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Born This Way: Sexual Orientation Beliefs and Their Correlates in Lesbian and Bisexual Women
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CITATION
In this study, we examined how beliefs about the nature and origin of sexual orientation were associated with sexual identity outcomes, namely internalized sexual stigma and sexual orientation uncertainty, and in turn, psychological well-being in sexual minority women. A community sample of 393 lesbian and 205 bisexual women were recruited for a cross-sectional online survey. Using multigroup structural equation modeling, we examined whether believing sexual orientation to be inborn/immutable (i.e., natural) and/or as existing in discrete categories (i.e., discrete) was indirectly associated with psychological well-being via internalized stigma and sexual orientation uncertainty and whether some of these relationships were moderated by nonprototypical attractions (nonexclusive same-sex attractions in lesbian women and straight- or lesbian-leaning attractions in bisexual women) and age. Overall, similar patterns of direct effects were observed in lesbian and bisexual women. In both groups, naturalness beliefs were associated with lower internalized-stigma, whereas discreteness beliefs were associated with greater internalized stigma. In bisexual women, nonprototypical sexual attraction patterns moderated the relationship between discreteness beliefs and sexual orientation uncertainty. Younger age was associated with increased sexual orientation uncertainty in both lesbian and bisexual women. Specific to lesbian women, nonprototypical attraction predicted less endorsement of immutability and binary/discrete beliefs about sexual orientation, and unexpectedly, greater internalized stigma. The present study identifies potential implications of common lay theories of sexual orientation for lesbian versus bisexual women.

Public Significance Statement
The present study suggests that the beliefs lesbian and bisexual women hold about the nature and origins of sexual orientation may be relevant to their own self-acceptance and certainty in their sexual orientation.

Keywords: lesbian, bisexual, essentialist beliefs, sexual orientation, psychological well-being

Supplemental materials: http://dx.doi.org/10.1037/cou0000209.supp

There is intense scientific and popular debate regarding the nature and origins of sexual orientation. This debate hinges on two main questions; first, whether sexual orientation is inborn (Hamer, Hu, Magnuson, Hu, & Pattatucci, 1993; Rahman & Wilson, 2003), or develops in response to social influences (e.g., culture and upbringing) or choice (Kittzinger, 1987; Whisman, 2012). The second concerns whether sexual orientation exists in discrete categories (e.g., homosexual vs. heterosexual; Norris, Marcus, & Green, 2015; Rieger, Chivers, & Bailey, 2005), or is best understood as fluid, or existing on a spectrum from exclusively straight to exclusively gay/lesbian (Kinsey, Pomeroy, & Martin, 1948; Savin-Williams, 2014). These questions are not merely of interest to scientists; they are also commonly invoked by the lay public when considering the moral status of homosexuality (Haslam & Levy, 2006; Jayaratne et al., 2006; Whitley, 1990), and the legitimacy of bisexual identities (Israel & Mohr, 2004; Rust, 2000).

Although a considerable body of research has investigated the implications of sexual orientation beliefs on heterosexuals’ attitudes toward lesbian, gay, and bisexual (LGB) individuals (Haslam & Levy, 2006; Haslam, Rothschild, & Ernst, 2002), only recently have researchers examined sexual orientation beliefs held by LGB individuals. Existing literature documents a diversity of beliefs about sexual orientation in LGBs, particularly among same-sex attracted (SSA) women. Indeed, whereas biological determinist accounts predominate among gay men (Morandini, Blaszczynski, Costa, Ross, & Dar-Nimrod, 2015), mirroring an emerging scientific consensus on the origin of male homosexuality (Bailey et al., 2016; Rahman & Wilson, 2003), women’s narratives of their sexual orientation often emphasize choice (Gottschalk, 2003; Katz-Wise & Hyde, 2015; Whisman, 2012), social and environmental influences (Gottschalk; Katz-Wise & Hyde, 2015; Kitz-
Egger & Wilkinson, 1995), and fluidity (Diamond, 2008b). Whereas previous explorations of sexual orientation beliefs among SSA individuals have been largely descriptive, we contend that these beliefs may be relevant to a range of sexual identity outcomes. Thus, in the present study we sought to examine how perceiving sexual orientation as natural (inborn and immutable) and discrete (existing in discrete nonoverlapping categories) was related to sexual minority women’s self-acceptance and certainty in their sexual orientation. Moreover, we aimed to examine whether these beliefs were linked to distinct sexual identity outcomes in lesbian versus bisexual identified women.

Essentialist Beliefs About Sexual Orientation

Lay people’s beliefs about the nature and etiology of sexual orientation have typically been studied under the rubric of “psychological essentialism” (Arseneau, Grzanka, Miles, & Fassinger, 2013; Dar-Nimrod & Heine, 2011; Haslam & Levy, 2006). This literature has found that people’s sexual orientation beliefs tend to vary along two key dimensions (Hegarty, 2002). The first, henceforth referred to as naturalness, refers to the extent to which sexual orientation is perceived as biologically determined, immutable, and fixed early in life. The second, referred to as discreteness, reflects the extent to which sexual orientation is thought to be fluid, or existing on a continuum versus existing in discrete nonoverlapping categories (Arseneau et al., 2013; Dar-Nimrod & Heine, 2011). Among heterosexuals, these beliefs are found to have mixed implications for attitudes toward homosexuality. On the one hand, perceiving homosexuality as immutable is often associated with more positive attitudes toward gay men and lesbian women (Haslam & Levy, 2006; Haslam et al., 2002; Jayaratne et al., 2006; Whiteley, 1990). On the other hand, perceiving homosexuality as a discrete typology appears to be related to more negative perceptions of gay/lesbian individuals, perhaps as it sharpens the sense of division and perceived difference between groups (Grzanka, Zeiders, & Miles, 2016; Haslam & Levy, 2006).

A small number of existing studies have examined lay beliefs about sexual orientation in lesbian and bisexual women. In open-ended interviews with 39 lesbian women, Whisman (2012) reported that 31% of lesbians perceived choice in their sexual orientation. In another qualitative study among lesbian identified women (Gottschalk, 2003), 40.5% perceived their sexual orientation as chosen, 36.7% as a combination of both biology and choice, and 22.8% as solely biologically determined. In her longitudinal study of female sexual orientation, Diamond (2005) posited that stable lesbians (women who had maintained a consistent lesbian identity from late adolescence onward) would perceive their sexuality as less influenced by the environment or personal choice, and more inborn than fluid lesbians (lesbian identified women whose sexual identity had shifted over their adult life) and stable nonlesbians (women who never adopted lesbian labels). However, contrary to predictions, no differences in etiological beliefs were observed between subtypes of SSA women in that study. In contrast, in a large quantitative study, Herek, Gillis, and Cogan (2009) found that 30% of lesbian women reported at least some choice in their sexual orientation, compared with 55% of bisexual women. Although these findings indicate substantial within group variability in etiological beliefs and evidence that bisexual women are more likely to perceive choice in their orientation than lesbian women, they are limited by reliance on single item measures, which fail to capture the full range of essentialist beliefs about sexual orientation. These studies also fail to examine possible implications of these beliefs for sexual identity related outcomes among LGB individuals.

Internalized Sexual Stigma and Sexual Orientation Uncertainty in Lesbian and Bisexual Women

Internalized sexual stigma (also referred to as internalized homonegativity or binegativity) refers to the extent to which LGB individuals have internalized negative societal attitudes and beliefs about homosexuality and/or bisexuality. When directed toward the self, these negative attitudes and beliefs are thought to cause LGB individuals guilt, shame, and contribute to impaired self-worth (Williamson, 2000). Internalized sexual stigma is commonly studied within the minority stress framework (Meyer, 2003) and is conceptualized as a proximal stressor, which increases vulnerability to a raft of adverse psychosocial outcomes among lesbian and bisexual women (Balsam & Mohr, 2007; Szymanski, Kashubeck-West, & Meyer, 2008).

Sexual orientation uncertainty refers to a lack of clarity or certainty about the nature of one’s own sexual orientation. Traditionally, sexual orientation uncertainty was thought to be limited to an early phase of sexual identity development, which occurs as an individual first becomes aware of same-sex (or same and other-sex) attractions, questions their presumed heterosexual identity, and which resolves with the adoption of a lesbian/gay or bisexual identity (Cass, 1979). From this perspective, protracted periods of uncertainty are taken as a sign of internalized stigma and difficulty accepting one’s sexual orientation. However, more recent conceptualizations, suggest that individuals may be uncertain about their sexuality long after first assuming a sexual minority identity, and that individuals may be uncertain for a number distinct reasons (Diamond, 2008b).

For some, uncertainty may result from pressure to conform to traditional sexual identity categories that fail to accurately capture one’s experience of sexuality (Balsam & Mohr, 2007). This phenomenon appears particularly relevant to sexual minority women whose fluid and nonexclusive orientations may not be well represented by rigid socially prescribed categories (i.e., homosexual, bisexual, or heterosexual; Diamond, 2008b). Similarly, bisexual individuals may experience heightened uncertainty about their sexual orientation due to societal invalidation of bisexual identities (Balsam & Mohr, 2007; Mohr & Kendra, 2011; Talley & Stevens, 2015; Thompson & Morgan, 2008). Binary notions of sexual orientation, which stipulate that people are either attracted to women or men, but not both, predominate within both heterosexual and gay/lesbian communities, and may lead some individuals to doubt the legitimacy of their bisexual identity (Balsam & Mohr, 2007). Likewise, popular misconceptions about bisexuality, such as that bisexuality requires an even split in attractions to men and women, may also lead some individuals to question whether they are truly bisexual or instead lesbian/gay or straight (McLean, 2007; Weinberg, Williams, & Pryor, 1994).

At present, there is some debate as to whether sexual orientation uncertainty necessarily reflects adjustment problems. Although some empirical studies have reported that uncertainty is associated with impaired psychosocial well-being (Borders, Guillen,
Meyer, 2014; Feinstein, Davila, & Yoneda, 2012; Talley & Stevens, 2015), others have failed to find an association when controlling for other related sexual identity constructs, such as internalized stigma (Balsam & Mohr, 2007; Morandini, Blaszczynski, Ross, et al., 2015). In fact, some argue that uncertainty can reflect an affirmative acknowledgment of fluidity and/or the eschewing of traditional sexual identity labels, which may even be a sign of self-acceptance and psychological health (Diamond, 2006). As such, there is need to examine under what conditions sexual orientation uncertainty may be relevant to psychological wellbeing.

Sexual Orientation Prototypicality

Recent literature points to significant within-group variability among lesbian and bisexual women (Vrangalova & Savin-Williams, 2012; Worthington & Reynolds, 2009). Whereas some lesbian-identified women report exclusive same-sex attraction (exclusive lesbians), other lesbian-identified women report varying degrees of other-sex attraction, or non-exclusivity (nonexclusive lesbians; Diamond, 2005). Likewise, although some bisexual identified women report that they are equally attracted to men and women, others report preferences for one gender over the other (lesbian-leaning bisexuals and straight-leaning bisexuals; Weinrich & Klein, 2002; Worthington & Reynolds, 2009). One implication of this variability is that some women’s attractions are better captured by socially prescribed sexual identity categories (i.e., straight, bisexual, lesbian) than are others. In this study, attraction patterns that neatly align with one’s sexual identity category are termed prototypical. As such, lesbian women who possess exclusively same-sex attraction, and bisexual women with equal same and other-sex attractions, would be deemed to possess prototypical attractions with reference to their respective sexual identities (and socially recognized categories of sexual orientation). On the other hand, lesbian-identified women who report nonexclusive same-sex attraction and bisexual-identified women with straight or lesbian leaning bisexual attractions are conceptualized as possessing varying degrees of nonprototypicality in their attractions. We contend that lesbian and bisexual women possessing nonprototypical attractions may be more likely to experience uncertainty in making sense of their sexual orientation, given that their attractions do not neatly conform to socially recognized categories of sexual orientation and identity. For instance, a lesbian woman possessing nonexclusive same-sex attraction would be more likely to question the nature of her sexual orientation (i.e., lesbian or bisexual) than a lesbian woman who is exclusively SSA. Those with nonprototypical attractions, but who perceive sexual orientation as existing in discrete/nonoverlapping categories, may be particularly prone to experience uncertainty about the nature of their sexuality.

Sexual Orientation Beliefs and Sexual Identity Outcomes

As sexual orientation beliefs appear to inform attitudes toward homosexuality in heterosexuals, such beliefs may be related to how LGB individuals evaluate their own sexual orientation. Morandini, Blaszczynski, Ross, et al. (2015) suggested that for some LGB individuals, perceiving sexual orientation as inborn and immutable may relieve self-blame associated with possessing a stigmatized sexual orientation and even reduce efforts to change one’s sexual orientation in certain instances (Morandini, Blaszczynski, Ross, et al., 2015). As such, it may be predicted that LGB individuals who perceive their sexual orientation as inborn and immutable, are more accepting of their sexual minority orientations. To this point however, empirical findings on this question are inconclusive.

Herek et al. (2009) found that gay and lesbian individuals who perceived choice in their sexual orientations actually had more positive feelings about their sexual orientation than did those reporting less choice. No link was observed for bisexual participants. The authors suggested that perceiving sexual orientation as chosen might hold different meaning among LGBs versus heterosexuals. In line with this, there is some evidence that among LGB individuals, asserting choice in one’s sexual orientation may be identity-affirming and may be used strategically to counter the notion that homosexuality is an immutable affliction to be pitied (Whisman, 2012). However, Morandini, Blaszczynski, Ross, et al. (2015), pointed out that such findings need to be viewed with caution because “essentialism” was measured with a single item and thus failed to assess the possibility that certain components of essentialism (i.e., naturalness vs. discreteness) may hold distinct relationships with internalized stigma. Consistent with this possibility, Morandini et al., found that although naturalness beliefs were not predictive of internalized homonegativity in gay men, those men who perceived sexual orientation as existing in discrete typologies did report more negative feelings about being gay. In addition to impacting self-evaluations, gay men perceiving sexual orientation as discrete were also less uncertain about their sexual orientation (Morandini et al.).

One limitation of the aforementioned study was that the authors did not control for the possibility that men who self-identify as gay, vary in the exclusivity of their same-sex attraction. Some research points to within-group variability among heterosexual, gay, lesbian, and bisexual individuals (Diamond, 2005; Feinstein, Meuwly, Davila, Eaton, & Yoneda, 2015; Worthington & Reynolds, 2009), with evidence of intermediate sexual orientation identity categories such as “mostly gay/lesbian” and “mostly straight” (Vrangalova & Savin-Williams, 2012). As such, it is possible that one’s beliefs about the immutability versus malleability and discreteness versus continuity of sexual orientation are formed, at least partly, by reflecting on the stability and exclusivity of one’s own sexual attractions. Consistent with this possibility, Katz-Wise and Hyde (2015) found that participants who viewed sexual orientation as more malleable and less fixed were more likely to have reported shifts in their own sexual attraction or sexual identity in the past. Therefore controlling for within-group variability in sexual attraction will help to isolate the unique contributions of naturalness and discreteness beliefs to sexual identity outcomes. This appears especially important in the context of the present study, given that most SSA women report attractions to both genders, albeit to varying degrees (Diamond, 2008b).

The Present Study

The main aim of the present study was to investigate the correlates of perceiving sexual orientation as inborn/immutable (naturalness) and binary/discrete (discreteness) on sexual identity outcomes and psychological well-being among lesbian and bisex-
ual women. In addition, we aimed to assess whether nonprototypical attractions in lesbian and bisexual women (i.e., nonexclusive same-sex attractions among lesbian women and bisexual women who possess straight- or lesbian-leaning attractions) and age moderated the associations between sexual orientation beliefs, sexual identity outcomes, and psychological well-being. We conceptualized psychological well-being as involving both affective and cognitive components of well-being (Ryff, 1989), previously found to be associated with sexual identity variables and minority stress in LGB populations (Meyer, 2003; Morandini, Blaszczynski, Ross, et al., 2015; Newcomb & Mustanski, 2010; Williamson, 2000). These were self-esteem, depression, and life-satisfaction. As depicted in Figure 1, we hypothesized the following: 

**Hypothesis 1 (H1):** For both lesbian and bisexual women, the more nonprototypical one’s attractions, the more discreteness beliefs will contribute to sexual orientation uncertainty, given that these attraction patterns are incongruent (to varying degrees) with discrete notions of sexual orientation. That is, nonprototypicality will moderate the association between discreteness beliefs and sexual orientation uncertainty in lesbian and bisexual women (see Path i1).

**Hypothesis 2 (H2):** Naturalness beliefs will be linked to lower internalized stigma in both lesbian and bisexual women, given that may reduce self-blame for one’s stigmatized attractions (see Path a1). In contrast, discreteness beliefs will be positively associated with internalized stigma in both groups in that they may contribute to a sense of marginalization (see Path b1), with this link stronger for bisexuals, for whom such beliefs can also imply that bisexuality is illegitimate and unstable.

**Hypothesis 3 (H3):** Internalized stigma will be negatively associated with age in both lesbian and bisexual women (Path d1). This hypothesis is in line with the notion that internalized sexual stigma is a developmental challenge for LGB individuals, which is most potent when first coming to terms with one’s sexual orientation. Given that most LGB individuals first become aware of their same-sex (or same- and other-sex) attraction in adolescence and early adulthood, internalized stigma would be predicted to be highest during these periods and diminish with age (Herek et al., 2009; Kertzner, Meyer, Frost, & Stirratt, 2009; Williamson, 2000).

**Hypothesis 4 (H4):** While acknowledging that some individuals experience shifts in facets of their sexual orientation across the life course (Diamond, 2006, 2008a), we hypothesize that, on average, sexual orientation uncertainty will be negatively associated with age in both lesbian and bisexual women. This is because LGB individuals will tend to be most uncertain about their sexual orientation following first emergence of same-sex (or same- and other-sex) attractions, a milestone which commonly occurs during adolescence and early adulthood (Savin-Williams & Diamond, 2000; Path d2).

**Hypothesis 5 (H5):** Lesbian and bisexual women possessing nonprototypical attractions will perceive sexual orientation as less immutable or discrete than those possessing prototypical attractions, given that their own sexual attractions do not fit with categorical understandings of sexual orientation (see Path h2 and h3).

**Hypothesis 6 (H6):** Internalized stigma and sexual orientation uncertainty will be positively associated in both lesbian and bisexual women (Path g) in line with previous empirical findings (Feinstein et al., 2012; Morandini, Blaszczynski, Ross, et al., 2015).

**Hypothesis 7 (H7):** Internalized stigma will be negatively associated with well-being in both lesbian and bisexual women.

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**Figure 1.** Conceptual model for lesbian and bisexual women.
women (Path E), given theoretical and empirical indications (Balsam & Mohr, 2007; Szymanski et al., 2008).

**Hypothesis 8 (H₈):** The relationship between sexual orientation uncertainty and psychological well-being will be moderated by discreteness beliefs and age in both lesbian and bisexual women (Path i₂ and i₃). Among younger women, uncertainty may often reflect initial difficulty coming to terms with one’s sexual minority sexual orientation and thus will be negatively associated psychological well-being. Among older women, uncertainty may more so represent an acknowledgment of fluidity in one’s sexual orientation and/or rejection of traditional sexual identity categories and therefore will not be associated with poorer psychological well-being. With regard to discreteness, those who perceive sexual orientation as existing in discrete/nonoverlapping categories might feel more pressure to resolve uncertainty and commit to one or another sexual identity category than those who perceive sexual orientation in a continuous or fluid manner. As such, the negative association between uncertainty and psychological well-being will be stronger for those who endorse discreteness beliefs.

Although we did not have specific hypotheses for paths h₁, h₂, h₄, h₅, and h₆, these paths were estimated to control for relationships between exogenous variables in the model.

**Method**

**Participants and Procedure**

Participants were drawn from a larger study investigating sexual orientation beliefs, minority stress and psychological well-being among individuals who are SSA (findings on other outcomes or populations are reported elsewhere, see Morandini, Blaszczynski, Dar-Nimrod, and Ross (2015) and Morandini, Blaszczynski, Ross, et al. (2015)). To be eligible, participants were required to be 18 years or over and report a sexual minority identity or otherwise experience same-sex attraction. From this larger sample, women self-identified as lesbian (n = 527) and as bisexual (n = 302) took part in the study, with 393 lesbian women and 205 bisexual women attempting the measures of interest. The demographics of the present sample were commensurate with other large-scale online samples of LGB Australians (e.g., Leonard et al., 2012), with the sample majority being White, nonreligious, residing in metropolitan areas, and university educated (sample demographics are reported in Table 1).

Respondents were recruited via targeted and snowball sampling. This involved a paid advertisement in an Australian online LGBT news website, ads on Facebook, and Twitter feeds of local LGBT organizations (e.g., AIDS Council of NSW, Equal Marriage Rights Australia), and invitations sent via university LGBT collective listservs across Australia. Embedded in the study advertisement was a URL link to the survey hosted on Limesurvey™. Respondents were not offered incentives for participation. The survey was active between March 2013 and September 2015. The University of Sydney Human Research Ethics Committee approved the present study.

**Procedure and Measures**

Deployed measures were all previously validated self-report scales. We administered scales in a set order: demographics, sexual attraction, sexual orientation beliefs, sexual orientation uncertainty, internalized stigma, depression, self-esteem, and life satisfaction.

**Sexual orientation** (Klein, Sepekoff, & Wolf, 1985). Nonprototypical sexual attraction was calculated on the basis of responses to an item adapted from the Klein Scale assessing present attraction: “To whom are you sexually attracted?” Responses were registered on a 7-point continuum, (1) exclusively opposite-sex attracted, (2) mostly opposite-sex attracted, (3) somewhat more opposite-sex attracted, (4) equal same and opposite sex attracted, (5) somewhat more same-sex attracted, (6) mostly same-sex attracted, and (7) exclusively same-sex attracted. Among lesbian women the range of scores was 4 to 7, whereas bisexuels spanned the full continuum. Nonprototypical attractions were coded to reflect the extent of nonexclusiveness in same-sex attraction in lesbian women (i.e., 6 = 1, 5 = 2, 4 = 3) with exclusive same-sex attraction as the reference (7 = 0). In bisexual women, nonprototypical attraction was coded as the absolute distance from the midpoint (4) equal same and opposite sex attraction (i.e., 3 or

**Table 1**

Sample Demographics for Lesbian and Bisexual Women

<table>
<thead>
<tr>
<th>Measure</th>
<th>Lesbian (n = 593)</th>
<th>Bisexual (n = 205)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (M/SD)</td>
<td>30.40 (10.21)</td>
<td>25.72 (8.09)</td>
</tr>
<tr>
<td>Age aware of same-sex attraction</td>
<td>14.37 (6.17)</td>
<td>14.89 (5.87)</td>
</tr>
<tr>
<td>Age disclose same-sex attraction</td>
<td>19.76 (6.24)</td>
<td>18.64 (5.60)</td>
</tr>
<tr>
<td>Ethnicity (%, N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>85.5 (336)</td>
<td>82.4 (169)</td>
</tr>
<tr>
<td>East or Southeast Asian</td>
<td>3.6 (14)</td>
<td>8.3 (17)</td>
</tr>
<tr>
<td>South Asian</td>
<td>1.3 (5)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>.8 (3)</td>
<td>.5 (1)</td>
</tr>
<tr>
<td>Mixed Ethnicity</td>
<td>5.6 (22)</td>
<td>5.8 (12)</td>
</tr>
<tr>
<td>Other</td>
<td>3.2 (13)</td>
<td>2.0 (4)</td>
</tr>
<tr>
<td>Religion (%, N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonreligious</td>
<td>78.9 (310)</td>
<td>80.0 (164)</td>
</tr>
<tr>
<td>Christian</td>
<td>14.6 (57)</td>
<td>10.7 (22)</td>
</tr>
<tr>
<td>Buddhist</td>
<td>3.3 (13)</td>
<td>2.9 (6)</td>
</tr>
<tr>
<td>Hinduan</td>
<td>0 (0)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Jewish</td>
<td>1 (4)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Other</td>
<td>2.3 (9)</td>
<td>5.4 (11)</td>
</tr>
<tr>
<td>Geographic area (%, N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inner metropolitan</td>
<td>45.8 (180)</td>
<td>40.9 (85)</td>
</tr>
<tr>
<td>Outer metropolitan</td>
<td>39.2 (154)</td>
<td>38.5 (80)</td>
</tr>
<tr>
<td>Regional/rural</td>
<td>15.0 (59)</td>
<td>20.7 (43)</td>
</tr>
<tr>
<td>Income (%, N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some high school</td>
<td>3.3 (13)</td>
<td>4.4 (9)</td>
</tr>
<tr>
<td>Graduated high school</td>
<td>37.9 (149)</td>
<td>43.9 (90)</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>36.4 (143)</td>
<td>38.5 (79)</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>22.4 (88)</td>
<td>13.2 (27)</td>
</tr>
<tr>
<td>Relationship status (%, N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>37.9 (149)</td>
<td>56.6 (116)</td>
</tr>
<tr>
<td>Monogamous</td>
<td>59.3 (233)</td>
<td>34.1 (70)</td>
</tr>
<tr>
<td>Nonmonogamous relationship</td>
<td>2.8 (11)</td>
<td>9.3 (19)</td>
</tr>
</tbody>
</table>

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5 = 1, 2 or 6 = 2, 7 or 1 = 3) with equal same/opposite attraction as the reference (4 = 0).

Sexual Orientation Beliefs Scale (SOBS; Arseneau et al., 2013). Beliefs about the nature and etiology of sexual orientation were assessed via two of the measure’s subscales. The first, labeled Naturalness, comprised 12 items assessing the degree to which individuals perceive sexual orientation as biologically determined, immutable, and fixed across the life span (e.g., “Biology is the main basis of an individual’s sexual orientation”), with reverse scored items gauging beliefs in the role of social factors and choice in one’s sexual orientation. The second subscale, labeled Discreteness, comprised six items assessing the extent to which sexual orientation is perceived as existing in binary or discrete categories (e.g., “Sexual orientation is a category with distinct boundaries: A person is either gay/lesbian or heterosexual”). Respondents rated their endorsement of these beliefs on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating stronger endorsement of the relevant construct. Internal consistency was acceptable for naturalness beliefs in lesbian (α = .72) and bisexual women (α = .68), although somewhat lower than previously reported in an LGB sample (α = .86; Arseneau et al., 2013). Reliability of the discreteness subscale was acceptable among lesbian women (α = .78, similar α = .82; Arseneau et al., 2013), however it was less robust among bisexual women (α = .59). In a previous study among gay men (Morandini, Blaszczynski, Ross, et al., 2015), naturalness and discreteness subscales of the SOBS were found to be positively correlated, with both predicting lower sexual orientation uncertainty, and discreteness, but not naturalness, predicted higher internalized stigma and depression.

Sexual orientation uncertainty (Mohr & Fassinger, 2003). Uncertainty about one’s sexual orientation was measured by a four item subscale of the Lesbian Gay Bisexual Identity Scale (LGBIS; Mohr & Fassinger, 2000; e.g., “I’m not totally sure what my true sexual orientation is”). Responses were registered on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree) with higher scores indicating greater uncertainty in one’s sexual orientation. Internal consistency was high in both lesbian (α = .92) and bisexual (α = .93) samples and in line with that observed in previous studies (α = .88; Henry & Crawford, 2005). The Depression subscale of the DASS shows strong convergent validity with other measures of depression and negative affective states (Crawford & Henry, 2003). DASS depression has been found to be positively associated with sexual identity problems, including internalized stigma and sexual orientation uncertainty in LGB samples (Mereish & Poteat, 2015).

Self-esteem. The Rosenberg Self-Esteem Inventory (RSE; Rosenberg, 1965) was deployed to assess self-esteem. Participants rated their endorsement of positive and negative feelings about the self on 10 items (“I wish I could have more respect for myself”). A 4-point Likert scale, ranging from 1 (strongly agree) to 4 (strongly disagree) was used to register responses. Internal-consistency was excellent for both identity groups (α = .92), mirroring internal constancy (i.e., α = .89) from other Australian adult samples (Schmitt & Allik, 2005). Studies find that the RSE is predictably associated with other indices of psychological functioning (Ryff, 1989). In LGB samples, self-esteem has been found to be negatively associated with sexual identity problems, including internalized stigma and sexual orientation uncertainty (Mohr & Fassinger, 2000; Morandini, Blaszczynski, Ross, et al., 2015).

Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The SWLS was used to assess global life satisfaction. The scale comprises five items (e.g., “So far I have gotten the important things I want in life”) rated on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Internal consistency was strong for both lesbian (α = .81) and bisexual participants (α = .79) and slightly stronger than that observed in past mixed-orientation and mixed-gender samples (α = .70; Balsam & Mohr, 2007). In LGB samples, the internalized stigma subscale of the LGBIS has been found to be associated with sexual identity problems including concealment, stigma sensitivity, lower LGB community connectedness, and poorer psychosocial functioning, including depression, lower social support, and self-esteem (Balsam & Mohr, 2007; Morandini, Blaszczynski, Ross, et al., 2015).

Data Analytic Plan

To test the hypothesized model we performed multigroup structural equation modeling using Mplus Version 7.11 (Muthén & Muthén, 2012). A complete overview of the analytic plan can be
found in the online supplemental materials. Briefly, given the nature of our data, the most appropriate estimation method was weighted least square mean and variance adjusted (WLSMV). Latent variables were estimated using all scale items as indicators (however two latent variables, discreteness and sexual orientation uncertainty, were subsequently analyzed as observed variables to create interaction terms for tests of moderation). The three latent variables—depression, self-esteem, and life satisfaction—were conceptualized as comprising a higher order latent variable, psychological well-being. We examined four fit indices (criteria for good fit in parentheses; Hu & Bentler, 1999): total chi-square (p > .05), the root-mean square error of approximation (RMSEA; < .06), and the comparative fit index (CFI, > .95) Tucker–Lewis index (TLI, > .95). Bootstrapping with 1,000 resamples was used to assess the significance of indirect effects in our model, in line with recommendations by Mallinckrodt, Abraham, Wei, & Russell (2006).

To allow for meaningful comparisons of structural parameters between lesbian and bisexual women, we tested configural invariance (i.e., whether latent variables are measured by the same indicators across groups), metric invariance (i.e., whether the magnitude of factor loadings is invariant across groups), and scalar invariance (i.e., whether item thresholds are invariant across groups) of the measurement model. To the best of our knowledge, ours is the first published study to establish the invariance of measurement instruments assessing sexual identity and well-being outcomes prior to comparing lesbian (or gay) versus bisexual populations. This process is important in ensuring that observed differences on constructs of interest do not represent measurement artifacts (Steenkamp & Baumgartner, 1998) and enables assessment of structural invariance (akin to testing moderation between groups on all structural paths in the model).

### Results

#### Data Preparation and Descriptive Statistics

We first assessed missing data, finding a sizable proportion owing to participant drop-out (26% of lesbian and 33% of bisexual women failed to attempt an entire measure of interest at the tail-end of the survey). Those respondents failing to attempt at least one entire measure of interest due to drop out, were excluded from analysis as imputation may be biased by a large proportion of missing data (Allison, 2000). The final sample consisted of 393 lesbian women and 205 bisexual women. Less than 1% of item-level data were missing for any one measure, with the exception of internalized stigma, for which ~10% of data was missing. All missing data was imputed using estimation maximization in SPSS Version 21 (see Scholmer, Bauman, and Card (2010)). Descriptive statistics and zero-order correlations for observed variables included in the hypothesized structural model for lesbian and bisexual women can be found in Table 2.

#### Testing Group Models (Measurement and Structural Invariance)

A confirmatory factor analysis on the measurement model for the lesbian group revealed that all items loaded onto factors >.30 (ps < .001), with the exception of Item 7 in the Naturalness subscale. In bisexual women, all items loaded >.30 (ps < .001),

### Table 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>α</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>30.40</td>
<td>10.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Nonprototypical*</td>
<td>.56</td>
<td>.67</td>
<td>.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3. Naturalness</td>
<td>3.95</td>
<td>.58</td>
<td>.73 (72)</td>
<td>.14 (18)**</td>
<td>.22 (−.18)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Discreteness</td>
<td>2.13</td>
<td>.65</td>
<td>.78</td>
<td>.22***</td>
<td></td>
<td>.11 (.24)*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sexual orientation uncertainty</td>
<td>1.93</td>
<td>1.22</td>
<td>.86</td>
<td>.28***</td>
<td>.47***</td>
<td>.22 (−.27)**</td>
<td>.24***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Internalized stigma</td>
<td>2.13</td>
<td>1.09</td>
<td>.81</td>
<td>.15**</td>
<td>.21***</td>
<td>.11 (−.08)*</td>
<td>.03</td>
<td>.33**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Self-esteem</td>
<td>3.04</td>
<td>.64</td>
<td>.92</td>
<td>.26***</td>
<td>−.14**</td>
<td>.01 (−.02)</td>
<td>.15*</td>
<td>.20***</td>
<td>.22**</td>
<td>.68***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Depression</td>
<td>1.66</td>
<td>.70</td>
<td>.92</td>
<td>.23***</td>
<td></td>
<td>.04 (−.02)</td>
<td>.15*</td>
<td>.20***</td>
<td>.22**</td>
<td>.68***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Life satisfaction</td>
<td>3.29</td>
<td>1.48</td>
<td>.91</td>
<td>.18***</td>
<td></td>
<td>.06 (.03)</td>
<td>.04</td>
<td>.20**</td>
<td>.23***</td>
<td>.65**</td>
<td>.53***</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bисexual (N = 205)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
</tr>
<tr>
<td>2. Nonprototypical*</td>
</tr>
<tr>
<td>3. Naturalness</td>
</tr>
<tr>
<td>4. Discreteness</td>
</tr>
<tr>
<td>5. Sexual orientation uncertainty</td>
</tr>
<tr>
<td>6. Internalized stigma</td>
</tr>
<tr>
<td>7. Self-esteem</td>
</tr>
<tr>
<td>8. Depression</td>
</tr>
<tr>
<td>9. Life satisfaction</td>
</tr>
</tbody>
</table>

**Note.** Cronbach’s alphas and correlation coefficients in brackets represent properties of the 12-item Naturalness subscale (i.e., nonloading items retained), whereas those values outside of brackets are based on the modified 8-item Naturalness subscale (i.e., nonloading items dropped).

* Nonprototypical sexual attraction in lesbian women represented the degree of non-exclusive same-sex attraction (i.e.: exclusively same-sex attracted = 0, mostly same-sex attracted = 1, somewhat more same-sex attracted = 2, equal same and opposite sex attracted = 3).  

b Nonprototypical sexual attraction in bisexual women is represented the extent of straight/lesbian leaning attractions (i.e.: equal same and opposite sex attraction = 0, somewhat more same/opposite sex attracted = 1, mostly same/opposite sex attracted = 2, exclusive same/opposite-sex attracted = 3).

*p < .05.  **p < .01.  ***p < .001.
with the exception of four items on the Naturalness subscale, including Items 1, 7, 9, and 10. As violation of configural invariance was limited to a single latent variable (naturalness), we decided to omit Items 1, 7, 9, and 10 from the Naturalness subscale for both groups and reran respective measurement models. The modified measurement models demonstrated acceptable fit in both lesbian and bisexual women as did the multigroup configural model (Model 1b in Table 3). For sake of comparison, we have also included a multigroup configural model for the original measurement model (i.e., nonloading items on the naturalness subscale retained; Model 1a in Table 3).

In the next step, metric invariance was examined by comparing the configural baseline measurement model (i.e., factor loadings freely estimated) with a nested model in which factor loadings were constrained to be equal. The nested model (i.e., factor loadings constrained to be equal) did not fit significantly worse than the baseline model, \( \Delta \chi^2(38) = 48.85, p > .05 \), indicating metric invariance (see Model 2 in Table 3). Finally, scalar invariance was examined by comparing the metric model (i.e., factor loadings constrained to be equal) to a nested model where thresholds were constrained to be equal. The scalar invariance model (i.e., thresholds constrained to be equal) fit the data significantly worse than did the metric model,

### Table 3

<table>
<thead>
<tr>
<th>Model description</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>( \Delta \chi^2 )</th>
<th>( \Delta df )</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement invariance testing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1a: Configural invariance (all item indicators)</td>
<td>3943.33</td>
<td>2228</td>
<td>( \Delta \chi^2 )</td>
<td>( \Delta df )</td>
<td>.957</td>
<td>.955</td>
<td>.051 (.048, .053)</td>
</tr>
<tr>
<td>Model 1b: Configural invariance (minus nonloading items)</td>
<td>3126.98</td>
<td>1858</td>
<td>.968</td>
<td>.966</td>
<td>.048 (.045, .051)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2: Full metric invariance</td>
<td>3094.74</td>
<td>1856</td>
<td>48.85</td>
<td>38</td>
<td>.968</td>
<td>.966</td>
<td>.051 (.043, .049)</td>
</tr>
<tr>
<td>Model 3a: Full metric and partial scalar invariance</td>
<td>3250.50</td>
<td>2052</td>
<td>185.49</td>
<td>156</td>
<td>.970</td>
<td>.971</td>
<td>.044 (.041, .047)</td>
</tr>
<tr>
<td>Model 3b: Model 3a with discrete and SO Uncertainty as observed variables</td>
<td>2101.87</td>
<td>1258</td>
<td>( \Delta \chi^2 )</td>
<td>( \Delta df )</td>
<td>.977</td>
<td>.978</td>
<td>.047 (.044, .051)</td>
</tr>
<tr>
<td>Model B: Multigroup saturated model (indirect + direct effects) with all structural parameters freely estimated</td>
<td>2401.62</td>
<td>1522</td>
<td>.976</td>
<td>.977</td>
<td>.044 (.040, .047)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model A: Multigroup theoretical model (indirect effects only) with all structural parameters freely estimated</td>
<td>2357.66</td>
<td>1534</td>
<td>18.93</td>
<td>12</td>
<td>.978</td>
<td>.980</td>
<td>.042 (.039, .046)</td>
</tr>
<tr>
<td>Model C: Multigroup modified model (i.e., Model A with Natural ( \rightarrow ) SO Uncertainty, Age ( \rightarrow ) PW and NP ( \rightarrow ) IH added) with all structural parameters freely estimated</td>
<td>2335.96</td>
<td>1528</td>
<td>36.74 *</td>
<td>6</td>
<td>.978</td>
<td>.979</td>
<td>.042 (.039, .045)</td>
</tr>
<tr>
<td><strong>Structural model specification for Model 3b</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Model D: Model C with moderator variables Discrete ( \times ) NP ( \rightarrow ) SO Uncertainty; Age ( \times ) SO Uncertainty ( \rightarrow ) PW; Discrete ( \times ) SO Uncertainty ( \rightarrow ) PW; with all structural parameters freely estimated</td>
<td>2865.42</td>
<td>1754</td>
<td>.971</td>
<td>.972</td>
<td>.046 (.043, .049)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Structural model including moderators</strong></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Model E: Multigroup modified theoretical model (i.e., Model D) with all structural parameters constrained to be equal</td>
<td>2716.96</td>
<td>1779</td>
<td>45.14 *</td>
<td>25</td>
<td>.976</td>
<td>.977</td>
<td>.042 (.039, .045)</td>
</tr>
<tr>
<td>Model F: Partially invariant modified multigroup theoretical model (i.e., Model D) with parameters ( c_2 ), ( d_i ), ( h_1 ), ( h_4 ), ( i_1 ), ( i_2 ) freely estimated, with all other parameters in Figure 1 constrained to be equal between groups*</td>
<td>2654.86</td>
<td>1772</td>
<td>15.22 *</td>
<td>18</td>
<td>.977</td>
<td>.978</td>
<td>.041 (.038, .044)</td>
</tr>
</tbody>
</table>

**Structural path noninvariance (Model F)**

- \( c_2 \) (i.e., Nonprototypical \( \rightarrow \) Internalized Stigma) | 2654.93 | 1773 | 4.15 \* | 1 |
- \( d_i \) (i.e., Age \( \rightarrow \) Internalised Stigma) | 2661.95 | 1773 | 8.18 \* | 1 |
- \( h_1 \) (i.e., Natural \( \rightarrow \) Discrete) | 2658.70 | 1773 | 7.92 \* | 1 |
- \( h_4 \) (i.e., Nonprototypical \( \rightarrow \) Discrete) | 2681.90 | 1773 | 26.06 \* | 1 |
- \( h_i \) (i.e., Age \( \rightarrow \) Discrete) | 2667.83 | 1773 | 25.19 \* | 1 |
- \( i_1 \) (i.e., Discrete \( \times \) Nonprototypical \( \rightarrow \) SO Uncertainty) | 2654.93 | 1773 | 4.15 \* | 1 |
- \( i_2 \) (i.e., Discrete \( \times \) SO Uncertainty \( \rightarrow \) PW) | 2660.94 | 1773 | 4.40 \* | 1 |

* Constraining of paths in Model F were informed by tests of moderation conducted via the MODEL CONSTRAINT function in Mplus (v7.11). Path coefficients which were moderated by group were allowed to differ, whereas all other paths were constrained to equality between groups.  

b Structural path invariance was tested via the DIFFTEST option in MPLUS. Structural paths were fixed to equality, one-by-one, and chi-square change was assessed relative to Model F (where these seven paths were freely estimated). 

\( p < .05 \).
\( \Delta \chi^2(172) = 310.60, p < .05 \), thus full scalar invariance could not be established. On the basis of modification indices, thresholds were released one-by-one and model comparisons rerun to attempt partial scalar invariance. In all, 17 thresholds were released (two on self-esteem, depression, life satisfaction, sexual orientation uncertainty; three on internalized stigma; and six on the Discreteness subscale) before partial scalar invariance was achieved (Model 3a in Table 3). Although releasing multiple thresholds was required to achieve partial scalar invariance, Byrne, Shavelson, and Muthén (1989) suggested that as long as one item is invariant in each latent variable, subsequent analyses are interpretable.

To examine the proposed moderation effects (see hypotheses one and eight), the discreteness and sexual orientation uncertainty latent variables were analyzed as observed variables in the structural model. This was necessary as latent variables cannot be used to build interaction terms in Mplus when using WLSMV estimation. Both latent variables demonstrated full metric invariance (see above) thus minimizing measurement concerns when interpreting multigroup analysis. Fit indices for this final model (Model 3b) can be found in Table 3.

**Structural Model Specification and Structural Invariance Testing**

In the next step, we sought to specify our structural model. We first tested the fit of our proposed indirect effects only model (see Figure 1) and found that it demonstrated acceptable fit on all model fit indices (Model A in Table 3). Next we tested a saturated model (all Direct + Indirect Effects; Model B). Inspection of the saturated model revealed three additional parameters (not specified in the proposed Model A), the first from age to psychological well-being, the second from nonprototypical attractions to internalized stigma, and the third from naturalness to sexual orientation uncertainty \( (p < .01) \). Even still, the less parsimonious saturated model (Model B) did not demonstrate superior fit, \( \Delta \chi^2(12) = 18.93, p > .05 \), relative to the more parsimonious indirect effects model (Model A). As such we decided to test a third model (Model C), which incorporated the new parameters observed in the saturated model into our original theoretical model (i.e., indirect effects only model). Model C demonstrated superior fit to Model A, \( \Delta \chi^2(6) = 36.74, p < .05 \), and was therefore adopted for subsequent examination of structural invariance.

Next we ran Model D, which added the three proposed interaction terms to Model C, to examine Hypotheses 1 and 8 (i.e., Nonprototypicality \( \times \) Discreteness on SO uncertainty; Age \( \times \) SO uncertainty on psychological well-being; Discrete \( \times \) SO uncertainty on psychological well-being, as well as an additional direct effect from discreteness to psychological well-being required to test this interaction effect). The interaction effects Discrete \( \times \) SO uncertainty and Age \( \times \) SO uncertainty on psychological well-being were nonsignificant in both lesbian and bisexual women \( (p > .05) \). The interaction effect of Nonprototypicality \( \times \) Discreteness on SO uncertainty was significant for bisexual women \( (p < .05) \) but not lesbian women \( (p > .05) \); see Figure 2.

We next proceeded to examine multigroup structural invariance. We compared Model D with all structural paths and covariances freely estimated, to an identical structural model with all structural paths and covariances fixed to equal across groups (Model E). The DIFFTEST revealed a significant difference between these models, \( \Delta \chi^2(25) = 45.14, p < .05 \), indicating structural noninvariance (see Table 3). As such, the fully constrained model was rejected. A figure summarizing the path coefficients for the freely estimated

![Figure 2](image_url)

**Figure 2.** Parameter estimates of the freely estimated structural model (Model F) depicting the relationship of sexual orientation beliefs, non-prototypical attractions, and age to psychological well-being via sexual orientation uncertainty and internalized stigma in lesbian \( (N = 393) \) and bisexual women \( (N = 205) \). Parameters estimates on the left are for lesbians. Bolded parameter estimates represent those which differ significantly by group. Dotted boxes represent interaction terms. \( R = \) reverse scored scales. Numbers represent standardized regression coefficients. * \( p < .05 \).
Partial Structural Invariance

In the next step we aimed to establish partial structural invariance (Byrne, Shavelson, & Muthén, 1989). First, we examined which parameters in the freely estimated model differed significantly between lesbian and bisexual women groups using the Wald’s chi-square test of parameter equalities. Of the predicted paths, two were found to differ significantly between lesbian and bisexual women ($p < .05$; see $c_2$, $d_1$ in Figure 1). These were nonprototypicality to internalized stigma and age to internalized stigma. Two interaction effects, Discrete × SO uncertainty on psychological well-being and Nonprototypicality × Discrete on SO uncertainty, were also found to differ significantly between groups ($f_1$, $i_2$, in Figure 1; $p < .05$). Other predicted paths did not differ significantly between lesbians and bisexuals. Next, of the six covariances, three were found to be noninvariant between groups ($h_2$,$ h_3$ in Figure 1; $p < .05$). As such we proceeded to test a multigroup partially invariant structural model in which the seven parameters that had significant Wald tests results (i.e., differed significantly between lesbian vs. bisexual samples) were freely estimated, whereas the remaining parameters were constrained to be equal across groups. The partially invariant structural model was then tested relative to Model D (freely estimated structural model with moderators), displaying equivalent fit to the data, $\Delta \chi^2(18) = 15.22$, $p = .64$, thus partial structural invariance was achieved in Model F (see Figure 2).

Moderation Effects

Consistent with hypotheses, nonprototypicality significantly moderated the relationship between discreteness beliefs and sexual orientation uncertainty among bisexual women ($p < .05$). Examination of simple slopes indicated that the more nonprototypical a bisexual women’s sexual attraction pattern, the more positive the relationship between discreteness beliefs and sexual orientation uncertainty (see Figure 3). No other moderation effects were significant in lesbian or bisexual women ($p > .05$).

Indirect Effects

To observe if exogenous variables (naturalness, discreteness, and age) were linked to psychological well-being via internalized stigma or sexual orientation uncertainty, we examined the significance of indirect effects for the partially invariant structural model. None of the eight indirect effects were significant for lesbian or bisexual women (see Table 4; $p > .05$).

Discussion

In the present study, we tested a structural model to examine if the way in which sexual minority women conceive of sexual orientation (i.e., as inborn/immutable vs. socially determined/chosen or as existing in discrete categories vs. fluid/continuous) is linked to sexual identity outcomes (internalized stigma and sexual orientation uncertainty), their sexual attraction patterns, and psychological well-being and whether these relationships differ for lesbian versus bisexual identified women. First, replicating previous findings, internalized stigma was negatively associated with psychological well-being in both lesbian and bisexual women, with no evidence that sexual identity moderated the strength of this association (consistent with findings of Balsam and Mohr (2007)).

Next, sexual orientation uncertainty was negatively associated with psychological well-being in lesbian and bisexual women, even after controlling for internalized stigma (contrary to previous findings of Morandini, Blaszczynski, Ross, et al., 2015, in gay men), and contrary to our predesctions, this association was not moderated by age or discreteness beliefs. Regarding sexual orientation beliefs, results indicated that naturalness and discreteness beliefs show some similar associations in lesbian and bisexual women. First, naturalness beliefs predicted lower internalized stigma in both lesbian and bisexual women. This finding is at odds with past empirical findings of absent or weak positive associations between immutability beliefs and internalized stigma in lesbian and gay male samples (Herek et al., 2009; Morandini, Blaszczynski, Ross, et al., 2015). Differences from Herek et al., may be attributable to our use of a more comprehensive measure of essentialist beliefs which distinguishes naturalness (immutability) beliefs from discreteness beliefs (belief factors which although positively associated, have divergent associations with internalized stigma; Arsenneau et al., 2013; Morandini, Blaszczynski, Ross, et al., 2015). Why immutability beliefs would be directly linked to internalized stigma in both lesbian and bisexual women but not in gay men (as found in a previous study: Morandini, Blaszczynski, Ross, et al., 2015) is harder to interpret. As the overwhelming majority of gay men in the previous study held biological determinist beliefs about sexual orientation, it is possible that this may have contributed to a restricted range which impaired our ability to detect an effect.

As predicted, perceiving sexual orientation as existing in discrete nonoverlapping categories was linked to internalized stigma in both lesbian and bisexual women. This is in line with the notion
Lesbian and Bisexual Women

Table 4
Model E: Analyses of the Magnitude and Statistical Significance of the Indirect Effects in Lesbian and Bisexual Women

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Mediator variable</th>
<th>β (standardized indirect effect)</th>
<th>β (M indirect effect)</th>
<th>SE</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesbian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naturalness →</td>
<td>Internalized stigma →</td>
<td>-0.12 × -.18 = .02</td>
<td>.023</td>
<td>.015</td>
<td>.132</td>
</tr>
<tr>
<td>Naturalness →</td>
<td>SO uncertainty →</td>
<td>-.10 × -.22 = .02</td>
<td>.021</td>
<td>.026</td>
<td>.426</td>
</tr>
<tr>
<td>Discreteness →</td>
<td>Internalized stigma →</td>
<td>.21 × -.18 = -.04</td>
<td>-.038</td>
<td>.029</td>
<td>.187</td>
</tr>
<tr>
<td>Nonprototypical →</td>
<td>Internalized stigma →</td>
<td>.26 × -.18 = -.05</td>
<td>-.047</td>
<td>.028</td>
<td>.084</td>
</tr>
<tr>
<td>Age →</td>
<td>Internalized stigma →</td>
<td>-.27 × -.18 = -.05</td>
<td>.049</td>
<td>.033</td>
<td>.124</td>
</tr>
<tr>
<td>Age →</td>
<td>SO uncertainty →</td>
<td>-.34 × -.22 = -.07</td>
<td>.071</td>
<td>.089</td>
<td>.42</td>
</tr>
<tr>
<td>Bisexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naturalness →</td>
<td>Internalized stigma →</td>
<td>-.14 × -.16 = -.02</td>
<td>.023</td>
<td>.015</td>
<td>.127</td>
</tr>
<tr>
<td>Naturalness →</td>
<td>SO uncertainty →</td>
<td>-.09 × -.26 = -.02</td>
<td>.021</td>
<td>.026</td>
<td>.416</td>
</tr>
<tr>
<td>Discreteness →</td>
<td>Internalized stigma →</td>
<td>.20 × -.16 = -.03</td>
<td>-.034</td>
<td>.027</td>
<td>.200</td>
</tr>
<tr>
<td>Nonprototypical →</td>
<td>Internalized stigma →</td>
<td>-.01 × -.16 = -.00</td>
<td>.001</td>
<td>.041</td>
<td>.968</td>
</tr>
<tr>
<td>Age →</td>
<td>Internalized stigma →</td>
<td>.10 × -.16 = -.02</td>
<td>-.019</td>
<td>.028</td>
<td>.480</td>
</tr>
<tr>
<td>Age →</td>
<td>SO uncertainty →</td>
<td>-.21 × -.26 = -.05</td>
<td>.051</td>
<td>.060</td>
<td>.393</td>
</tr>
</tbody>
</table>

Note. The dependent variable is psychological well-being.

that discreteness beliefs may increase perceptions of marginalization and difference from the heterosexual majority and thus lead to more negative perceptions of being lesbian/bisexual. Contrary to the prediction that this effect would be stronger among bisexual women, discreteness beliefs were no more strongly linked to internalized stigma in bisexual than lesbian women.

In partial support of our hypotheses, among bisexual women, the more nonprototypical one’s attractions, the more strongly discreteness beliefs were associated with sexual orientation uncertainty. This suggests that for women who experience less categorical attraction patterns (in this case straight- or lesbian-leaning bisexual attractions), discreteness beliefs may exacerbate uncertainty, as they contradict one’s own experiences and increase doubts as to the legitimacy of one’s sexual identity. Contrary to our hypothesis, nonprototypical attractions did not moderate the association between discreteness and sexual orientation uncertainty in lesbian women. This might be explained by the fact that unlike bisexuality, the legitimacy of lesbianism isn’t questioned in society. As such, even lesbian women who view sexual orientation in a relatively discrete manner may not regard occasional opposite-sex attractions as a threat to the validity of their lesbian identity. In contrast, given that the very existence of bisexuality is often denied, bisexual women who view sexual orientation as discrete may be more troubled by nonprototypical attraction patterns (i.e., lesbian- or straight-leaning preferences), which they may perceive as calling into question the legitimacy of their bisexual identity.

Next, an unexpected finding was that nonexclusive lesbians reported higher levels of internalized stigma than did exclusive lesbians. It is possible that these women encounter negative reactions to their nonmonosexual attractions from LGB and heterosexual communities, akin to the discrimination directed toward bisexual people and that this leads to more negative appraisals of their sexual orientation. Alternatively, some lesbian women may report other-sex attraction as a way of retaining a sense of normalcy and connection with dominant heterosexual culture, even if they are in fact only attracted to the same sex (Guitard, 2013). In this case, apparent other-sex attractions are a manifestation of internalized heterosexism.

As predicted, this study demonstrated that lesbian women who are exclusively SSA are more likely to view sexual orientation as inborn/immutable and discrete than are lesbian women who are attracted to women nonexclusively. These findings provide evidence that rather than merely ontological abstractions, sexual orientation beliefs are logically connected to an individual’s experience of sexual orientation. At present, it remains unclear whether sexual orientation beliefs are formed by reflecting on the nature of one’s own sexuality or, as suggested by Katz-Wise and Hyde (2015), whether certain cognitions about sexual orientation may facilitate fluid attractions in some women.

As hypothesized, we observed that sexual orientation uncertainty was negatively associated with age for both lesbian and bisexual women. Recent literature finds that sexual identity development is not necessarily age-dependent, with some sexual minority women experiencing shifts in attractions, partner gender, and thus sexual identity, across the life span (Diamond, 2006). Nevertheless, our findings indicate that, on average, uncertainty about one’s sexual orientation diminishes over time, in line with more traditional models of sexual identity development (McCarn & Fassinger, 1996). Next, among lesbian, but not bisexual women, internalized stigma was negatively associated with age. Although previous studies, in mixed LGB samples, have found that those who are younger report higher levels of internalized stigma (Herek, Gillis, & Cogan, 2009; Ross et al., 2013), to our knowledge, ours is the first study to find this pattern is moderated by sexual identity in women. One possible explanation is that the absence of bisexual communities, invisibility of bisexual role models, and pervasive monosexism (Israel & Mohr, 2004; Weinberg et al., 1994) provide additional barriers to overcoming internalized stigma in this group. Finally, a direct positive association between age and psychological well-being was observed in the present model (independent of internalized stigma and sexual orientation uncertainty). This relationship may be explained by other minority stressors (i.e., stigma sensitivity) whose presence decreases with age, or the buffering effect of factors such as community connectedness which increase with age.

Implications for Counseling Psychology and Advocacy

Clinicians should be aware of the possibility that sexual minority women hold somewhat diverse beliefs about their sexual ori-
entation. Whereas “born this way” narratives may accurately reflect the experiences of some sexual minority women, they may be less appealing to others, particularly lesbian women who report nonexclusive same-sex attraction and bisexual women. Moreover, as the nature and etiology of sexual orientation is a politically charged topic, clinicians and advocates should also manage their own biases when encountering narratives that conflict with personal beliefs (i.e., biological theories of sexual orientation tend to be viewed with caution if not outright hostility within some feminist and queer academic circles (Kitzinger, 1987)).

Given that sexual orientation beliefs appear partly informed by reflection on the stability or exclusivity of one’s own sexual orientation, such beliefs may often be inappropriate targets for clinical interventions. However, when such beliefs reflect an internalization of invalidating societal attitudes and are linked to identity distress, such interventions may be warranted. For instance, in supporting a straight- or lesbian-leaning bisexual client who is struggling with confusion about their sexuality, exposure to nondiscreet ways of conceptualizing sexual orientation (i.e., depicting sexual orientation as a spectrum or as fluid) may provide a framework of sexual orientation which is more congruent with the client’s experiences, thus facilitating greater self-acceptance.

Limitations and Future Directions

A number of limitations should be considered in interpreting the present findings. The cross-sectional nature of the present study requires that findings are interpreted with caution. First, it is well established that cross-sectional analysis can lead to biased estimates of mediational processes which unfold over time (Maxwell & Cole, 2007). Next, the causal paths in our model were theoretically rather than empirically informed. As such, it is possible for instance that greater acceptance of one’s sexual orientation leads one to perceive sexual orientation as more inborn/immutable (thus the direction of causation is the reverse of that specified in our model). Future research should aim to clarify the direction of these and other relationships specified in our model.

Another limitation was that the current study drew on a convenience sample of sexual minority women, recruited online via LGB organizations, university pride collectives, and on social media. Samples such as these are found to be younger, more highly educated, and more connected to the LGB community than the sexual minority population at large (Ross et al., 2005).

Although measurement was a strength of the present study (i.e., based on establishment of partial measurement invariance on all latent variables), a number of measurement issues remained. First, omitting four items from the naturalness subscale of the SOBS (Arseneau et al., 2013) reduced the measures’ conceptual coverage and may have weakened its predictive power among lesbian participants. Moreover, subscales of the SOBS displayed weaker psychometric properties among bisexual than lesbian participants, particularly the discreteness subscale, which demonstrated poor internal consistency. This may have negatively impacted the strength of associations between discreteness and other variables in our model in the bisexual sample. In addition, as discreteness and sexual orientation uncertainty were analyzed as observed variables in our model (rather than measurement invariant latent variables), relevant group based comparisons must be interpreted with caution. Finally, our measure of internalized stigma held weaker than expected associations with psychological well-being compared with previous literature (Balsam & Mohr, 2007), rendering all predicted indirect effects via this variable nonsignificant. The weaker than expected association may have been due to our deploying of a previous version of LGBIS that includes some out-dated language, which may have resulted in a restricted range on the relevant subscale.

In the present study, we aimed to develop a more nuanced understanding of the relationship between sexual orientation uncertainty and psychological well-being by examining potential moderators of this relationship. Future research may attempt to explicitly measure distinct manifestations of uncertainty and their implications for sexual identity outcomes and well-being. Such scales should clearly differentiate aversive uncertainty linked with difficulty accepting and integrating stigmatized same-sex attractions into one’s self-concept (e.g., Cass’s (1979) conceptualization) from more recent conceptualizations which emphasize committed uncertainty and the eschewing of traditional sexual-orientation labels (e.g., Diamond’s (2006) conceptualization) given they that these distinct forms of uncertainty would be predicted to have distinct implications for wellbeing.

Conclusion

Some have argued for the merits of biological theories of sexual orientation in reducing stigma toward sexual minorities (Whitley, 1990), whereas others have cautioned of their potential pathologizing effects (Hegarty, 2002; Stein, 2001). Only recently have empirical studies investigated how essentialist theories of sexual orientation may impact LGB individual’s perceptions of their own sexuality (Morandini, Blaszczyński, Ross, et al., 2015). The present findings reveal that naturalness beliefs are linked to positive identity outcomes, whereas discreteness beliefs are linked to more negative outcomes. Of course, whether certain lay theories about sexual orientation are found to be helpful or unhelpful for LGB individuals, has no bearing on the scientific merit of these theories. Rather, the present findings might assist clinicians in understanding how popular understandings of sexual orientation are related to sexual identity outcomes and well-being in sexual minority women.

References


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