

Fragile Heterosexuality

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Abstract

Previous research demonstrates that membership of majority groups is often perceived as more fragile than membership of minority groups. Four studies ($N_1=90$, $N_2=247$, $N_3=500$, $N_4=1176$) investigated whether this was the case for heterosexual identity, relative to gay identity. Support for fragile heterosexuality was found using various methods: sexual orientation perceptions of a target who engaged in incongruent behaviour, free-responses concerning behaviours required to change someone's mind about a target's sexual orientation, agreement with statements about men/women's sexual orientation and agreement with gender neutral statements about sexual orientation. Neither participant nor target gender eliminated or reversed this effect. Additionally, we investigated multiple explanations (moderators) of the perceived difference in fragility between heterosexual identity and gay identity and found that higher estimates of the gay/lesbian population decreased the difference between the (higher) perceived fragility of heterosexual identity and the (lower) perceived fragility of gay identity.

Keywords: Fragile sexual orientation; heterosexuality; gay; estimates of gay/lesbian population; social normativity.

Asymmetrical perceptions of sexual orientation matter because people who are identified as belonging to a sexual minority group (e.g., gay people) are subjected to discrimination, violence and stereotyping (Mishel 2016; Powell, Quadlin, and Pizmony-Levy 2015). Diverse types of evidence (mostly qualitative) allude to the idea that heterosexual identity is perceived as more fragile (i.e., easily compromised) than gay identity (Anderson, 2005; Lee, 2006; Mize & Manago, 2018). This fragility refers to the relative ease with which one's heterosexual status can be lost, compared to that of gay status. The aim of this research is to investigate the proposed asymmetry in perceptions of the fragility of heterosexual identity versus gay identity, and to explore potential psychological explanations for this phenomenon.

Anderson (2008) introduced the “one-drop rule” of sexual orientation (Anderson, 2005, p 45) to describe the relative fragility of heterosexuality and the relative robustness of being gay. This “one-drop rule” is similar to the one-drop rule of Black racial identification (Khanna, 2010), and claims that one same-sex experience is enough to categorize someone as gay, whereas one opposite-sex experience is not sufficient to consider someone heterosexual. Anderson (2005) likely intended this one drop rule to be illustrative, rather than absolute. Indeed, Anderson et al. (2012) showed that same-sex behaviours in men can be construed as bonding between members of a sports team, rather than signs of being gay. Nonetheless, other anecdotal evidence strongly indicates the relative fragility of heterosexual identity versus gay identity. On October 3rd 2003, in Newark, California, USA, Michael Magidson and Jose Merel beat Gwen Araujo to death after having sex with her, when they discovered she was transgender (Lee, 2006). At their trial, Michael and Jose argued that their discovery had felt like a “theft of [their] heterosexuality” (C. Lee & Kwan, 2014, p. 111), and that Gwen's deception had made them gay, an outcome so distressing that it led to murderous panic. To Michael and Jose, the few, recent sexual encounters with Gwen were enough to threaten their heterosexuality, making

them feel gay, whereas their extensive sexual history with cisgender women was not sufficient to assure their heterosexuality (Lee & Kwan, 2014, p. 111).

Few studies have done quantitative research on the fragility of heterosexuality, and these have produced inconsistent results (Duran, Renfro, Waller, & Trafimow, 2007; Flanders & Hatfield, 2014; Mize & Manago, 2018). Duran and colleagues (2007) found initial evidence of the fragility of heterosexuality. In their studies lower number of behaviours were required to change participants' views about another person's heterosexual identity than another person's gay identity. Similarly, Flanders and Hartfield (2014) found that participants assigned sexual minority status (i.e., 'bisexual') to a target who displayed minor evidence of same-sex attraction in the context of more considerable evidence of heterosexual dating: a categorisation that was particularly rigid for male versus female targets (Flanders & Hartfield, 2014). Mize and Manago (2018) found a similar fragile heterosexuality effect, that applied *only to men* and *not women*; suggesting that women were allowed more sexual freedom to have same-sex experiences without compromising perceptions of their heterosexuality.

Together these studies strongly suggest that there are different standards for classifying individuals as heterosexual versus gay. However, beyond this overarching similarity, these studies do have certain limitations. These include restricted, student sampling and a lack of replication (Duran et al., 2007; Flanders & Hatfield, 2014), as well as limitations that more seriously curtail interpretation and generalisability. For example, Flanders and Hartfield (2014) found that it was easy to change perceptions of heterosexuality, but did not compare this with the ease of changing perceptions of any other sexual orientation (e.g., gay). Thus, it is unclear from their studies whether heterosexuality is particularly fragile compared to other sexual orientations. Duran et al. (2007) found that fewer behaviours were required to change perceptions of heterosexual identity than perceptions of gay identity, but made no attempt to investigate the type of behaviours. It is thus possible that participants were simply thinking of

different behaviours. Additionally, Duran et al. (2007) did not specifically investigate whether the fragility of heterosexuality applied to women as well as men.

Mize and Manago (2018) conducted studies with large numbers of participants ($N=1965$) and replicated findings. However, their findings diverge from those of the prior research in that they found that the fragile heterosexuality effect did *not* apply to women. This is possibly due to their design and analysis strategy which focused on the difference between men and women, rather than the differences between heterosexuality and other sexual orientations. Furthermore, though they hypothesised some plausible explanations for the fragile heterosexuality effect (and why it didn't occur in women) none of the explanations were tested empirically.

This current research builds on the afore-mentioned evidence for the asymmetry in fragility perceptions between heterosexual and gay identities. We investigated the asymmetry in a new social context (Britain); we tested the effect using a variety of methodologies; we specifically and explicitly investigated whether the effect applied to women as well as men (as well as possible differences in the *strength* of the effect across genders); and we explored a number of potential psychological *explanations* for the effect. Due to the lack of consensus regarding the effect of gender, we remain somewhat agnostic about its effects. However, we do not expect gender to eliminate the fragile heterosexuality effect, but perhaps merely to attenuate its strength.

Asymmetrical perceptions of other social constructs of majority and minority groups have been explained by processes related to social normativity (Monteith, Deneen & Tooman, 1996; Costa-Lopes, Vala & Judd, 2012; Dovidio, Gaertner & Isen, 1995). This approach, suggests that asymmetric perceptions of social groups reflect a society's transformation of standards, which are constituted by what is most common or accepted behaviour (Zarate & Smith, 1990).

The normativity model is based on people's tendency to adjust their behaviour and opinions in line with social norms (Miller & Prentice, 1996). This model has been used to explain regional differences in the racial categorization of biracial stimuli (Chen, Couto, Sacco & Dunham, 2017). For instance, in certain parts of USA, Black populations are denser and more visible than any other. In these localised contexts, Whites might stand out more, grab perceptual attention, and be perceived as deviant (not the norm or default) relative to the Black norm (majority group). In fact, Chen and colleagues (2017) argue that differences in the racial categorization of biracial stimuli between Americans and Brazilians reflect the historical dissimilarities in the majority/minority racial makeup of these two countries, where the racial majority group status boundaries were opposite.

Norm perception is therefore a dynamic process where people learn about social norms over time, constantly revising their impressions according to the interactions they have within and outside their group, or through other sources of information (Monteith et al., 1996; Tankard & Paluck, 2016; Zarate & Smith, 1990). Within this model, descriptive norms are what Monteith and colleagues (1996) refer to as summary information about a reference group. This type of information refers to data about a group, that provides the benchmark and contrast needed for general comparison between groups (Monteith et al., 1996), creating social change by modifying people's opinions and behaviours (Tankard & Paluck, 2016).

In the context of sexuality, it is clear that a majority of people identify as heterosexual. Population-based studies revealed that in the United Kingdom, 12% of adults (roughly 8 million), identify themselves as being part of the LGBTQ+ community (EuroClinix, 2018). Although, other sources report that only 2% of the population is LGBTQ (Office for National Statistics – Annual Population Survey, 2019). Hence, in Britain the social norm (the default-majority group) would be being heterosexual, while being gay would be the exception (minority group). However, there can be regional and individual differences in estimates of

population size (descriptive norm) relative to the heterosexual majority. Given the above, individual perceptions of estimates of gay/lesbian population seem like a suitable candidate of summary information about a group, that could help understand the asymmetrical fragility perceptions of sexual orientation.

Besides the normativity model, biased perceptions of majority identities have been explained in terms of contact between groups (i.e., quantity and quality: Pettigrew, Wagner, & Christ, 2010; Wagner, Christ, Pettigrew, Stellmacher, & Wolf, 2006; Wagner, Dick, Pettigrew, & Christ, 2003), prejudice against the minority group (i.e., prejudice against gay population: Duran et al., 2007; Martinez, Wald, & Craig, 2008), or broader intergroup ideologies, like right-wing authoritarianism or social dominance orientation (i.e., Ho, Sidanius, Cuddy, & Banaji, 2013a), hence their inclusion as moderators in this study.

Contact between groups is more likely to happen when the population of the minority group grows (Pettigrew et al., 2010). Individuals who report more positive contact with minority groups, show less asymmetrical perceptions between groups (Harwood, Hewstone, Paolini, & Voci, 2005; Paolini, Hewstone, Cairns, & Voci, 2004; Plant & Devine, 2003). In terms of prejudice against the minority group, individuals with higher prejudice against gay people, show significantly more asymmetrical perceptions between being heterosexual and being gay (Duran et al., 2007). In parallel, multiple studies have found more racial asymmetric perceptions (i.e., 'Black' versus 'White') for participants high in right-wing authoritarianism (those who stick to social norms, while being hostile and punishing toward people who challenge societal conventions: Dhont & Van Hiel, 2011), as well as for individuals high on the social dominant orientation scale (those who endorse beliefs, and policy-related actions, that enhance hierarchical differentiation between groups: Ho et al., 2011; Whitely, 1999). Accordingly, it is theoretically important to understand the explanatory contribution of certain

ideological attitudes and between-group interactions in the asymmetrical fragility perceptions between heterosexual identity and gay identity.

The Current Research

Besides replicating findings from USA within a heterosexual, British population, we aimed to demonstrate that heterosexual identity is perceived as more fragile (easily compromised) than gay identity using four different methodologies, and to test possible explanations for this asymmetry.

To address these aims, we investigated fragility perceptions of sexual orientation (heterosexual identity vs. gay identity), and six possible moderators of the effect. In terms of measures of fragility of sexual orientation, we used three different approaches. The first approach involved analysing participants' perceptions of a male target who engaged in behaviour that contradicted his disclosed sexual orientation (Study 1). The second examined participants' free-responses concerning behaviours required to change someone's mind about the sexual orientation of a male target (Study 2a) or female target (Study 2b)¹. For the third and fourth studies, participants indicated their agreement with 14 statements related to the fragility of heterosexual identity (or gay identity), for each gender (Study 3) or in a gender-neutral version (Study 4). Additionally, Study 4 investigated the underlying explanations (moderation effects) for the effects observed: participants' estimates of gay/lesbian population, social dominance orientation, right wing authoritarianism, prejudice against gay/lesbian people, contact quantity and contact quality.

Based on previous findings, we expected an asymmetry in fragility perceptions between heterosexual identity and gay identity; i.e., heterosexual identity should be perceived as more fragile than gay identity. We predicted that the effect would occur for both men (Studies 1, 2 and 3) and women (Studies 2 and 3), though the effect may be smaller for women (Studies 2 and 3). Additionally, based on the social normativity model, we predicted that the asymmetry

in fragility perceptions between heterosexual identity and gay identity would be moderated by individual estimates of the gay/lesbian population. As participants report higher estimates of the gay/lesbian population, the asymmetry between the (higher) perceived fragility of heterosexual identity and the (lower) perceived fragility of gay identity should be smaller. We hypothesize that when gay identity is more prevalent (i.e., higher estimates of gay/lesbian population), there would be a decrease in fragility perceptions of heterosexual identity and an increase for gay identity. Further, we do not have specific predictions for the other five moderators but their inclusion was needed to rule out their effects as alternative explanations for the results found here. Finally, as a methodological note, we aimed to be as consistent as possible across all the studies and to rule out possible spurious effects based on demographic variables. Thus, across all studies, if participants' age and gender were not independent variables, they were included as covariates.

Study 1

This was an initial test of heterosexual identity being perceived as more fragile (easily compromised) than gay identity. All participants received information about a target (named James) who described himself as either gay or heterosexual. Participants then read a vignette in which "James" behaved in a way that contradicted his professed sexual orientation. We predicted that participants would alter their perceptions of James' sexuality more strongly if he described himself as heterosexual and then engaged in a same-sex intimate act, than if he described himself as gay and then engaged in an opposite-sex intimate act.

Based on condition effects observed in a previous pilot study when assuming a similar effect size ($\eta^2 = 0.2$), and the following parameters ($\alpha = 0.05$; power = 0.9), we found that 82 participants would be required for adequate power. Assuming a 5-10% loss of data after exclusions and reliability checks, we calculated a final sample size of 90 participants.

Method

Participants and recruitment. Using snowball sampling and posters distributed throughout London, we recruited 90 heterosexual, White, British adults (33 men, 57 women, M age = 32.85, SD = 15.29), who conducted our experiment using pen and paper. Participants entered a prize draw in exchange for their participation. Two participants were excluded as they did not complete the relevant questions for this study.

Study design. This was a 2 (Condition: presented as heterosexual vs. presented as gay) x 2 (Time: before contradicting behaviour vs. after contradicting behaviour) factorial design with repeated measures on the second factor.

Materials and procedure. Participants were randomly assigned to one of two conditions. In the ‘heterosexual’ condition, they saw a social-media profile description of a man (James) who described himself as heterosexual (Figure 1). We further emphasised that James was heterosexual by having him mention that he “had [his] share of girlfriends” in a self-descriptive paragraph. Participants in the ‘gay’ condition received identical information, except that James described himself as gay, and mentioned having “had [his] share of boyfriends” in the self-descriptive paragraph. After reading this description, participants in both conditions indicated their perceptions of James using a number of traits, including his apparent sexual orientation (the critical measure) and 5 filler traits (“liberal”, “intelligent”, “cold”, “trustworthy” and “friendly”).

After the initial rating, participants in the ‘heterosexual’ condition then read a vignette about James in which he went to a party and was seen kissing a man. Participants in the ‘gay’ condition read a vignette about James kissing a woman (i.e., in both conditions James behaved in a way that contradicted his previously stated sexual orientation). After reading their respective vignettes, participants indicated once more, their perception of James for the same traits: his apparent sexual orientation and the 5 filler traits.

At both time points participants indicated their perceptions of James' sexual orientation using a 100-point sliding scale that was anchored by two extremes: *100% gay* and *100% heterosexual*. Please note that these were merely the *labels* used at the anchor points of the scale meant to indicate that participants saw the target as either entirely gay or entirely heterosexual. In terms of the dimensions, the scale was a 100-point sliding scale. The critical measure and filler items were presented in a different randomised order for each participant at each time point.

Results

For these analyses, sexual orientation scores at both time points were coded so that higher scores indicated stronger beliefs in James' professed sexual orientation. We analysed the data with a 2 (Condition: Presented as heterosexual vs. Presented as gay) x 2 (Time: Before vs. After) mixed analysis of variance with repeated measures on the second factor and belief in James' professed sexual orientation as the dependent variable. Age and participant's gender were included as covariates.

We found a main effect of condition; overall participants more strongly believed James' professed sexual orientation in the presented as gay condition ($M = 78.14, SE = 2.04$) than in the presented as heterosexual condition ($M = 63.48, SE = 2.08$). There was no significant effect of age, or participant's gender. There was significant effect of time; overall participants more strongly believed James' professed sexual orientation before the contradictory behaviour ($M = 91.1, SE = 1.31$) than after the contradictory behaviour ($M = 50.52, SE = 2.52$). Most importantly, we found the hypothesised interaction of condition and time. As predicted, participants' perceptions of James' sexual orientation were more strongly affected if he professed to be heterosexual, but then took part in a same-sex intimate act (a 48.73% difference; $M = 87.89, SE = 1.85$ vs. $M = 39.16, SE = 3.56$; $t(44) = 10.93, p < 0.001$), than if he professed to be gay, but then took part in a single opposite-sex intimate act (a 32.5% difference; $M = 94.37, SE = 1.81$ vs.

$M = 61.87$, $SE = 3.48$; $t(46) = 10.07$, $p < .001$); see Table 1 for detailed statistics and Figure 2 for a graphical representation.

Note also that, in the presented as heterosexual condition, participants' perceptions of James' sexual orientation dipped below the 50% point to 39.15%, after his apparently incongruent behaviour. Whereas, participants' perceptions of James' sexual orientation remained above the 50% point (at 61.88%), after his contradictory behaviour.

Study 2a and 2B

Study 1 provided evidence that heterosexual identity is perceived as more fragile than gay identity: one contradictory experience undermined the professed heterosexual identity more strongly than the professed gay identity. Study 2a and 2b tested the fragile heterosexuality hypothesis using a different methodology: one that relied on participants' spontaneously generated ideas. In this study participants imagined that a friend of theirs changed their mind about a male (Study 2a) or female (Study 2b) friend's sexual orientation. Participants reported what they thought happened to make their friend change their mind. In line with the fragile heterosexuality hypothesis, we expected less consequential (serious) behaviours required to compromise someone's perceived heterosexuality (vs. someone being perceived as gay).

Method

Participants and recruitment. Recruitment was the same as in Study 1. Two hundred and forty-seven participants were recruited for Study 2a (161 women, 75 men, 11 who did not state their gender; $M_{age} = 25.42$, $SD = 10.97$) and 1563 participants for Study 2b (1004 women, 477 men, 82 who did not state their gender; $M_{age} = 24.31$, $SD = 9.71$). We predicted a smaller effect size for Study 2b, as women's sexuality is more dynamic than that of men (Diamond, 2000; Kinnish, Strassberg, & Turner, 2005), therefore more participants were recruited. However, the difference in sample size does not merely reflect the difference in the expected effect size; participant recruitment was also much faster and easier for Study 2b, perhaps due

to it being a different time of the year. Participants who did not disclose their gender were excluded, leaving a final sample size of 1481. Participants entered a prize draw in exchange for their participation.

Study design. Both studies used between-participants design. Participants were randomly assigned to one of two conditions. In the first condition they indicated what was required to make a man (Study 2a) or woman (Study 2b) who was initially perceived as *heterosexual* be subsequently perceived as *gay*. In the second condition, they indicated the reverse: what was required to make a man/woman who was initially perceived as *gay* be subsequently perceived as *heterosexual*.

Materials and procedure. When assigned to the “initially heterosexual condition”, participants read the following instructions: Imagine that you are having a drink with friends. In the course of conversation one of your friends says the following: ‘You guys know **James** (Study 2a)/ or **Jenny** (Study 2b), right? I used to think **he/she** was **straight**, but I don’t think so anymore . . .’. Write down what you think might have happened to make your friend change his/her mind about **James** (or **Jenny**).’ In the initially gay condition, the instructions were almost identical, except that the friend said, ‘You guys know **James** (or **Jenny**: Study 2b), right? I used to think **he/she** was **gay**, but I don’t think so anymore . . .’

After reading these instructions participants indicated what they thought might have happened to make their friend change his/her mind about James’ (or Jenny’s) sexual orientation. Before analyses were run, participants’ responses were blinded so that it was not clear whether they referred to same-sex or opposite-sex behaviours. For each study, two research assistants, blind to the hypotheses and conditions of the studies, rated each response in terms of its apparent seriousness on a 5-point scale (1= *very trivial*, 5= *very serious*). Examples of very trivial responses identified by the research assistants included, “visiting a bar normally frequented by people of a particular sexual orientation”, and “being very friendly

with someone of a particular gender”. Examples of very serious responses included, “being in a serious, long-term sexual and romantic relationship with someone of a particular gender” and “explicitly coming out/ declaring a particular sexual orientation”. For Study 2a, the seriousness scores of the two raters were significantly correlated ($r = .77, p < .001$), as well as for Study 2b ($r = .88, p < .001$). Moreover, there was a moderate agreement between raters in Study 2a (Kappa = .55; $p < .001$) and substantial agreement between raters in Study 2b (Kappa = 0.7; $p < .001$). Therefore, in both studies, the mean of the two raters was used as the dependent variable. In line with fragile heterosexuality, we predicted that it would require relatively trivial behaviours for James/Jenny to no longer be perceived as heterosexual, but relatively serious behaviours for James/Jenny to no longer be perceived as gay.

Results

We ran two separate ANCOVAS – one for each study – that included seriousness of behaviours required to compromise someone’s perceived heterosexual identity (vs. gay identity) about ‘James’ or ‘Jenny’ as the dependent variable, condition as a fixed factor, and participant’s age and gender as covariates. This analysis revealed that seriousness of behaviours required to compromise someone’s perceived heterosexual identity (vs. gay identity) about ‘James’ or ‘Jenny’, were not predicted by participant’s age or participant’s gender. In line with our prediction, the seriousness of behaviours reported by participants were significantly different depending on condition. Participants assigned to the “initially heterosexual condition” reported less serious behaviours (James: $M = 2.23, SD = 1.19$, Jenny: $M = 2.31, SD = 0.91$) required to change someone’s mind about the target being heterosexual than those assigned to the “initially gay condition” (James: $M = 2.86, SD = 1.28$, Jenny: $M = 2.88, SD = 1.23$). For detailed statistics see Table 2.

Results from Study 2a and Study 2b suggest that regardless of the gender of the protagonist in each condition (Jenny vs. James) the seriousness of the behaviours that would

change someone's mind about the protagonist being heterosexual are less serious than those associated to changing someone's mind about the protagonist being a gay.

Study 3

Studies 2a and 2b supported our hypotheses of fragile heterosexuality. For Study 3, we sought to confirm our hypotheses using yet another methodology (measuring participants' agreements with particular statements), and develop a set of reliable items that measure fragile heterosexuality beliefs.

Based on condition effects observed in a previous pilot study, an a-priori power analysis was run to test interactions between condition, target gender and participant gender. Using the following parameters ($f^2 = 0.02$, $\alpha = 0.05$, power = 0.9, number of groups = 8), we found that 472 participants would be required for adequate power. Assuming a 5-10% loss of data after exclusions and reliability checks, we calculated a final sample size of 500 participants. For further assurance of the robustness of any findings from this study, all parameters were preregistered via AsPredicted.org (<http://aspredicted.org/blind.php?x=vh25cy>). Analyses reported here are those stated in the preregistration.

We based this study's methodology on that of Vandello et al. (2008, Expt 1b), who used a similar method to investigate precarious manhood. We asked participants to respond to a list of straightforward statements of opinion suggesting that either heterosexual or gay identity was fragile (depending on condition). We predicted that participants would more strongly endorse statements about the fragility of heterosexual identity than the fragility of gay identity. Results from Study 2a and 2B suggest that heterosexual identity is more fragile than gay identity, regardless of gender. Accordingly, we specifically hypothesized that no interaction of condition with either target or participant gender would eliminate or reverse the fragile heterosexuality effect.

Methods

Participants and recruitment. Five hundred and two British people (248 women, 252 men, $M_{age} = 37.83$, $SD = 12.47$) were recruited via Prolific – an online participant recruitment platform. Each participant completed the online experiment in exchange for a fee (£0.90 each). After exclusions (see pre-registration), we were left with an effective sample of 489 participants (243 women, 246 men, $M_{age} = 37.92$, $SD = 12.45$).

Design and procedure. Participants were randomly assigned to complete one of the four versions of the questionnaire. Depending on condition, participants either indicated their agreement with statements expressing the idea that *heterosexual identity* was fragile in (1) men or (2) women, or that *gay identity* was fragile in (3) men or (4) women. Therefore, our experiment was a 2 (Condition: fragile heterosexual identity items vs. fragile gay identity items) x 2 (Target gender: male vs. female) x 2 (Participant gender: men vs. women) between-participants factorial design.

All participants completed a questionnaire containing a list of 21 statements of opinion, which included 7 distractor items. These items inquired about controversial topics that were not related to our hypotheses. The 14 critical items that expressed ideas about the fragility of a particular sexual orientation were randomly distributed throughout the questionnaire. These statements were developed for this study and derived from prior qualitative work on sexual orientation (Anderson, 2008; Messner, 2004).

The 14 statements related to the fragility of heterosexual or gay identity (in men or women) provided participants with statements such as: “It only takes one *gay* experience for a *man* to no longer be *straight*” vs. “It only takes one *straight* experience for a *man* to no longer be *gay*”, “It only takes one *lesbian* experience for a *woman* to no longer be *straight*”, vs. “It only takes one *straight* experience for a *woman* to no longer be a *lesbian*”. The full list of all 14 items for all 4 conditions is included in the Appendix. Participants responded to all items on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The 14 items

related to fragile sexual orientation formed a reliable scale ($\alpha = .81$ CI[0.78, 0.83]), even when different subgroups of condition and target gender were considered: fragile heterosexual identity in men ($\alpha = 0.80$ CI[0.74, 0.85]), fragile gay identity in men ($\alpha = 0.79$ CI[0.73, 0.84]), fragile heterosexual identity in women ($\alpha = 0.78$ CI[0.72, 0.84]), and fragile gay identity in women ($\alpha = 0.78$ CI[0.72, 0.84]).

Results

An ANCOVA was conducted with mean agreement to fragility of sexual orientation as dependent variable; condition, participant gender and target gender as fixed factors, and participants age as covariate. As expected, we found the hypothesized main effect of condition. Participants more strongly agreed with statements about the fragility of heterosexual identity ($M = 3.11$, $SD = 0.78$), than with statements about the fragility of gay identity ($M = 2.64$, $SD = 0.71$). Additionally, participants' gender marginally affected the agreement with statements about the fragility of sexual orientation. Compared to women ($M = 2.81$, $SD = 0.76$), men expressed higher agreement with the items ($M = 2.93$, $SD = 0.80$). Target gender significantly influenced agreement with statements about sexual orientation fragility. Participants agreed more strongly with statements about a male target ($M = 3.00$, $SD = 0.87$) than with statements about a female target ($M = 2.75$, $SD = 0.67$). In support of our central hypothesis, although there was also a significant interaction of condition and target gender, this did not reverse or eliminate the fragile heterosexuality effect. When responding to questions about female targets as well as male targets, there was more agreement with statements about the fragility of heterosexual identity than about the fragility of gay identity (female target: $t(243) = -2.52$, $p = 0.012$, $d = 0.32$, CI [-0.38, -0.47], $M = 2.86$, $SD = 0.63$ vs. $M = 2.65$, $SD = 0.70$; and male target: $t(243) = -7.16$, $p < 0.001$, $d = 0.91$, CI [-0.92, -0.52], $M = 3.36$, $SD = 0.85$ vs. $M = 2.64$, $SD = 0.73$). Neither participant's age, nor any of the other two-or-three-way interactions had a significant

effect on the dependent variable (all $p's > 0.30$). See Table 3 for detailed statis and Figure 3 for a graphical representation of results.

Study 4

Results from Studies 1, 2a, 2b and 3 supported the hypotheses that heterosexual identity is perceived to be more fragile than gay identity, and that this effect persists for both men and women perceivers and male and female targets. The aim of Study 4 was therefore to understand what drives the asymmetry in perceptions of sexual orientation, including possible moderators such as estimates of gay/lesbian population, prejudice against gay/lesbian people, social dominance orientation, right wing authoritarianism, and contact between groups. We predicted that, as heterosexuality becomes less of the 'social norm' (i.e., estimates of gay/lesbian population increase), there would be less asymmetrical perceptions between heterosexual identity and gay identity. Specifically, fragility perceptions of heterosexual identity should decrease, while fragility perceptions of gay identity should increase.

To determine the necessary sample size for this study, we used the sample size from Study 1, which revealed a relatively large effect size for the difference in perceived fragility of heterosexual versus gay identity, $\eta^2 = 0.089$ (Lakens, 2013). In this case we used Ledgerwood's (2019) rule of thumb to perform our power calculations, as G*Power can make distorted estimates for moderations (Giner-Sorolla, 2018; Ledgerwood, 2019). This rule depends on the type of results expected for the interaction. If a reversal is expected for the new condition, one should use a cell n equal to the original study (total N = 2x the original). When a knockout effect is expected for the new condition, the cell size should be double that of the original study (total N = 4x the original). Finally, if the effect of the new condition is expected to attenuate the difference by 50%, one should use a cell n that is seven times that of the original study (N = 14x the original). Therefore, the projected sample size needed to test a potential moderation in a 2x2 between-subjects factorial design would be 1176 (84 participants to test the difference

between heterosexual and gay identities fragility x 14). All parameters for this study were preregistered via AsPredicted.org (<https://aspredicted.org/b52ca.pdf>). Analyses reported here are those preregistered.

Methods

Participants and recruitment

Our total sample consisted of 1277 white, heterosexual, British people (men $N=619$ and women $N=658$), who were recruited via prolific (<https://prolific.ac>). Participants were paid £0.90 in total for their participation. After exclusions our total sample size was 1197 (men's $N= 579$, M age= 37.82, $SD= 12.78$; women's $N= 617$, M age= 38.07, $SD= 11.78$).

Design and procedure

This study consisted of between participants design. Each participant was randomly assigned to one of the two conditions (fragile heterosexual identity vs. fragile gay identity). As in Study 3, participants indicated their level of agreement (7-likert scale) with 14 statements related to each condition, however statements were gender neutral (See Appendix for the complete list).

First, participants answered questions related to one of the two conditions, with 14 items related to either fragile heterosexual identity ($\alpha= 0.77$, $CI[0.75, 0.80]$) or fragile gay identity ($\alpha= 0.79$, $CI[0.77, 0.82]$). Then participants were presented with questions related to each moderator. In terms of estimates of gay/lesbian population participants answered two questions: “1. What percentage of the overall population would you estimate is actually gay or lesbian?”, and “2. What percentage of the overall population would you estimate is openly either gay or lesbian?” (Martinez, Wald, & Craig, 2008).

Social dominance orientation was measured with 10 items: four items from Pratto, Cidam, Stewart, Zeineddine, Aiello...& Henkel, 2013; and six items from Pratto, Sidanius, Stallworth & Malle, 1994. For right wing authoritarianism, participants indicated their level of

agreement with 15 statements (Zakrisson, 2005). Similarly, prejudice against gay/lesbian people, was measured using agreement with 5 statements (Herek, 1988). In terms of contact quantity, participants answered 4 questions (Van Dick et al., 2004). If participants did not have any contact with gay/lesbian people they were not asked about contact quality. Conversely, if participants did have contact with gay/lesbian people, they answered how pleasant was this interaction (Schwartz & Simmons, 2001). Overall, all moderators showed high internal consistency (estimates of gay/lesbian population $r = .80$; social dominance orientation ($\alpha = .92$, $CI[0.91, 0.92]$); right wing authoritarianism ($\alpha = .81$, $CI[0.79, 0.83]$); prejudice against gay/lesbian people ($\alpha = .86$, $CI[0.84, 0.87]$), and contact quantity ($\alpha = .79$, $CI[0.77, 0.81]$). Finally, participants responded to 5 demographic questions (gender, age, ethnicity, sexual orientation and religion). Full lists of all items used in this study can be found in the Appendix.

Results

We ran an ANCOVA, with (fragility of heterosexual identity vs. fragility of gay identity) and participants' gender (women vs. men) as independent variables and fragility of sexual orientation as the dependent variable. Along with age, all moderators (estimates of gay/lesbian population, social dominant orientation, right wing authoritarianism, prejudice against gay/lesbian people, and contact) were included as covariates. Our model was customized to include all possible interactions between condition and moderators.

There was a significant main effect of condition replicating findings from Studies 1, 2a, 2b, and 3. Participants agreed more strongly with statements about the fragility of heterosexual identity ($M = 3.06$, $SD = 0.68$), than about the fragility of gay identity ($M = 2.69$, $SD = 0.71$). Women participants showed significantly lower perceptions of fragility of sexual orientation compared to men ($M = 2.76$, $SD = 0.68$ vs. $M = 3.00$, $SD = 0.75$). Additionally, older participants had significantly lower fragility perceptions of sexual orientation. Three out of the six possible moderators had significant main effects on fragility of sexual orientation: estimates of

gay/lesbian population, social dominance orientation, and prejudice against gay/lesbian people. Participants reporting high estimates of gay/lesbian population, higher social dominance orientation and more prejudice against gay/lesbian people, showed higher perceptions of fragility. No significant effects were found for any other moderators (all p 's > 0.076). Furthermore, condition (fragile heterosexual identity vs. fragile gay identity) significantly interacted with estimates of gay lesbian population, as well as with social dominance orientation. None of the other interactions were significant (all p 's > 0.31). See Table 4 for detailed statistical results.

To further probe the interactions between 1). condition and estimates of gay lesbian population and 2). condition and social dominant orientation, we ran two moderation analyses via the PROCESS macro Model 1 with pre-standardized variables, 95% confidence intervals (CIs) and 1,000 bias-corrected bootstrap samples. Mean fragility of sexual orientation was included as the dependent variable and condition was included as the independent variable. Estimates of gay/lesbian population and social dominant orientation were included as moderators in separate analyses.

The model involving estimates of the gay/lesbian population was significant. Condition, estimates of gay/lesbian population and the interaction between these two variables were significant predictors of fragility beliefs. When the estimates of gay/lesbian population were low (i.e., 9%), the difference between fragility perceptions between heterosexual identity and gay identity was greater, smaller at average estimates (i.e., 20.5%), and smallest at higher (i.e., 32.9%) estimates of gay/lesbian population. See Table 5 for complete statistics and Figure 4 for a graphical representation.

The model involving social dominance orientation model was significant. Although there was no main effect of social dominance orientation in this model, there was a significant effect of condition, and a significant interaction between these variables. It should be noted

that this moderation did not help explain the existing asymmetry in perceptions of sexual orientation fragility as social dominance orientation increased fragility perceptions for *both heterosexual identity* and *gay identity*. See Table 5 for complete statistics and Figure 5 for a graphical representation.

General Discussion

This current research investigated whether there were asymmetrical fragility perceptions between heterosexual identity and gay identity. Specifically, and in line with previous results from different populations, we predicted that heterosexual identity would be perceived as more fragile than gay identity. We also investigated a range of possible moderators of this effect, including perceiver gender, target gender, attitudes, experiences, individual differences in intergroup orientations, and estimates of population size. It is important to note that the scale developed to measure fragility of sexual orientation was reliable for studies 3 and 4, which constitutes a further advance in trying to understand this phenomenon.

The results of all studies showed support for our central prediction: incongruous behaviours have a larger effect on perceptions of someone's heterosexual identity than on perceptions of someone's gay identity, hence heterosexual identity is more fragile (easily compromised) than gay identity. The findings were replicated across different methodologies; including perceptions of sexual orientation of a target who engaged in behaviour that contradicted his disclosed sexual orientation (Study 1), free-response indications of behaviours required to undermine the heterosexual and gay identities of both male and female targets (Study 2a and b), agreement with statements related to male/female targets of different sexual orientations (Study 3), and agreement with gender-neutral statements about the fragility of heterosexual and gay identities (Study 4). The consistency of findings across samples and methodologies, provide strong evidence for the robustness of the effects found here, showing

that it was not limited to a particular mode of response or type of stimulus. Regardless of how or with whom it was investigated, our participants consistently indicated a belief that heterosexual identity was more fragile than gay identity.

This is the first study to unequivocally demonstrate that the fragility of heterosexuality occurs for both men and women. Prior research either did not consider men and women separately (Duran et al., 2007; Flanders & Hatfield, 2014), or failed to find the effect for women (Mize & Manago, 2018). We also show that the fragility effect persists even when behaviours under discussion are standardized across sexual orientations. Thus, our results add meaningfully to prior studies of asymmetrical perceptions of sexual orientations (Mize & Manago, 2018; Duran et al., 2007; Flanders & Hatfield, 2014) by establishing the reliability of this effect, with both men and women, in a different population, through larger samples, and with multiple divergent methods.

We also extend past research by testing different plausible moderators of this effect. In line with our predictions, higher estimates of gay/lesbian population reduced the asymmetry in fragility perceptions between heterosexual identity and gay identity. It is also noteworthy that several other plausible variables – including anti-gay prejudice, contact with gay and lesbian individuals, and right-wing authoritarianism – did *not* moderate the fragile heterosexuality effect. Following the social normativity model (Monteith et al., 1996; Zarate & Smith, 1990), disparities in summary information about a reference group (estimates of the gay/lesbian population), moderated the different fragility perceptions between heterosexual identity and gay identity. The results observed here show that when gay identity becomes less ‘deviant’ and more prevalent within an individual’s perceptions of society, heterosexual and gay identities are perceived to be more similar in terms of fragility. These results may reflect an adjustment in status perceptions between groups. That is, people who perceive more widespread gay

identities within their contexts also perceive a smaller gap between the status of heterosexual people and gay people.

Beyond the specific domain of sexual identities our results parallel with evidence from a variety of majority-minority distinctions that are asymmetrically perceived, including distinctions based on race and gender (Bosson & Vandello, 2011; Duran et al., 2007; Flanders & Hatfield, 2014; Ho et al., 2013; Khanna, 2010; Vandello et al., 2008). For instance, the criteria for inclusion in racial categories typically differs between majority group membership (i.e., White) and minority group membership (i.e., Black). Reflecting a similar ‘one drop rule’, studies have shown that the presence of a single Black ancestor can be sufficient for a person to be perceived as Black, but the presence of a single White ancestor is not sufficient for a person to be perceived as White (Ho et al., 2013; Khanna, 2010). A similar pattern is evident in the context of gender identities. Research on precarious (fragile) manhood has shown that manhood is a status that is difficult to attain and maintain, and can be easily lost through displays of un-manly behaviours. Womanhood, on the other hand, is a status that is ascribed, rather than achieved, and is contingent on biological transformation rather than confirmation through one’s own behaviour (Bosson & Vandello, 2011; Bosson, Vandello, Burnaford, Weaver, & Arzu Wasti, 2009; Vandello et al., 2008).

We acknowledge that the asymmetry in fragility between heterosexual identity and gay identity, may be explained by an effect of cultural defaults on information diagnosticity. In other words, engaging in heterosexual behaviour (e.g., visiting a non-sexual orientation coded bar) is not diagnostic of sexual orientation, but visiting a gay bar is, simply because it must be actively sought out among the myriad non-sexual orientation coded bar options. Relatedly, engaging in openly gay behaviour may be considered more costly, as it comes with the potential for stigmatization. Thus, one might reasonably assume that even individuals who are gay might refrain from certain behaviours, making gay behaviour more diagnostic.

However, if this were the case, the effect of fragile heterosexuality should have been moderated by participants' levels of anti-gay bias, but this moderation was not significant. Also, were the fragile heterosexuality effect merely due to differences in assumed diagnosticity, we should not have found differences in the strength of the effect for men and women targets, which we did. Furthermore, the effect should have disappeared when we exclusively considered statements related to *thoughts* (supplementary analyses). However, when we investigated this alternative explanation by excluding statements related to *behaviour* from our fragility scale, we still found that heterosexual identity was perceived as more fragile than gay identity. These results strengthen our argument in support of the asymmetrical fragility perceptions between heterosexual and gay identities.

It should be noted that in spite of the higher fragility of heterosexual identity relative to gay identity observed across all studies and sub-groups, including men and women perceivers, the asymmetry in fragility perceptions between heterosexual identity and gay identity was larger for male compared to female targets (Study 3). These results could be attributed to women's (actual or perceived) sexual fluidity. Several studies have concluded that women's sexual orientation is significantly more dynamic than that of men (Diamond, 2000; Kinnish, Strassberg, & Turner, 2005). In fact, Kinnish and colleagues (2005) found that women, describe and experience their sexuality in continuous and ever evolving terms, whereas men describe their sexual orientation as static and unchanging. Additionally, findings from Chandra, Mosher, Copen & Sionean (2011) showed that the rate of men who identify themselves as bisexual was significantly lower compared to women. Accordingly, we believe that having less fluid sexuality (less gay/lesbian experiences), may be more indicative of men's sexual orientation than it would be for women. To the extent that perceivers hold implicit theories of sexuality that are consistent with this picture, they are likely to judge male behaviour as more diagnostic of sexual preferences than female behaviour. Of course, it could equally be argued

that just as heterosexual identity is more normative than gay identity, maleness is more normative than femaleness. Accordingly, the particular fragility of male heterosexual identity might reflect the intersection of these two categories.

The asymmetry in fragility perceptions between heterosexual and gay identities was quite robust, however it is also the case that women participants generally perceived sexual categories to be less fragile than men participants did (Study 3 and 4). This finding parallels findings from previous research on attitudes toward gay/lesbian people, in which women have been found to hold less negative attitudes toward gay/lesbian people compared to men (for a review see Whitley & Kite, 1995). Men are more likely to believe that gay identity is a discrete, dichotomous category, than women (Haslam & Levy, 2006), and are more likely than women to categorise themselves as ‘gay’ based on past same sex sexual experience (whereas for women, past experience does not automatically result in identification: Kinnish et al., 2005). Women seem to be less strict about defining the boundaries of sexual orientation to which they assign themselves (and others). The effects of perceiver gender might again reflect that women’s categorization processes are more flexible than those of men.

Limitations and future studies

The current research focused on asymmetrical fragility perceptions of heterosexual and gay identities. The concept of bisexuality or sexual fluidity was not explored. As this was the first representative quantitative exploration of fragile heterosexuality within a British population, this focus was necessary. However, perceptions of bisexuality and sexual fluidity are an important area of relevant future research. Some conceptions of bisexuality highlight the spectrum of possible gender identities and sexual attractions, undermining fundamental assumptions inherent in the definitions of both heterosexual and gay identities (Moore & Norris, 2005; Peery & Bodenhausen, 2008; Savin-Williams, 2016). Thus, future research on differences in perceptions of sexual orientation should explore a broader range of categories.

For instance, participants could be given the option to assign a target the bisexual or sexually fluid category. Relatedly, Peery and Bodenhausen (2008) found that the hypodescent effect for racial minorities decreases when participants have more time to categorise a target. Thus, a similar effect might occur for judgements of sexual orientation; participants may be more inclined to consider fluid sexuality or bisexuality when given more time to process a target's behaviours.

Another consideration is that earlier studies have revealed a stereotype that gay people are more promiscuous than heterosexuals (e.g., Pinsof & Haselton, 2017). It is possible that the fragile heterosexuality effect found here may reflect this. That is, when gay people engage in incongruous sexual behaviour, it may be more easily dismissed due to being understood as stereotype-consistent promiscuity and broadly directed sexual desire. Conversely, when heterosexual people engage in incongruous sexual behaviour its observers tend to engage in more thorough processing of the implications for their sexual orientation. While this would not undermine the fragile heterosexuality effect, future research should investigate whether, and to what extent, the effect may be explained by relevant stereotypes of promiscuity concerning heterosexual people and sexual minorities.

Additionally, our study revealed that higher estimates of gay/lesbian population lead to less differences in fragility perceptions between heterosexuals and gays. We suggest that these results may reflect participants' change in status perceptions of these two groups. This contention should be tested empirically in future studies. For example, heterosexual participants could be primed with a scenario where the status of gay people is either more similar to or significantly different from the status of heterosexual people.

The studies reported here were carried out entirely in the UK using heterosexual, White, British participants. In spite of Britain being more open minded and less prejudiced against sexual minorities than the USA (Mazzuca, 2004), our results parallel with those found for an

American population (Mize & Manago, 2018). However, there is no evidence yet that the fragile heterosexuality effect transcends a particular Western cultural milieu. Indeed, as the effect appears to depend on estimates of gay/lesbian populations, it is reasonable to expect variation between nations based on the status of sexual minorities in each specific location. Future international and cross-cultural research would be important for exploring these hypotheses. Perhaps, exploring the differences between countries with a known-record of prejudice against sexual minorities, like Jamaica (Borras Guevara & West, 2020; West & Cowell, 2015) and a more egalitarian country like the UK. Targeted replications could also investigate whether sexual minorities also perceive heterosexual identity to be more fragile than gay identity.

Being perceived as a sexual minority implies being stereotyped and discriminated against, hence our focus was to understand where asymmetrical perceptions of fragility of sexual orientation come from. However, we acknowledge that a very important step towards tackling prejudice against the LGBTQ community is to understand the consequences of these asymmetries too. Future research should study experimentally whether higher fragility leads to more negative attitudes/behaviours (e.g., violence) towards sexual minorities.

Conclusions

Prior research and socio-political commentary have alluded to the asymmetric nature of fragility perceptions of sexual orientation. The current research extended that work by: (a) demonstrating this fragility with a variety of quantitative methods; (b) clarifying that it applies across genders and; (c) finding evidence that these beliefs are moderated by estimates of the gay/lesbian population. The assigned status of heterosexual was shown to be more difficult to maintain than the status of being gay. Normalization of the gay/lesbian population predicted smaller differences in fragility perceptions between heterosexual identity and gay identity. These results remind us that the definition of a social category is not merely a linguistic

practicality or balanced description of symmetrically understood states. Rather, categories may also reflect, and inform, our perceptions and treatment of the groups they describe.

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¹ We acknowledge, that perceptions of masculinity and heterosexuality (in men) are intertwined, sexual and gender identities are also separate constructs, and accordingly they should not be treated as redundant (i.e, gay men can be masculine or feminine; see, Glick, Gangl, Gibb, Klumpner, & Weinberg, 2007). While this research strongly connects with ideas about gender identities, it is novel in focusing on sexual identities. Moreover, testing the fragility of heterosexuality in women as well as men, our investigation will empirically consider the fragility of heterosexuality across gender identities and thereby will answer the question of whether this is reducible to masculinity concerns.