = 38.82, p < .001$, as a significantly higher proportion of men (3.5 %) self-generated a lesbian/gay sexual orientation, compared with women (1.8 %). The chi-square test for bisexual orientations, $\chi^2(1, n = 14{,}066) = 8.16, p = .004$,

Table 1 Frequency of participants reporting the various sexual orientations at Level 1 of the coding scheme

	Weighted		Non-weighted	
	%	N	%	N
Level 1				
Heterosexual/straight	94.20	13,256	94.40	13,619
Lesbian/gay	2.60	367	2.40	343
Bisexual	1.80	254	1.80	266
Bicurious	0.60	79	0.60	88
Pansexual/open	0.50	71	0.50	76
Asexual	0.30	39	0.30	41

Table 2 Frequency of participants reporting the various sexual orientations by gender at Level 1 of the coding scheme, and chi-square tests for each sexual orientation across gender

	Men		Women		χ^2
	%	N	%	N	
Level 1					
Heterosexual/straight	94.10	6173	94.40	7082	<1
Lesbian/gay	3.50	230	1.80	137	38.81***
Bisexual	1.50	96	2.10	158	8.16**
Bicurious	0.40	25	0.70	54	7.0**
Pansexual/open	0.50	31	0.50	40	<1
Asexual	0.10	8	0.40	31	10.75**

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

showed that a significantly higher proportion of women (2.1 %) responded with a bisexual orientation when compared with men (1.5 %). The chi-square test for bicurious sexual orientations was also significant, $\chi^2(1, n = 14,066) = 7.20, p = .007$, as more women (0.7 %) than men (0.4 %) answered with bisexuality. There was no significant gender difference in pansexuality. Finally, the chi-square test for asexuality, $\chi^2(1, n = 14,066) = 10.74$, $p = .001$, revealed that significantly more women (0.4 %) were asexual than men (0.1 %).

Age Differences

To examine age differences across sexual orientations and genders, we conducted a 2 (Gender) × 6 (Sexual Orientation: heterosexual, lesbian/gay, bisexual, bicurious, pansexual/open, or asexual) analysis of variance. Means for men, women, and the total sample are shown in Table 3, and the means across both men and women for each Level 1 sexual orientation are presented in Fig. 1.

The interaction between gender and sexual orientation was significant, $F(5, 15,597) = 4.11, p < .001$, partial $\eta^2 = 0.001$. Follow-up pairwise comparisons of sexual orientation at each level of gender showed that heterosexual men ($M = 48.54$) were significantly older than heterosexual women ($M = 45.37$; $p < .001$). Bisexual men ($M = 45.13$) were also significantly older than bisexual women ($M = 37.31$; $p < .001$), as were pan-

sexual/open men ($M = 49.93$), when compared with pansexual/open women ($M = 41.02$; $p = .006$). The differences between lesbian women and gay men, bicurious men and women, and asexual men and women were not significant.

Examining this another way, or within each gender, bisexual and bicurious women ($p = .206$) were significantly younger than heterosexual ($ps < .001$), lesbian ($ps < .001$), and asexual ($ps = .007–.041$) women. Additionally, bicurious women were significantly younger than pansexual/open women ($p = .007$). Heterosexual women were also significantly older than lesbian/gay ($p = .046$) and pansexual/open women ($p = .027$) women. For men, heterosexual men were significantly older than gay ($p < .001$), bisexual ($p = .020$), and bicurious ($p = .001$) men. Gay men were significantly older than pansexual/open men ($p = .004$), and bisexual and pansexual men were significantly older than bicurious men ($ps = .003–.044$). There were no significant differences for the mean age of asexual men.

Discussion

We analyzed responses to an open-ended item that allowed a nationally representative sample of participants in New Zealand to describe their sexual orientation in their own words. First, we wished to detail and describe self-generated sexual orientation across a wide range of people. Second, we aimed to devise a sen-

Table 3 Mean age as a function of gender and self-labeled sexual orientation

| | Level 2 sexual orientation | | | | | | | | | | | | | | | | | |
| | Heterosexual | | | Lesbian/gay | | | Bisexual | | | Bicurious | | | Pansexual/open | | | Asexual | | |
	M	SE	n	M	SE	n	M	SE	n	M	SE	n	M	SE	n	M	SE	n
Men	48.54	0.18	6173	42.03	0.94	230	45.13	1.45	96	38.61	2.89	25	49.93	2.57	31	40.14	5.24	8
Women	45.37	0.15	7082	43.23	1.06	137	37.31	0.99	158	34.90	1.63	54	41.02	1.96	40	42.28	2.22	31

sible two-level coding scheme in order to answer quantitative approach questions on prevalence, age, and gender differences. Our analyses have provided up-to-date estimates of population prevalence for the New Zealand population.

We received a broad and diverse range of responses to a relatively simple question. These responses reflected the personal, nuanced, and diverse ways in which people described their sexual orientation. From this, we can conclude that one size does not fit all, and that people appear to understand their sexuality or at least describe their sexual orientation in vastly diverse ways. We had predicted that around 2 % of participants would describe their sexual orientation as something like lesbian or gay, and around 2 % would describe a bisexual sexual orientation. We found that a substantive proportion of the population described their sexual orientation as lesbian/gay (2.6 %) and bisexual (1.8 %).

We had predicted that a higher proportion of women, when compared to the proportion of men, would describe themselves as bisexual. Indeed, we found that 2.1 % of women self-reported as bisexual, compared to 1.5 % of men, and that bisexual men were significantly older than bisexual women. The proportion of men providing a bisexual self-generated sexual orientation was larger than previous research had indicated. One explanation for this effect is that people (including those who identify as lesbian/gay) chastise bisexual men more so than women (i.e., biphobia), but this may be changing over time (see Eliason, 1997; McLean, 2008; Mulick & Wright, 2002; Savin-Williams, 2009b). It did not appear, however, that more men who would

have once identified as gay are now identifying as bisexual. A higher proportion of men (3.5 %) than women (1.8 %) responded with a gay sexual orientation.

In line with our hypotheses, the bisexual and bicurious categories had the youngest average age. We also discovered that there was no significant gender difference in having a pansexual/open sexual orientation. For both men and women, 0.5 % identified as pansexual, which provides insight on an emerging and (possibly) growing sexual orientation, although men who mentioned a pansexual or open orientation were significantly older than the women who did. Supporting expectations, we found that a significantly larger proportion of women than men identified as asexual. Asexuality is defined as having no romantic or sexual attraction to anyone (Bogaert, 2004, 2012, 2013, 2015). However, these findings come with a caveat: We were careful to only include people in the asexual category who specifically used terms like "asexual." This was a conservative approach, which may have meant that older participants who meet the definition of asexual, but were unaware of the conventional language to describe their sexual orientation, were placed in the "no orientation" category.

Initially, our intentions were to measure self-generated sexual orientation, that is, allow our sample to describe their own sexual orientation to us in their own words. However, this method and the measure we used relied on participants: (1) knowing the language or terms conventionally used for sexual orientations without any priming and (2) taking such a measure seriously. We did not envision the relatively larger number of people who seemed to misunderstand the sexual orientation question or respond in a derisive manner. Thus, incidentally, we also uncovered the proportion of the population that either do not have the requisite knowledge to respond to such a question or do not want to. Some of these may people may be those that typically leave sexual orientation questions blank (e.g., 26.7 % in Wells et al., 2011).

We also did not expect people to describe the quality, frequency or activities in their sex life to us, or describe their own gender or their marital status (6.8 %). Nor did we expect the large group of people who responded using heteronormative terms like "normal" or "ordinary" describe themselves as "not homosexual" or reference marriage or the Bible. Just over 1/10 people surveyed used heteronormative responding to our sexual orientation question (10.3 %). When UMR Research (2003) interviewed a wide range of New Zealanders on the
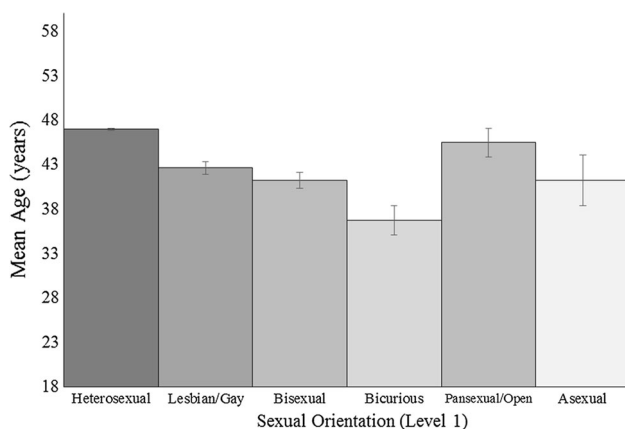

Fig. 1 Mean age for each Level 1 sexual orientation (*error bars* represent the SEM)

topic of including sexual orientation in the national census, none of the participants mentioned "normal" as a potential response for themselves or others. It is possible that these groups represent people who are unaware of the correct or typical terms for different sexual orientations or even know what a sexual orientation is. They could be purposely expressing conservative political or religious views through their answers, a question we intend to revisit with future research. This may also be a limitation of the single-item, open-ended measure: we did not provide participants with preset answers to choose from. However, due to this limitation, we have shown that a substantial minority of the population may not regard sexual orientation as a serious identity or question or may not have the requisite vocabulary to answer such a question. That these responses were returned at an unexpectedly high rate may provide support for public information campaigns about sexual orientation.

Additionally, due to concerns about survey space, we did not include measures of attraction, sexual behavior, or sexual identity. As such, we do not know how many of our participants who, for example, described their sexual orientation as something like "straight" or "heterosexual" were nonetheless attracted to their same gender to some extent or engage in/have engaged in sexual behavior with the same gender (e.g., see Baldwin et al., 2015, 2016). For example, Wells et al. (2011) found that although 1.4 % identified as gay, lesbian, or bisexual, 3.2 % reported having had same-gender sexual experience. This is a limitation of our measure and thus our analyses—we have likely underestimated the number of people who are attracted to the same gender or have engaged in same-gender sexual behavior. On a related note, cultural context may also effect which information (whether it be behavior, attractions, or identity) that people are drawing upon when they self-generate sexual orientation and, of course, the language they use. Future research could examine which aspects of sexual orientation participants draw on when describing their sexual orientation, perhaps even across cultures.

When coding self-generated sexual orientations, we tried to find the balance between parsimony and the inclusion of a number of sexual orientations not typically represented in categorical measures. Our method involved some potentially subjective decisions, some of which could not be based on research because of a lack of the literature in that particular area. For example, we had concerns around categorizing "normal" and synonyms; it could be that these participants were saying they have a "normal" sexual orientation (heteronormativity) or that their sex life is what they would call "normal" in terms of frequency or behavior (again, possibly expressing heteronormativity). However, we often used similar responses to provide meaning. For example, in the case of "normal," we used those who answered "normal" in combination with "straight" or "heterosexual" or gave an explanation as to what "normal" typically meant, to conclude that "normal" on its own means heterosexual. Unfortunately, we do not know whether everyone using these types of ambiguous terms for their

orientation meant the same thing. This could be followed up with more in-depth qualitative work, which would allow participants to explain the terms that they used.

The NZAVS will retain this measure in order to examine changes or consistency in the use of terms over time. Longitudinal panel research on self-generated sexual orientation is important for two reasons. Firstly, people may change their attractions, behavior, and identities and thus describe their sexual orientation using terms typically used to describe a different sexual orientation than that previously generated. This is important as some research shows that, for some people, the way that they describe their sexual orientation and their patterns of attractions and identity itself changes over time. In a 10-year qualitative study of non-heterosexual women ($n = 79$), Diamond (2000) found that two-thirds of participants had changed the way they talked about and understood their own sexual identity since the beginning of data collection, and one-third had changed this at least twice. Additionally, Rosario, Schrimshaw, Hunter, and Braun (2006) reported that only 72 % of 14–21-year-old participants retained the same sexual orientation over a less than 2-year period. Other longitudinal research that has used measures of attraction, behavior, and Kinsey scale ratings has shown changes over fairly short periods of time (Dickson, Paul, & Herbison, 2003; Pattatucci & Hamer, 1995; Stokes, Damon, & McKirnan, 1997; Stokes, McKirnan, & Burzette, 1993; Weinberg, Williams, & Pryor, 1994). We await future data collection so that we can examine changes in sexual orientation over time, as well as predictors of such change.

The second reason that longitudinal panel research on self-generated sexual orientation is important is that the popular terms for different sexual orientations may change over time. For example, a woman who is primarily attracted to and pursues relationships with other women has many ways to describe her sexual orientation: "queer," "lesbian," or "homosexual." She may additionally choose to describe herself in a different language or use humor to express her sexual orientation. These changes in language may change based on reactions to events in society and highlight the importance of conducting large-scale, longitudinal research.

Missing data are always an issue for surveys asking sensitive questions, as participants can refuse to answer a question for any number of reasons (Purdam, Wilson, Afkhami, & Olsen, 2008; Savin-Williams, 2009a; Tourangeau & Yan, 2007). In the current study, we found that the rate of missing data, refusals, or nonsense responses was 22.8 %. This is slightly lower than the 26.7 % reported by Wells et al. (2011) over a decade ago. Part of the explanation for differences in missing data rates and the prevalence of different orientations may lie in the different data collection formats (they used interviews whereas we used a survey). It is also possible that people are better able to define their sexual orientation, owing to societal wide changes occurring over time. Although we cannot infer for certain what the sexual orientations of the participants who did not answer or

answered in an unsuitable way actually were in 2014, they may answer in a different manner next year, or during any of the many years of data collection after that. Uptake in the adoption of certain language could possibly reflect more people coming to terms with their identities or terminology like "sexual orientation" becoming more common in the national lexicon.

Conclusion

We presented data from a measure of self-reported sexual orientation in a large-scale, nationally representative panel study of New Zealand adults. We created a two-level coding scheme that summarized the diverse self-identifications, reports of behavior, attractions, and use of other terms. In order to analyze the data in such a large sample, we had to take a reductionist approach, but the volume and detail of descriptions highlights the varied and personal nature of sexual orientation. In future, we wish to follow changes, or stability, in self-generated sexual orientation over time. These findings will provide critical information regarding the origins and structures of social groups based around sexual orientation and, importantly, groups that will likely develop as social norms change.

Compliance with Ethical Standards

Appendix

See Table 4.

Table 4 New Zealand Attitudes and Values Study sexual orientation statistical standard (including codes from Levels 1 and 2, with weighted sample estimate frequencies and raw (unchanged from survey entry) examples

Level 1	Level 2	Code numbers and names	Raw, open-ended examples from the NZAVS Wave 5 data	Frequency
10		Heterosexual/Straight		
	100	Heterosexual	"HETEROSEXUAL," "hetero," "het"	40.6 % (7417)
	101	Heterosexual AND straight	"Heterosexual (Straight!)," "straight/heterosexual"	0.7 % (119)
	102	Straight	"Straight," "Sraight," "Stright"	19.0 % (3462)
	103	Straight/Heterosexual AND states own gender	"A straight female," "Hetro Male," "Active heterosexual male!"	0.4 % (69)
	104	Straight/Heterosexual AND states preferred gender	"straight towards men," "Heterosesxual (Like men)"	0.1 % (10)
	105	Straight/Heterosexual AND specification of preference/strong preference	"strictly straight," "Straight!," "100 % Straight"	0.3 % (49)
	106	Straight/Heterosexual AND attempt at humor	"straight (vagitarious…)," "like it lots-hetro," "Straight-like strippers"	0.3 % (48)
	107	Straight/Heterosexual but confused (likely at question)	"Straight (?)," "straight?," "hetrosexual?"	0.1 % (17)
	108	Straight/Heterosexual but suggests they are gay friendly	"Straight. LGBT friendly," "straight, gay accepting"	<0.1 % (6)
	109	"Normal"	"Standard," "ordinary," "typical"	7.9 % (1443)
	110	"Normal" with explanation that this means straight/heterosexual	"Normal (Straight)," "Normal/Heterosexual," "normal-man/woman"	0.8 % (141)
	111	"Normal" with humor/emphasis/outrage/misc.	"normal :-)," "Completely normal," "not very PC but normal"	0.4 % (67)
	112	"Normal" with confusion	"Normal?," "not sure what you mean by this question-normal"	0.1 % (21)
	113	"Normal" with own gender label	"normal as a female," "Normal healthy male with healthy sex drive"	0.2 % (35)
	114	Specifies that they are Homophobic or NOT Homosexual	"Not Gay," "Homophobic Male," "normal (i.e. not homo)"	0.3 % (54)
	115	Marriage theme/Religious theme	"man marry woman," "man/wife," "God ordained-only with my husband"	0.7 % (130)
	199	Describes heterosexuality (misc.)	"opersit sex," "female who likes blokes!," "I like vaginas"	0.9 % (163)

Table 4 continued

Level 1	Level 2	Code numbers and names	Raw, open-ended examples from the NZAVS Wave 5 data	Frequency
20		Lesbian/Gay		
	200	Homosexual	"homosexual"	0.2 % (45)
	201	Queer	"Queer :)," "queer"	0.1 % (14)
	202	Lesbian	"lesbian"	0.3 % (61)
	203	Gay	"gay," "openly gay and proud," "Gay/Queer"	1.3 % (232)
	299	Describes Lesbian/Gay (misc.)	"same sex," "Takaatapui"	0.1 % (16)
30		Bisexual		
	300	Bisexual	"bi," "Queer(bi)," "bisexual"	1.4 % (254)
35		Bicurious		
	350	Bicurious	"bi-curious," "Predominantly heterosexual, bi-curious"	0.1 % (16)
	351	Heterosexual/Straight but suggestion this is not exclusive	"hetero with bi leanings," "Hetro-flexible," "Straight(-ish)"	0.3 % (64)
40		Pansexual/Open		
	400	Pansexual	"Pansexual/lapsed lesbian," "pansexual," "OMNI"	0.1 % (13)
	401	Open-minded/Fluid/Flexible	"open minded," "Liberal," "anything goes"	0.3 % (58)
50		Asexuality		
	500	Asexual	"Asexual"	0.2 % (38)
	501	Self-Sexual	"self-sexual"	<0.1 % (1)
Codes for missing data				
70		Does not understand question		
	700	Just specifies dissatisfaction	"Deprived," "Dull," "Bleak"	0.2 % (39)
	701	Just specifies satisfaction	"happy!," "PERFECT," "5 stars"	3.7 % (679)
	702	Expresses they are sexually active (no orientation suggestions)	"virile," "active," "regular vanilla"	0.6 % (111)
	703	Expresses frustrations/general lack of sexual activity	"Horny," "oral??? :-)," "Haven"t had it for ages (lol)"	0.2 % (45)
	704	Describes masculinity/femininity/gender	"Meterosexual," "alpha male," "I'm a lady"	0.1 % (23)
	705	Just specifies a gender	"a Woman," "male," "female"	1.3 % (236)
	706	Specifies marital status or relationship type (no suggestion of orientation)	"Single," "Married," "Monogamous"	0.5 % (99)
	707	Specifies both genders but not in any order/relationship	"woman/man," "male and female"	0.2 % (39)
80		Stated no Sexual Orientation		
	800	Expresses that they are celibate/virgin	"Celibate," "virgin," "involuntary celibate female"	0.2 % (29)
	801	Expresses illness or age (orientation as no longer relevant)	"Waning with age," "too old," "concluded"	0.3 % (53)
	802	None/Not applicable	"0," "none," "N/A"	0.9 % (169)
	803	Does not know	"don't know," "disorientated," "Unsure"	0.3 % (50)
90		Outside scope/Refusal to answer/Missing		
	900	Outside scope	"wellbeing," "Haha," "European"	0.6 % (102)
	901	Transgender	"transgender," "trans"	<0.1 % (5)
	902	Confusion	"?," "???," "ahmmmm"	0.3 % (59)
	903	Expresses confusion with question	"what?????," "What does this mean," "Don"t know what that is!"	0.1 % (15)
	904	Does not label	"I don't believe in labelling sexual orientation," "I don"t define it," "No label"	0.1 % (15)
	905	Stated refusal to answer	"Refused," "My Biz," "No Comment"	0.5 % (90)
	998	Missing Data (just orientation question)		9.9 % (1810)
100		Missing Data due to Incomplete Questionnaire Response		
	999	Missing Data due to Incomplete Questionnaire Response		2.9 % (522)

Note that on occasion, the participant's reported gender (participants could tick: "male," "female," or neither) was used to clarify their response

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