

Face Validity Ratings of Sexual Orientation Scales by Sexual Minority Adults: Effects of Sexual Orientation and Gender Identity

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Abstract The present research explored sexual minority individuals' ratings of two traditional (Kinsey and Klein Sexual Orientation Grid [KSOG]) and two novel (Sexual-Romantic and Gender Inclusive) sexual orientation scales with regard to how well they capture their sexuality. Participants included 363 sexual minority individuals who identified as lesbian, gay, bisexual, pansexual, or queer, and included individuals who identified as transgender ($n = 85$) and cisgender ($n = 278$). The findings indicated clear patterns of responses across both sexual orientation and gender identity, where participants differed in the degree to which they felt the scales captured their sexuality. A main effect of sexual orientation was found for all four scales, where participants endorsing monosexual (lesbian/gay) identities rated the scales more positively than did participants endorsing plurisexual (bisexual and pansexual/queer) identities. Bisexual individuals had a unique pattern of ratings, which sometimes aligned with those of lesbian/gay participants and sometimes aligned with pansexual/queer participants. A main effect of gender identity was found for the Kinsey, KSOG, and Sexual-Romantic (but not Gender Inclusive) scales, where cisgender individuals rated the scales more positively than did transgender individuals. There were no significant interaction effects between sexual orientation and gender identity for any of the four scales. The present findings can be used to understand sexual minority individuals' assessment of the face validity of four sexual orientation measures. Discussion focused on the implications for using traditional measures of sexual orientation in research as well as for the development of new measures that better capture the range of sexual minority experience.

Keywords Cisgender · Intersectionality · Monosexual · Plurisexual · Sexual orientation · Transgender

Introduction

Sexual orientation is understood as an internal mechanism that directs sexual and romantic interests (Diamond, 2003; Rosario & Schrimshaw, 2014). As a multi-dimensional construct, sexual orientation research often focuses on three primary components of identity, attraction, and behavior (Laumann, Gagnon, Michael, & Michaels, 1994; Pega, Gray, Veale, Binson, & Sell, 2013) although it also encompasses sexual fantasy, subjective arousal, and genital/non-genital arousal (Bailey, 2009; Klein, Sepekoff, & Wolf, 1985). The development of the Heterosexual-Homosexual (“Kinsey”) Rating Scale (Kinsey, Pomeroy, & Martin, 1948) and the Klein Sexual Orientation Grid (KSOG; Klein et al., 1985) represented major advancements in the measurement of sexual orientation; both were developed based on research that incorporated an understanding of sexual minority experience. The Kinsey Scale is one of the most commonly used sexual orientation scales and is composed of a single continuum with “heterosexual” on one end and “homosexual” on the other. Although this scale was designed to capture a range of sexual orientations, researchers using this measure typically group individuals into three sexual orientation categories: heterosexual, lesbian/gay, and bisexual (Sell, 1997; Sell & Perulio, 1996). Designed with the intent of capturing multiple dimensions of sexuality and better characterizing bisexuality, the KSOG expanded the measurement of sexual orientation by prompting individuals to rate behavior, attraction, fantasies, emotional preference, social preference, lifestyle, and self-identification, in three contexts: past, present, and ideal (Klein et al., 1985).

Sexual orientation research has generally emphasized differences between heterosexual and sexual minority individuals.

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Because sexual minority experience is understood in relation to heterosexuality, variations among sexual minority individuals are minimized. For example, individuals who rate their attractions between the heterosexual and lesbian/gay end points are often labeled by researchers as “bisexual” and are treated as a single, homogenous group (Galupo, Mitchell, Gryniewicz, & Davis, 2014c). In an effort to represent the diversity of sexual minority experience, researchers have begun using more nuanced labels to describe people who fall in the middle of the sexual continuum. Labels such as bi-heterosexual, bi-bisexual, bi-lesbian (Weinrich & Klein, 2002), bi-curious (Morgan & Thompson, 2006), mostly straight (Thompson & Morgan, 2008), mostly heterosexual (Vrangalova & Savin-Williams, 2012), mostly lesbian/gay (McCabe, Hughes, Bostwick, Morales, & Boyd, 2012), and bisexual-leaning gays/lesbians (Savin Williams, 2014) help to distinguish gradations of experience and underscore the conceptualization of sexual orientation as continuous (Savin-Williams, 2014). However, these labels linguistically situate bisexuality as a blend of heterosexual and lesbian/gay desire. They also continue to reify distinct classifications (heterosexual, lesbian/gay, and bisexual) to the exclusion of other identity labels or conceptualizations of sexual orientation.

Recent qualitative research has focused on the subjective evaluation of traditional sexual orientation measures. When asked how well traditional measures (i.e., Kinsey, KSOG) captured their experience, sexual minority participants raised a number of concerns surrounding the way sexual orientation is conceptualized and measured (Galupo et al., 2014c). For example, participants questioned whether a single continuum scale was able to capture the complexity and fluidity of their sexuality. Participants also questioned the way both the Kinsey Scale and the KSOG required individuals to rate same- and other-sex desire as opposite poles on the same continuum, rather than independently. Although many participants voiced being familiar with the traditional scales and could pinpoint their typical rating on these scales, they also challenged the conceptualization of sexual orientation as anchored on binary dimensions of sex and gender. Many of the criticisms of the Kinsey Scale and the KSOG varied across the sexual orientation (monosexual, plurisexual¹) and gender identity (cisgender,²

transgender) of the individual (Galupo, Davis, Gryniewicz, & Mitchell, 2014b). Sexual minority participants, particularly those with plurisexual and transgender identities, reported that their experience of sexuality could not be represented accurately within the confines of these traditional scales. In addition, they critiqued traditional sexual orientation scales as normalizing monosexual and cisgender experience. These findings suggest that when using traditional measures of sexual orientation, caution should be taken in the interpretation of sexual minority individuals' scores.

In response to the critique of traditional scales, Galupo, Lomash, and Mitchell (2017a) described two novel measures of sexual orientation (The Sexual-Romantic Scale and the Gender Inclusive Scale) and explored sexual minority individuals' qualitative responses to them (see Appendix). The Sexual-Romantic Scale was constructed to measure same- and other-sex attraction on independent dimensions rather than on a single continuum (modeled after Storms, 1980). In addition, sexual and romantic components of attraction were also independently assessed. Sexual minority participants voiced appreciation for the way the scale allowed both sexual/romantic attraction and same- and other-sex attraction to be rated independently. However, participants (particularly those with plurisexual and transgender identities) registered concern regarding the binary conceptualization of sex inherent in the scale. The Gender Inclusive Scale was constructed to measure same- and other-sex attraction on independent dimensions and to incorporate aspects of attraction beyond those based solely on sex. The inclusion of attraction based on gender expression (masculine, feminine, androgynous, gender non-conforming) was received positively by all participants regardless of identity, suggesting that it may be important to broaden our definitions of sexuality particularly when sampling this population.

Sexual minority critiques of both traditional (Galupo et al., 2014b, 2014c) and novel (Galupo et al., 2017a) scales highlight the need to attend to gender diversity when assessing sexuality measures. Feminist intersectional theory may provide a useful guide for how to systematically attend to sexual orientation and gender identity in such work.

Foregrounding the Intersection of Sexual Orientation and Gender Identity

Feminist intersectional theory emphasizes the importance of examining relationships among social identities as intersecting categories of oppression and inequality (Collins, 2000; Crenshaw, 1991; McCall, 2005; Shields, 2008). As such, it can usefully inform the critique of sexual orientation measures in ways that foreground the intersection between sexual orientation and gender identity. Past research related to sexual orientation (Anzaldúa, 1990; King, 1990; Trujillo, 1991) and more recently gender identity (Futty, 2010; Galupo et al., 2014a; Hines, 2010; Monro & Richardson, 2010; Nagoshi & Brzuzu, 2010) has taken

¹ We use plurisexual to refer to identities that are not explicitly based on attraction to one sex and leave open the potential for attraction to more than one sex/gender (e.g., bisexual, pansexual, queer, and fluid). Plurisexual is used instead of non-monosexual because it does not linguistically assume monosexual as the ideal conceptualization of sexuality (see Galupo et al., 2014b).

² Gender identity is typically described as an individual's private understanding of themselves as male, female, both, or neither (Tate, 2014). Cisgender and transgender are labels that can be used to describe the relationship between an individual's gender identity and sex assigned at birth (SAB); cisgender individuals have a gender identity that is the same as their SAB, and transgender individuals have a gender identity that is different from their SAB.

an intersectional approach. When researching sexual orientation, it is important to note that normality is dually constructed on heterosexual and cisgender experience (Galupo et al., 2014b). The assumption of cisgenderism when studying sexuality has contributed to the conflation of sexual orientation and gender identity. There is a need, then, to make visible both normative (cisgender) and non-normative (transgender) dimensions of gender when investigating sexual minority experience.

Previous qualitative critique of both traditional (Galupo et al., 2014b) and novel (Galupo et al., 2017a) measures of sexual orientation highlight the patterns of responses that occur across sexual orientation (monosexual vs. plurisexual) and gender identity (cisgender vs. transgender). This work took an intercategorical complexity approach to consider intersections of sexual orientation and gender identity (McCall, 2005), where categories were adopted in order to document relationships among multiple and potentially conflicting dimensions of experience. By incorporating multiple groups, an intercategorical complexity approach is comparative by nature and centers the analysis on intersecting patterns of identity. The present research employed a similar approach to systematically explore how participants' sexual orientation and gender identity impact their assessment of how well four different measures capture their sexuality.

Purpose of the Present Study

The present research explored sexual minority individuals' quantitative ratings of two traditional (Kinsey, KSOG) and two novel (Sexual-Romantic Scale, Gender Inclusive Scale; see Appendix) sexual orientation scales. Analysis considered the effects of sexual orientation (monosexual vs. plurisexual) and gender identity (cisgender vs. transgender) on participants' ratings of how well each scale captured their sexuality. Although previous research has highlighted sexual minority individuals' critiques of these scales using a qualitative approach, the present research will allow an understanding of how these concerns translate to participants' assessments of the face validity of these different measures.

Previous qualitative research found that plurisexual and transgender individuals raised more concerns than monosexual and cisgender individuals regarding traditional measures of sexual orientation (Galupo et al., 2014b). Therefore, it was hypothesized that there would be significant main effects of both sexual orientation and gender identity on participants' validity ratings for both traditional scales. Specifically, it was predicted that ratings would be more positive for lesbian/gay participants than for bisexual, pansexual, or queer participants. Likewise, bisexual participants were predicted to rate both traditional scales more positively than pansexual or queer participants. With regard to gender identity, it was hypothesized that cisgender individuals would have more positive ratings for both scales than would transgender individuals.

The Sexual-Romantic Scale was designed to address dual concerns raised by sexual minority participants with regard to traditional measures of sexual orientation (Galupo et al., 2017a). This scale was constructed to: (1) disaggregate the ratings of sexual and romantic components of attraction and (2) measure same- and other-sex attraction on independent dimensions, rather than on the same continuum. These changes primarily addressed the concerns bisexual individuals raised in previous research. They do not, however, address a primary concern of pansexual, queer, and transgender individuals; namely, that sexual orientation measures center their assessment on binary notions of sex as illustrated by the terms "same-sex" and "other-sex" (Galupo et al., 2014b, 2017a). It was hypothesized, then, that there would be significant main effects of both sexual orientation and gender identity on validity ratings for the Sexual-Romantic Scale. It was predicted that ratings would be more positive for lesbian/gay and bisexual participants than for pansexual or queer participants, and that cisgender individuals would have more positive ratings than transgender individuals.

The Gender Inclusive Scale was constructed to (1) measure same- and other-sex attraction on independent dimensions, rather than on the same continuum and (2) incorporate dimensions of attraction beyond those based on sex (Galupo et al., 2017a). Traditional components of attraction (same sex and other sex) were incorporated and likely to capture more normative conceptualizations of sexuality (monosexual, cisgender). In addition, novel components of attraction (masculine, feminine, androgynous, and gender non-conforming) were included and are likely to address the concerns of plurisexual and transgender individuals. We hypothesized that ratings for the Gender Inclusive scale would not differ across groups.

Method

Participants

Participants included 363 individuals who self-identified as non-heterosexual and completed an online survey. Participants represented 46% of all individuals who accessed the survey online ($n = 776$). This analysis excluded data from participants who resided outside of the U.S.; whose primary identity was not gay, lesbian, homosexual, bisexual, pansexual, or queer; whose responses appeared to be a duplicate based on IP address and/or response pattern; whose gender identity or sexual orientation information was inconclusive or incomplete; and who had incomplete or missing responses for the questions under consideration. Participants included in the analysis, then, represented a subset of the full dataset where some participants from this sample overlapped with the participant samples used in other work from this lab (Galupo, Mitchell, & Davis, 2015; Galupo et al., 2014b, 2017a).

With regard to their primary sexual orientation, 42.4% of participants self-identified with monosexual labels, and 57.6% with plurisexual labels. Monosexual participants included participants who primarily self-identified as lesbian (23.4%), gay (18.7%), and homosexual (0.3%). Plurisexual participants primarily self-identified as bisexual (24.0%), pansexual (16.3%), and queer (17.4%). With regard to gender identity, 51.8% of participants were cisgender women, 24.8% were cisgender men, and 23.4% self-identified as transgender (with the majority identifying with non-binary labels such as genderqueer, agender, and two spirit). See Table 1 for group demographics by gender.

Participants represented all regions of the continental United States, as well as Alaska. Overall, participants resided in 39

states and Washington, DC. Participant ages ranged from 18 to 62 years ($M = 26.5$, $SD = 9.1$). There was some racial/ethnic diversity, with 21.0% of participants identifying as racial minorities. The overwhelming majority of the sample (77.7%) identified as White/Caucasian. See Table 2 for a breakdown of participant demographics by race/ethnicity, socioeconomic status, and education.

Initial recruitment announcements were posted on social networking Web sites, online message boards, and forwarded via email. Online resources included those with a national and local community reach. In addition, some targeted specific plurisexual, transgender, or LGBT communities of color, while others engaged the LGBT community more broadly. Snowball recruitment was also used, as some people who learned of the survey shared it with additional groups or individuals. Participants learned of the survey primarily via online resources, including seeing the survey link on Facebook (52.8%), Tumblr (9.1%), Twitter (2.2%), and research-oriented Web sites/message boards (18.3%). Other participants located the survey through the use of an internet search engine or while conducting their own research (2.8%). The remaining participants received a link to the survey via email (6.4%), were directly recruited by a friend (6.4%), or received information about the survey through a college class (1.9%).

Table 1 Group demographics by gender

	Women <i>n</i> (%)	Men <i>n</i> (%)	Non-binary <i>n</i> (%)	Total
<i>Cisgender</i>				<i>N</i> = 278
Lesbian/Gay	71 (53.4)	62 (46.6)	–	133
Bisexual	60 (75.9)	19 (24.1)	–	79
Pansexual/Queer	57 (86.4)	9 (13.6)	–	66
<i>Transgender</i>				<i>N</i> = 85
Lesbian/Gay	3 (14.3)	5 (23.8)	13 (61.9)	21
Bisexual	1 (12.5)	2 (25.0)	5 (62.5)	8
Pansexual/Queer	9 (16.1)	14 (25.0)	33 (58.9)	56

Table 2 Participant demographics

	<i>n</i>	%
<i>Race/Ethnic Identity</i>		
American Indian/Alaska Native	3	0.6
Asian/Asian American	12	3.3
Black/African American	9	2.5
Hispanic/Latino	22	6.1
Native Hawaiian/Other Pacific Islander	3	0.6
White/Caucasian	282	77.7
Biracial/Multiracial	27	7.4
<i>Education</i>		
Did not complete high school or GED	6	1.6
High school or GED	36	9.9
Completed vocational school	10	2.7
Associates degree or some college	162	44.6
Bachelor's degree	77	21.2
Graduate or professional degree	72	20.0
<i>Socioeconomic status</i>		
Working class	67	18.5
Lower-middle class	59	16.2
Middle class	138	38.0
Upper-middle class	70	19.3
Upper class	6	1.7

Measures

Kinsey Scale

The Kinsey Scale is a single-item scale that allows participants to rate sexual interests and behaviors based on self-report. Scale scores range from 0 (“Exclusively Heterosexual”) to 6 (“Exclusively Homosexual”). An alternate version of the Kinsey Scale adds category “X” as an option for those whose sexuality does not fit within the identified 0–6 continuum (Kinsey et al., 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953). For the present study, we used this version of the Kinsey Scale and labeled “X” as “Asexual” to enhance participant understanding.

Klein Sexual Orientation Grid (KSOG)

The present study used a version of the KSOG that was modified for teaching purposes (Keppel & Hamilton, 1998). The scale's three reference domains (past, present, and ideal) were displayed in columns, while the eight human sexuality domains were represented by rows. The human sexuality domains included six originally used by Klein (sexual attraction, behavior, and fantasies; emotional and social preference; self-identification). Keppel and Hamilton's modified version relabeled Klein's original “lifestyle” domain as “community” and added a political identity domain. Participants used a seven-point Likert style scale to rate the resulting 24 variables, between 1 (“Other Sex Only/Heterosexual Only”) and 7 (“Same Sex Only/Gay Only”).

Sexual-Romantic Scale

The Sexual-Romantic Scale (Galupo et al., 2017a) allowed for the independent evaluation of same- and other-sex attraction by asking participants to rate their level of sexual and romantic attraction to each sex separately. Participants used a seven-point Likert style scale (1 = “Almost Never True” to 7 = “Almost Always True”) to rate four dimensions using the prompt: “I am (sexually/romantically) attracted to individuals of the (same-sex/other-sex).”

Gender Inclusive Scale

The Gender Inclusive Scale (Galupo et al., 2017a) included six rating dimensions where participants rated their attraction from “Almost Never True” (1) to “Almost Always True” (7). This scale retained the typical categories of “same-sex” and “other-sex” while adding four gender-related categories (masculine, feminine, androgynous, and gender non-conforming).

Face Validity Ratings

Following completion of each of the four sexual orientation scales, participants provided face validity ratings in response to the prompt: “This scale accurately reflects my sexuality” using a five-point Likert scale ranging from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”).

Procedure

As part of a larger online study on sexual minority experiences, the present analysis focused on participants’ responses to four quantitative questions. After providing basic demographic information, participants were presented with the Kinsey Scale, the KSOG, the Sexual-Romantic Scale, and the Gender Inclusive Scale (in that order and without a title or label). Participants were asked to complete each scale and then provide a face validity rating.

Results

A preliminary analysis was conducted and found no significant difference of scores across pansexual/queer participants for any of the scales.³ Pansexual/queer participants were then collapsed into a single group. A preliminary analysis also ruled out the

³ Although pansexual and queer participants did not significantly differ on their validity ratings for any the scales, queer participants ($M = 27.14$) were significantly older than pansexual participants ($M = 24.44$) and were more likely to identify as transgender (55 vs. 38%).

effect of gender (female, male) for cisgender participants. A 2×3 multivariate ANOVA was conducted and found no interaction effects between sexual orientation and gender, and no main effect of gender on ratings for any of the scales. A parallel analysis of gender for transgender participants was not conducted due to the small sample size. A 3 (Sexual Orientation: Lesbian/Gay, Bisexual, Pansexual/Queer) \times 2 (Gender Identity: Cisgender, Transgender) multivariate ANOVA investigated the impact on scale ratings. Table 3 shows the mean ratings for each of the four questions as a function of participant sexual orientation and gender identity. When a main effect of sexual orientation was found, Tukey post hoc t tests were used to explore group differences.

Kinsey Scale

There was a significant main effect of sexual orientation, $F(2, 355) = 42.30, p < .001$, partial $\eta^2 = .19$, for Kinsey scale ratings. Lesbian/gay participants ($M = 4.66, SD = 1.29$) rated the scale more positively than did bisexual ($M = 3.78, SD = 1.48$) and pansexual/queer ($M = 2.68, SD = 1.35$) participants. Bisexual participants rated the scale more positively than did pansexual/queer participants. There was also a significant main effect of gender identity where cisgender individuals ($M = 4.09, SD = 1.51$) rated the Kinsey Scale more positively than did transgender individuals ($M = 2.78, SD = 1.48$), $F(1, 355) = 16.71, p < .001$, partial $\eta^2 = .045$.

Klein Sexual Orientation Grid

There was a significant main effect of sexual orientation, $F(2, 355) = 14.77, p < .001$, partial $\eta^2 = .07$, for KSOG ratings. Lesbian/gay participants ($M = 4.32, SD = 1.22$) rated the scale more positively than pansexual/queer ($M = 3.22, SD = 1.38$). Bisexual participants ($M = 4.00, SD = 1.19$) also rated the scale more positively than pansexual/queer participants. There was a significant main effect of gender identity where cisgender individuals ($M = 4.14, SD = 1.19$) rated the KSOG more positively than did transgender individuals ($M = 3.01, SD = 1.51$), $F(1, 355) = 16.21, p < .001$, partial $\eta^2 = .043$.

Sexual-Romantic Scale

There was a significant main effect of sexual orientation, $F(2, 355) = 15.70, p < .001$, partial $\eta^2 = .08$, for Sexual-Romantic ratings. Lesbian/gay ($M = 4.58, SD = 1.12$) and bisexual participants ($M = 4.38, SD = 1.10$) both rated the scale more positively than did pansexual/queer ($M = 3.65, SD = 1.37$) participants. There was a significant main effect of gender identity where cisgender individuals ($M = 4.42, SD = 1.13$) rated the scale more positively than did transgender individuals ($M = 3.56, SD = 1.49$), $F(1, 355) = 10.47, p < .001$, partial $\eta^2 = .028$.

Table 3 Ratings for four sexual orientation measures across sexual orientation and gender identity

	Cisgender			Transgender		
	Lesbian/Gay <i>n</i> = 133 <i>M</i>	Bisexual <i>n</i> = 79 <i>M</i>	Pansexual/Queer <i>n</i> = 66 <i>M</i>	Lesbian/Gay <i>n</i> = 21 <i>M</i>	Bisexual <i>n</i> = 8 <i>M</i>	Pansexual/Queer <i>n</i> = 56 <i>M</i>
Kinsey	4.74	3.90	3.03	4.19	2.62	2.27
KSOG	4.38	4.08	3.73	3.95	3.25	2.62
Sexual-Romantic	4.58	4.47	4.06	4.62	3.50	3.17
Gender Inclusive	4.41	3.96	4.05	4.71	4.12	3.87

Participants rated how well each scale captured their sexuality on scale of 1–5, where 5 is a more positive response

Gender Inclusive Scale

There was a significant main effect of sexual orientation, $F(2, 355) = 6.27$, $p < .002$, partial $\eta^2 = .03$, for Gender Inclusive ratings. Lesbian/gay participants ($M = 4.45$, $SD = 1.11$) rated the scale more positively than did bisexual ($M = 3.98$, $SD = 1.11$) and pansexual/queer ($M = 3.97$, $SD = 1.25$) participants, who did not significantly differ from one another.

Discussion

The present findings provide a way to think about the face validity of sexual orientation scales and to help differentiate their best use with regard to research and/or clinical purposes. The findings indicated clear patterns of responses, where sexual minority individuals of different identities did not equally perceive their sexuality to be captured by sexual orientation scales.

Sexual Orientation Measurement across Monosexual and Plurisexual Identities

We hypothesized differences in validity ratings across sexual orientation for the Kinsey Scale, the KSOG, and the Sexual-Romantic scale. Our findings supported these hypotheses, where individuals who endorse monosexual identities rated the three scales as a more valid representation of their sexuality than did individuals who endorse plurisexual identities. Although we did not predict differences in validity ratings of the Gender Inclusive scale, our findings for this scale mirrored those of the other three. Although monosexual participants rated the scale more favorably, it is important to note that all participants indicated the Gender Inclusive scale accurately reflected their sexuality (mean ratings were positively skewed, ranging from 3.54 to 4.41 on the five-point scale). Thus, the inclusion of gender-based dimensions was relevant across the range of sexual minority experience of sexuality.

Measurement scales have typically conceptualized sexual orientation on a continuum between two monosexual poles with bisexuality bridging the two. However, bisexuality can

also be understood as an umbrella term that encompasses a range of attractions, behaviors, and identities (Flanders, 2017). Recent scholarship has focused on understanding the similarities and differences of three distinct plurisexual identities—bisexual, pansexual, and queer (Flanders, Lebreton, Robinson, Bian, & Caravaca-Morera, 2017; Galupo, Ramirez, & Pulice-Farrow, 2017b; Lapointe, 2017; Mereish, Katz-Wise, & Woulfe, 2017; Mitchell, Davis, & Galupo, 2015; Morandini, Blaszcynski, & Dar-Nimrod, 2016). For the present study, we conducted a preliminary analysis and found no significant differences in the way pansexual and queer participants responded to the scales, combining them into one group. Pansexual/queer responses to the Kinsey, KSOG, and Sexual-Romantic scale were distinct, where pansexual/queer individuals found the scales to be a less valid measure of their sexuality than did bisexual individuals. Given that pansexual and queer identities are explicitly conceptualized outside or beyond the gender binary (Galupo et al., 2017b), these findings reflect the larger trend that non-normative identities are not captured in our current systems of sexual orientation measurement.

Sexual Orientation Measurement across Cisgender and Transgender Identities

Consistent with our hypotheses, transgender individuals rated the Kinsey, KSOG, and Sexual-Romantic scales to be less valid measures of their sexual orientation than did cisgender individuals. This pattern is consistent with the qualitative critique of these scales by transgender individuals who problematize the way sexuality is conceptually anchored on binary assumptions of sex/gender and sexual orientation (Galupo et al., 2014b, 2017a). There is a complex history in the way sexual orientation and gender identity have been conceptually conflated (Galupo, Henise, & Mercer, 2016). Sexual orientation nomenclature requires individuals to label their (same- and other-sex) attraction by considering their own gender identity designation in relation to that of the individual/group of interest (Galupo et al., 2016; van Anders, 2015). When asked to describe their sexuality, transgender individuals do not easily relate to this system (Dozier, 2005; Lev, 2004). Instead, they view their sexuality as

complex and often find ways to describe their sexuality without relying on binary terms (Galupo et al., 2016). Sexual orientation measures and labels have also been criticized for not capturing the fluidity of transgender sexuality (Galupo et al., 2014b, 2016, 2017a) especially in light of shifts in sexual self-identification following social or medical transition (Devor, 1993; Galupo et al., 2016; Kuper, Nussbaum & Mustanski, 2012; Meier, Pardo, Labuski, & Babcock, 2013).

As predicted, participants' validity ratings of the Gender Inclusive scale did not differ across gender identity. This scale included gender-based dimensions of attraction (masculine, feminine, androgynous, and gender non-conforming) in addition to traditional attraction ratings based on same- and other-sex. Thus, it was the only scale that incorporated dimensions of attraction that were not exclusively anchored on dichotomous notions of gender/sex. This more complex system of measuring sexuality resonated with transgender participants and at the same time the complexity was not lost on cisgender participants; their validity ratings for the Gender Inclusive scale were similarly high.

Limitations and Directions for Future Research

Our participants represented a convenience sample collected online. Online recruitment is particularly useful for LGBT research where participants may have privacy concerns and may not otherwise have access for participation (Riggle, Rostosky, & Reedy, 2005). Online sampling, however, disproportionately represents educated, middle class, White individuals (Dillman, Smyth, & Christian, 2008). With 77.7% of our participants identifying as White and 59% identifying as middle or upper class, our sample demographics were consistent with this trend. Thus, interpretation of these data should be noted within the sample demographics.

The present sample represented a diverse range of sexual and gender identities. Although we did find significant group differences, the effect sizes were small. It is likely that there was overlap across our groups. Even though participants were grouped on the basis of primary sexual identity, sexual minority individuals, particularly those with plurisexual identities, often endorse multiple identities (Galupo, Mitchell, & Davis, 2015; Rust, 2000). In addition, we recruited participants who identified as "sexual minorities," a broad term intentionally chosen to be inclusive. This terminology, however, may not have resonated with all individuals who experience same-sex attraction. Recent attention has focused on "mostly heterosexuals" (Savin-Williams & Vrangalova, 2013; Vrangalova & Savin-Williams, 2012), and it is likely that people whose attractions fall within this group would see themselves outside our inclusion criteria. This is supported by the fact that none of our participants identified as such even when given a write-in option for their sexual identities. Because heterosexuals (Morgan, 2012, 2013) and mostly heterosexuals (Savin-Williams & Vrangalova, 2013)

experience a range of same-sex desire, future research is needed to explore their ratings of sexual orientation scales.

Although some survey participants identified as asexual, there were not enough to analyze as a separate group, representing another limitation of this research. Because asexuality falls outside traditional conceptualizations of sexual orientation (Flore, 2014; Galupo et al., 2014c; Przybylo, 2013), future research should explore the range of identities on the asexual spectrum.

Implications for Sexual Orientation Measurement

The findings of the present research underscore the ways traditional measures of sexual orientation fail to represent the full range of sexual minority experience. The Kinsey scale and Kinsey-like alternatives (e.g., Savin-Williams' 2010, seven-point scale) utilize a single-item rating where sexual orientation is conceptualized on a continuum. As one of the most commonly used measures, it is usually well understood by participants (Galupo et al., 2014c). Among our monosexual cisgender participants, the Kinsey scale had the highest face validity rating. Among our plurisexual participants (both cisgender and transgender), the Kinsey scale had the lowest, followed by the KSOG. The KSOG captures the multi-dimensional nature of sexuality by allowing ratings across several dimensions and contexts. However, participants often find it unnecessarily complex or confusing (Galupo et al., 2014c). The KSOG can be useful in clinical and instructional contexts as a way to inspire self-reflection (Keppel & Hamilton, 1998) but, because the multiple ratings do not add up to a singular "score," it is not easily integrated into research where the focus often centers on group differences. Despite being developed to better capture bisexuality (Klein et al., 1985), bisexual, pansexual, and queer individuals did not rate this scale as the most valid of the four scales.

When using traditional measures of sexual orientation, researchers should contemplate whether the inherent bias in the measurement might impact the conclusions they are drawing from their findings. Likewise, researchers should consider whether their current demographic descriptions of their sample are sufficient. For example, many researchers describe their participants' gender by providing information about the number of "men" and "women" in their sample, where cisgender is unlabeled but assumed. By contrast, information about transgender identity or experience is often not provided and/or not collected. With regard to sexual orientation, researchers often group non-heterosexual individuals into one (sexual minority) or two (lesbian/gay and bisexual) distinct groups for the purpose of analysis. These practices ignore the growing evidence of differences in sexual minority experience across a range of monosexual and plurisexual identities (Callis, 2014; Morandini et al., 2016; Mitchell et al., 2015; Worthington & Reynolds, 2009). While it may not always be relevant or possible to analyze three or more sexual minority groups, researchers

should consider the demographics of the target sample, as well as collect and report demographic information that better represents the range of identities endorsed by their participants.

The present findings also have practical implications for researchers interested in using the Sexual-Romantic and Gender Inclusive scales, or who are developing their own measures of sexual orientation. Transgender participants of all sexual orientation identities rated the Gender Inclusive scale as having the highest validity, followed by the Sexual-Romantic scale. Cisgender pansexual/queer participants also rated these two scales as having the highest validity while cisgender bisexual participants rated the Sexual-Romantic higher than the other three. Although these novel scales are not without their problems, it is clear that they are tapping into an aspect of sexuality that is not captured by the traditional scales.

The Sexual-Romantic scale allowed for independent ratings for sexual and romantic attraction. This separation of sexual and romantic attraction is consistent with the way many asexual (Przybylo, 2013), transgender (Galupo et al., 2016), and sexual minority individuals (Galupo et al., 2015) conceptualize their sexuality. This scale may prove particularly useful to researchers who want to isolate sexual/romantic interests and their relation to, for example, sexual risk or social relationships. The Sexual-Romantic scale also allowed for independent measurement of same- and other-sex desire. Using this model, bisexuality/plurisexuality is no longer conceptually represented as a midpoint between two opposite poles and sexual minority individuals responded favorably to this aspect of the scale in qualitative research (Galupo et al., 2017a). However, individuals with plurisexual and transgender identities found the binary assumptions of sex inherent to the “same-sex” and “other-sex” terminology problematic (Galupo et al., 2017a), which could account for their lower validity ratings reported here.

The Gender Inclusive Scale retained traditional elements of attraction (same-sex and other-sex) but included four additional dimensions based on gender (attraction to masculine, feminine, androgynous, and gender non-conforming individuals). Validity ratings for the Gender Inclusive scale did not differ across gender identity. However, plurisexual individuals' validity ratings were significantly lower than monosexual individuals, suggesting that there is room for improvement. The first two dimensions still retain the problematic “same-sex” and “other-sex” wording, emphasizing a binary understanding of sex and utilizing the traditional labeling convention requiring a match of gender identity between the individual and the group(s) to whom they are attracted. Based on qualitative feedback, Galupo et al. (2017a) suggested a wording change for the first two dimensions to “I am attracted to women” and “I am attracted to men.” Another potential improvement could be made in altering the wording of the response options from a frequency based response (e.g., “almost never true” to “almost always true”) to an intensity based response (e.g., “not at all” to “strongly”). With these modifications, the Gender Inclusive

scale may represent a promising instrument for researchers interested in assessing sexual orientation in a way that better resonates with a range of experiences and identities. However, like the KSOG and the Sexual-Romantic scale, the use of the Gender Inclusive scale is limited given that it does not provide a singular score that could be used to group participants or allow for comparative research. Further work should also be done to conceptually disaggregate the measurement dimensions based on sex (attraction to women and men) from those based on gender (attraction to masculine, feminine, androgynous, and gender non-conforming individuals). Such work could involve an investigation of the factor structure for the scale in order to explore whether distinct subscales exist that could allow for the independent assessment of these different dimensions of attraction.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Appendix: Novel Measures of Sexual Orientation

Sexual-Romantic scale^a

- I am sexually attracted to individuals of the same-sex
- I am romantically attracted to individuals of the same-sex
- I am sexually attracted to individuals of the other-sex
- I am romantically attracted to individuals of the other-sex

Gender Inclusive scale^a

- I am attracted to individuals of the same-sex^b
- I am attracted to individuals of the same-sex^b
- I am attracted to masculine individuals
- I am attracted to feminine individuals
- I am attracted to androgynous individuals
- I am attracted to gender non-conforming individuals

^a Both scales are rated on a 7-point scale between 1 = Almost Never True to 7 = Almost Always True

^b The first two items on the scale would have better resonated with sexual minority participants had they read: “I am attracted to women,” and “I am attracted to men.” This is the suggested wording for use of this scale in future work (see Galupo, Lomash, & Mitchell, 2017)

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