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Social Relationships and Loneliness in Late Adulthood: Disparities by Sexual Orientation

Ning Hsieh, Hui Liu

Michigan State University

Abstract

Objective: This is the first national study to examine disparities in loneliness and social relationships by sexual orientation in late adulthood in the United States.

Background: Prior studies have shown that lesbian, gay, and bisexual (LGB) individuals often struggle with social relationships across the life course, likely because of stigma related to sexual orientation. However, little is known about whether loneliness is more prevalent among LGB people than among other groups in late adulthood, and if so, which relationships contribute to the loneliness gap.

Method: We analyzed data from a nationally representative sample of older adults from the 2015–2016 National Social Life, Health, and Aging Project (N = 3,567) to examine the disparity in loneliness by sexual orientation and identify links between this disparity and multiple dimensions of social relationships, including partner, family, friend, and community relationships.

Results: Older LGB adults were significantly lonelier than their heterosexual counterparts, primarily due to a lower likelihood of having a partner and, to a lesser extent, lower levels of family support and greater friend strain. While they were also disadvantaged in the size of close family and frequency of community participation, these factors were less relevant to their loneliness. Overall, the conventionally defined inner layers of relationships (partnership and family) contributed more to the loneliness disparity than the outer layers of relationships (friends and community).

Conclusion: These findings suggest that strengthening the partnerships and family relationships of sexual minorities is essential to reducing the loneliness gap.

Keywords

aging; communities; family; friendship; LGBTQ; marriage

Loneliness is defined as perceived deficiencies in the quantity or quality of an individual's social relationships; it is subjective (i.e., not synonymous with objective isolation) and distressing (Peplau & Perlman, 1982). Exposure to loneliness has detrimental effects on mental and physical health, such as increased risk of depression, cognitive decline, coronary

Michigan State University, 509 East Circle Drive, 317, Berkey Hall, East Lansing, MI 48824-1111, (hsiehnin@msu.edu).

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heart disease, and mortality (Cacioppo, Hawkley, & Thisted, 2010; Chen & Feeley, 2014). Loneliness is especially pervasive among older adults. About 17 % of Americans age 50 and older report feelings of loneliness (Chen & Feeley, 2014; de Jong Gierveld & Broese van Groenou, 2016). There is little empirical research, however, on whether the level of loneliness among older adults varies across social groups. In this study, we examine how sexual orientation, an important but underexplored factor, shapes the experience of loneliness in late adulthood.

Loneliness is likely more prevalent among sexual minority older adults than heterosexual older adults because the former group has experienced an accumulation of negative events over the life course, such as family estrangement, difficulties gaining social and legal recognition of partnerships, the loss of significant others to HIV/AIDS, and (consequently) higher rates of living alone (Fredriksen-Goldsen, Kim, Barkan, Muraco, & Hoy-Ellis, 2013; Hsieh, 2014; Kim & Fredriksen-Goldsen, 2016; Kuyper & Fokkema, 2010). However, scholars know little about the extent to which sexual minority status affects loneliness at the population level or how inequality in access to social resources contributes to the loneliness disparity. Although many studies have suggested that loneliness is rooted in the structure and quality of social relationships, specifically smaller network size, lower levels of social support, and more relationship strains (de Jong Gierveld, van Tilburg, & Dykstra, 2006; Hsieh & Hawkley, 2018; Masi, Chen, Hawkley, & Cacioppo, 2011), few researchers have examined how these aspects of social relationships contribute to loneliness across sexual orientation groups.

In this study, we analyze data from a nationally representative sample from the 2015–2016 National Social Life, Health, and Aging Project (NSHAP) to address two research questions: (a) Do older sexual minority adults suffer higher levels of loneliness and have fewer and lower quality social relationships than their heterosexual counterparts? (b) If so, do the smaller number and poorer quality of social relationships experienced by sexual minorities contribute to their higher levels of loneliness? Our study not only examines the quantity of relationships in multiple domains, including spouse/partner, family, friend, and community, but also assesses the quality of these relationships, including the extent of support and strain associated with each type of relationship. The rapid growth of the elderly sexual minority population in the United States highlights the importance of this study. In 2010, an estimated 1.5 million Americans age 65 and older identified as lesbian, gay, or bisexual (LGB); this population is expected to grow to nearly 3 million by 2030 (Movement Advancement Project, 2010). The study findings have implications for public policies and programs that seek to facilitate the successful aging of LGB older adults.

Background

Loneliness and Social Relationships

Social relationships broadly refer to connections between people who have recurring interactions that generate personal meanings (August & Rook, 2013). Loneliness is a distressing feeling resulting from perceived deficiencies in social relationships; it occurs when actual relationships do not align with desired relationships in either quantity or quality (de Jong Gierveld et al., 2006; Hawkley & Cacioppo, 2010; Peplau & Perlman, 1982).

Because loneliness entails a subjective assessment of dissatisfaction with one's relationships (e.g., feeling a lack of companionship), it is conceptually distinct from the characteristics of those relationships, which may be subjectively or objectively described (e.g., number of friends and quality of friendship).

Social relationships encompass multiple conceptual dimensions, including structure, quality, and type (Antonucci, Ajrouch, & Birditt, 2014; Berkman & Glass, 2000), all of which are considered important for loneliness. The structural dimension includes the existence, quantity, and other structural features of relationships, such as the size of family and the frequency of contact with friends. The qualitative dimension is comprised of both positive and negative elements such as social support and relational demands and conflicts (Berkman & Glass, 2000; Umberson & Montez, 2010). Both the quantity and quality of social relationships, most notably a larger number of social ties, less social support, and more social strain, are linked to higher levels of loneliness (Berkman & Glass, 2000; Chen & Feeley, 2014; Fokkema & Kuyper, 2009; Hawkey et al., 2008), although some studies have suggested that relationship quality may matter more than relationship quantity for loneliness because not all relationships are supportive (Pinquart & Sorensen, 2001).

Moreover, previous studies have suggested that relationships consist of different types, with certain ties (e.g., partners and close family members) being more central to one's life than others (e.g., friends and neighbors) (Antonucci et al., 2014; Lin, Ye, & Ensel, 1999). Because higher frequencies of support exchanges and greater reciprocal obligations as well as co-residence can increase the importance of a relationship, partnership and family are often considered the ties that are nearest to the center of the social circle and have the strongest influence on one's experience of loneliness (Chen & Feeley, 2014). This may be especially true in late adulthood because personal networks become smaller after retirement, functional decline, or bereavement (Carr & Moorman, 2011; Carstensen, 1992). Partners and, to a lesser extent, other family members, play a central role in caregiving and maintaining a sense of social connectedness in older age (Hsieh & Hawkey, 2018; Warner & Adams, 2012). Only when a partner or close family member is unavailable do older adults rely on more distant kin, friends, neighbors, and other community members as major sources of support (Cantor, 1979; Carstensen, 1992). However, these findings are based primarily on research among heterosexual populations and may not apply to sexual minorities who have had notably different experiences with marriage, family, friendship, and community relationships, which we turn to next.

Conceptual Framework

Links Between Sexual Orientation, Social Relationships, and Loneliness.—

Sexual orientation may shape the quantity and quality of various types of social relationships and, in turn, affect the risk of loneliness. Overall, prejudice and discrimination against sexual minorities in private and public domains and at both the interpersonal and institutional levels can severely disrupt social connections, reduce access to social support, and discourage community involvement, thereby fostering loneliness (Fokkema & Kuyper, 2009; Institute of Medicine, 2011; Meyer, 2003). Because non-heterosexual identity and behavior were highly stigmatized in the recent past, many older LGB adults faced more challenges building and

maintaining their social relationships over the life course than their heterosexual peers (de Vries & Hoctel, 2007; Fredriksen-Goldsen & Muraco, 2010; Grossman, D'Augelli, & Hershberger, 2000).

Moreover, the conventional order of relationship types from the inner to the outer layers of the social circle—partners being the most central to the focal person, followed by family, friends, and then community members—may not hold true for older sexual minorities. In particular, because many older LGB adults have become distanced or estranged from their biological families due to their stigmatized sexual orientation, they have relied more on close friends, whom they consider “families of choice,” for primary support (de Vries & Hoctel, 2007). Therefore, friends may be more central to the focal person than family. Although the current study does not directly compare relationship importance across sexual orientation groups, it examines the extent to which different types of relationships contribute to the loneliness disparity faced by sexual minorities, thereby indirectly assessing whether the relative importance of relationships follows the conventional order among older LGB adults. Figure 1 presents the conceptual framework of the study. Below, we discuss in detail how sexual orientation may shape the structural (mainly quantitative) and qualitative aspects of four major relationship types—partnerships, families, friendships, and community relationships—and thus affect the sense of loneliness.

Partnerships and biological families.: Older LGB adults are less likely to be married or in a partnership than their heterosexual peers due to historical legal restrictions on same-sex marriage and social disapproval of same-sex relationships (Fredriksen-Goldsen et al., 2013; MetLife, 2010). Because the lack of a marital or cohabiting relationship is a strong predictor of loneliness among LGB individuals (Fokkema & Kuiper, 2009; Kim & Fredriksen-Goldsen, 2016; Kuiper & Fokkema, 2010), we expect partnership quality than different-sex couples because same-sex relationships tend to be more egalitarian in the provision of support and care than different-sex relationships (Reczek & Umberson, 2012; Umberson, Thomeer, & Lodge, 2015) and because same-sex partnerships have been tested by and survived more stress over the years (LeBlanc, Frost, & Wight, 2015). Therefore, we expect that partnership quality may play a minor role in the loneliness disparity faced by sexual minorities.

Some older LGB adults entered heterosexual marriages and had children within these marriages before coming out as LGB. Coming out to a spouse and children often leads to family strain, conflict, and dissolution, and may compromise relationships with family members either structurally or qualitatively (Goldberg, 2007; King, 2016). For example, some parents lost custody of their children or had restrictions placed on their visitation rights because of their sexual orientation. Further, prior studies have suggested that older LGB adults are more likely to have poor relationships with their families of origin than their heterosexual peers, for example, receiving less support and having a lower frequency of contact (Barker, Herdt, & de Vries, 2006; Cronin & King, 2014; Fokkema & Kuiper, 2009; Grossman et al., 2000; Solomon, Rothblum, & Balsam, 2004). Many older LGB adults have become temporarily or permanently estranged from their biological families due to their stigmatized sexual orientation, and those who remain in touch with family members may feel more conflict and distance from them. Overall, unsupportive and strained family

relationships could lead to greater loneliness among sexual minorities (Kim & Fredriksen-Goldsen, 2016).

Friendships: Families of choice.: In contrast to most heterosexual people, who rely heavily on kin support in late adulthood, many sexual minorities turn to friends for support during this phase of life (de Vries & Hoctel, 2007; Grossman et al., 2000; Solomon et al., 2004; Wilkens, 2015). While having friends is often optional (but important) for heterosexual people, for many sexual minorities it is necessary for survival in a heteronormative society. Sexual minorities create and maintain friendships out of a need to mitigate the impact of stigmatization and cope with threats to identity and self-esteem (de Vries & Hoctel, 2007; Grossman et al., 2000; Nardi, 1982). To compensate for the aforementioned lack of partner and family support, many older LGB adults have built networks of close friends, whom they consider “families of choice” or “chosen families,” to exchange resources and care (Fokkema & Kuyper, 2009; Grossman et al., 2000; Wilkens, 2015). We expect that older LGB adults would have a larger number of friends than their heterosexual peers, and thus the size of friendship may play a minor role in the loneliness disparity faced by them.

Prior research has focused almost solely on the positive qualities of friendships (e.g., friend support) in sexual minorities’ lives, and has largely ignored the complexity of friendships, for example, paying little attention to friend strain. Just like family members, friends can be demanding, critical, and disappointing once friendships deepen, even if they are understanding, helpful, and supportive all or some of the time. Some research on caregiving has noted that older LGB adults are more likely to provide care for friends than older heterosexual adults, which may place additional stress on their emotional and physical health, social life, and financial security (Croghan, Moone, & Olson, 2014; MetLife, 2010; Muraco & Fredriksen-Goldsen, 2011). Caregiving stress can also lead to relationship ambivalence, a feeling linked to poorer well-being and health (Fingerman, Pitzer, Lefkowitz, Birditt, & Mroczek, 2008; Uchino, Smith, & Berg, 2014). Unlike heterosexual people, who may feel free to walk away from ambivalent friendships and feel somewhat indifferent to friends at older ages (Hsieh & Hawkey, 2018), sexual minorities may be more likely to persist in these relationships, in part because they have fewer options for accruing other social resources. Thus, the unpleasant qualities of friendships could contribute to higher levels of loneliness among sexual minorities.

Communities: Organized activities and neighborhood experiences.: In addition to having friends and/or family to confide in, older sexual minorities may join larger communities to validate their minority identities, enhance their sense of belonging, and escape loneliness. While some older LGB adults actively participate in social and leisure activities through agencies and groups that serve lesbian, gay, bisexual, transgender, and queer (LGBTQ) communities (Barker et al., 2006; Fokkema & Kuyper, 2009; Grossman et al., 2000), many avoid community participation because they fear judgment of their minority identities in non-LGBTQ communities (e.g., church) or they worry about ageism and sexism within LGBTQ social and commercial spaces, many of which cater to young gay men (Barker et al., 2006; Cronin & King, 2014; King, 2016). In addition, because the literature on older sexual minorities is largely based on samples recruited through LGBTQ

organizations (thereby oversampling sexual minorities who are more socially active), the extant findings likely overestimate the frequency of community participation among older sexual minorities (Grossman et al., 2000).

Moreover, a few recent studies suggest that sexual minorities have poorer neighborhood experiences, for example, perceiving neighbors as less trustworthy and helpful, with the exception of those who live in a “gayborhood” (Henning-Smith & Gonzales, 2018; King, 2016). Although much research has shown that negative neighborhood experience is linked to poor health and well-being in the general population (Elliott, Gale, Parsons, & Kuh, 2014; Sampson, Morenoff, & Gannon-Rowley, 2002), few studies have examined this linkage across sexual orientation groups. We expect that older LGB adults have lower levels of community participation and poorer neighborhood experience than their heterosexual peers, which may contribute to the loneliness disparity between the two groups.

Based on this body of research, we propose three hypotheses:

Hypothesis 1: Older LGB adults are lonelier than older heterosexual adults.

Hypothesis 2: The higher levels of loneliness among LGB people are attributable to their disadvantages in the quantity and quality of social relationships of various types, including partnership, family, friendship, and community relationships.

Hypothesis 3: The conventionally defined inner layers of relationships (e.g., those with spouses/partners and family members) contribute more to the loneliness disparity than the outer layers of relationships (e.g., those with friends and community members).

Methods

Data

We used the 2015–16 data from the NSHAP. NSHAP is a nationally representative study of the social networks and support, sexuality, and health of community-dwelling older Americans. While NSHAP is a longitudinal study of older adults first interviewed in 2005–2006 (Wave 1), the survey did not include a question about sexual identity until 2015–2016 (Wave 3). The NSHAP questionnaire consists of two parts, the in-person questionnaire (IPQ) (face-to-face interview) and the leave-behind questionnaire (LBQ) (self-administered survey). Because the sexual identity question is in the LBQ, the current analysis is restricted to respondents who completed the LBQ (84% of the respondents who completed the IPQ). Demographically, the LBQ sample is older and more educated and has a higher proportion of white respondents than the IPQ sample (Table S1). We used weights in all analyses to adjust for nonresponse biases. Because NSHAP Wave 3 also interviewed the spouses/partners of focal respondents (some of whom were younger), the analysis excluded those spouses/partners who were under age 50 at the time ($n = 132$). We also excluded respondents who did not answer the sexual identity question ($n = 366$) and those who were missing important demographic information ($n = 7$). The final analytic sample includes 3,567 older adults ages 50–97. Of these respondents, 438 have missing values on one or more of the relationship variables. We used multiple imputation ($M = 50$), specifically multivariate

imputation by chained equations, to impute these missing values. All the variables in the final models were used to predict missing values in an iterative process (Johnson & Young, 2011). Table S2 shows the number of cases imputed for each variable. Notably, all descriptive and regression results are highly consistent across analyses conducted with casewise deletion and multiple imputation. We present results based on multiple imputation, but results based on casewise deletion are available upon request.

Variables

Loneliness.—Loneliness is a three-item measure summarizing how often the respondent feels a lack of companionship, left out, or isolated from others. Each item was originally rated on a 4-point scale (0 = *never*, 1 = *hardly ever*, 2 = *some of the time*, 3 = *often*). Following previous research using NSHAP loneliness data (Hughes, Waite, Hawkey, & Cacioppo, 2004), we summed and standardized the responses to create a loneliness score ($\alpha = .8$).

Sexual Orientation.—NSHAP asked respondents the following question about sexual identity: “Do you consider yourself to be: heterosexual or straight, gay or lesbian, or bisexual?” However, because the social climate and norms about identity and disclosure were more conservative in the past, older sexual minorities are less likely than their younger counterparts to identify with the labels gay, lesbian, and bisexual (Institute of Medicine, 2011), and thus relying solely on the sexual identity measure might have excluded older adults who are not “out.” To create a more inclusive sample, we also used responses from a question about sexual experience: “In your entire life so far, about how many men have you had sex with, even if only one time?” and “In your entire life so far, about how many women have you had sex with, even if only one time?” The resulting sexual orientation variable has three categories—heterosexual-identified individuals with no same-sex experience (reference, $n = 3,213$), LGB-identified individuals regardless of sexual experience ($n = 81$), and heterosexual-identified individuals with same-sex experience ($n = 273$). The third category may help identify sexual minorities who do not want to disclose their sexual orientation. Because only about 2% of the sample adults were self-identified LGB, the analyses did not have enough statistical power to further separate this group into lesbians, gays, and bisexuals.

Social Relationships.—We used a series of variables to measure the quantitative and qualitative characteristics of four major types of social relationships: spouse/partner, family, friend, and community relationships. The variables, with the exception of neighborhood qualities, are closely modeled on the items used in the Psycho-Social Module in the Health and Retirement Study, which were first tested in an experimental module in 2002 (J. Kim & Waite, 2014) and have been widely used in research since then (e.g., Liu & Waite, 2014; Warner & Adams, 2012). The measures of neighborhood qualities are reproduced from the Project on Human Development in Chicago Neighborhoods Community Survey, which was conducted in 1994 (E. Y. Cornwell & Cagney, 2014).

Marital status—Marital status is a categorical variable indicating whether the respondent was married/cohabiting (reference), divorced/separated/widowed, or never married. For

those who were currently married/cohabiting, *partner support* and *partner strain* were measured via 11 items: (1) relationship happiness (1—*very unhappy* to 7—*very happy*); (2) preference for spending free time doing things with their spouse (1—prefer separate things to 3—prefer together); how often respondents can (3) open up to and (4) rely on their partner; how often does their partner (5) really understand the way they feel, (6) open up to them, (7) rely on them, (8) make too many demands on them, (9) criticize them, (10) let them down, and (11) get on their nerves. Items 3–11 were all rated on a 4-point scale (0 = *never*, 1 = *hardly ever or rarely*, 2 = *some of the time*, 3 = *often*). Following previous studies on relationship quality using NSHAP data (Liu & Waite, 2014), we conducted exploratory factor analysis and found that these items loaded on two major dimensions (i.e., two factors had an eigenvalue > 1 and together explained more than 99% of total variance). As Table S3 illustrates, these two dimensions generally represent positive and negative partner qualities, which we refer to as “partner support” and “partner strain.” Factor scores for partner support and partner strain were calculated based on item loadings derived from a principle factor analysis with oblique rotation.

We measured *number of close family members* via self-reports of the number of family members the respondent had to whom he or she felt close, excluding their spouse or romantic partner. Respondents could choose one of the following six response categories: none (reference), 1, 2–3, 4–9, 10–20, or more than 20. Because very few respondents reported having more than 20 close family members, we combined the categories “10–20” and “more than 20” in the analyses. *Family support* and *family strain* were measured by nine items assessing the quality of family relationships (excluding marriage and partnership relationships): how often could respondents (1) open up to and (2) rely on their family members; how often do their family members (3) really understand the way they feel, (4) open up to them, (5) rely on them, (6) make too many demands on them, (7) criticize them, (8) let them down, and (9) get on their nerves. Each item was rated on a 4-point scale (0 = *never*, 1 = *hardly ever or rarely*, 2 = *some of the time*, 3 = *often*). As we did for partner support and strain, we conducted factor analysis and identified two dimensions—family support and family strain—that together explained more than 99% of the total variance (see Table S3 for factor loadings). Two factor scores were created, one for family support and the other for family strain.

We assessed *number of friends* using the same categories as number of close family members: none (reference), 1, 2–3, 4–9, and more than 10. *Friend support* and *friend strain* were measured by nine items of friendship quality that paralleled the items assessing family support and strain. Once again, we conducted factor analysis and identified two dimensions—friend support and friend strain—that together explained close to 100% of the total variance (see Table S3 for factor loadings). We then created a score for each dimension.

The variable for *community participation* is a summary score based on three items: how often did respondents do volunteer work for organizations (e.g., religious, charitable, and political organizations), attend meetings of any organized groups (e.g., a hobby/sports/support group or professional society), and attend religious services in the past 12 months. All these items were originally rated on a 6-point scale (0 = *never*, 1 = *about once or twice a year*, 2 = *several times a year*, 3 = *about once a month*, 4 = *every week*, 5 = *several times a*

week). Because factor analysis identified only one common factor measured by these three items (eigenvalue = 1; 100% of variance explained), we created a variable representing the overall frequency of participation in community activities. *Positive neighborhood quality* and *negative neighborhood quality* were measured via 11 items assessing perceived neighborhood cohesion for the area within a 20-minute walk from the respondent's home. These items included: how often do respondents and people in this area (1) visit each other's homes or meet on the street, (2) do favors for each other, and (3) ask each other for advice. In addition, respondents were asked whether they agreed or disagreed with the following statements: (4) this is a close-knit area; (5) people around here are willing to help their neighbors; people in this area generally (6) do not get along, (7) do not share the same values, (8) can be trusted, and (9) are afraid to go out at night; (10) there are places in this area where everyone knows "trouble" is expected; and (11) you are taking a big chance if you walk in this area alone after dark. Items 1–3 were rated on a scale of 0 (*never*) to 3 (*often*) and items 4–11 were rated on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Using factor analysis, we detected two dimensions and thus generated two scores, one for positive and the other for negative neighborhood quality (see Table S4 for factor loadings).

Sociodemographic Covariates.—We controlled for *age* (in years), *gender* (male [reference] or female), *education* (less than high school [reference], high school or equivalent, some college or associate's degree, or bachelor's degree or above), and *race/ethnicity* (non-Hispanic white [reference], non-Hispanic black, Hispanic, or other). Each of these factors is linked to structural barriers and opportunities that could change the quantity and quality of respondents' social relationships (B. Cornwell, Laumann, & Schumm, 2008; Hawkley et al., 2008; Turner & Marino, 1994). For example, higher levels of education are associated with larger and more diverse social networks, a higher likelihood of being married, and more engagement in organizational activities (Hawkley et al., 2008; Turner & Marino, 1994).

Analytic Strategy

We first compared loneliness and characteristics of relationships with spouses/partners, family members, friends, and community members across sexual orientation groups, controlling for sociodemographic covariates. The analyses were conducted via three types of regression models: ordinary least squares (OLS) models (for loneliness, family support and strain, partner support and strain, friend support and strain, community participation, and positive and negative neighborhood qualities), multinomial models (for marital status), and ordinal logit models (for number of close family and number of friends). The models were not stratified by gender because we found very few significant interaction effects between sexual orientation and gender (results available upon request). We then used a series of OLS regression models to estimate the extent to which characteristics of social relationships explain the loneliness gap by sexual orientation: Model 1 includes sexual orientation and sociodemographic controls to predict levels of loneliness; Models 2–5 add variables for each domain of social relationships separately as additional covariates; Model 6 includes all covariates. We used *t*-tests to determine whether the change in the size of coefficient estimates for sexual orientation (on loneliness) across models was significant. All analyses

were adjusted for sampling design with the *svy* functions and were performed under the *mi* (multiple imputation) framework in Stata 14 (StataCorp, 2015).

Results

Descriptive Statistics

Table 1 compares sociodemographic characteristics, loneliness, and social relationship measures across sexual orientation groups. Compared to heterosexual people with no same-sex experience, LGB people had higher levels of education and were more likely to be non-white, and heterosexual people with same-sex experience were slightly older. In addition, loneliness and social relationships differed between heterosexual people with no same-sex experience and LGB people (but not between heterosexual people with and without same-sex experience). Compared to heterosexual people with no same-sex experience, LGB people were lonelier, less likely to be married or cohabiting, and more likely to be never married. They also had fewer close family members and reported less family support. Further, LGB people experienced more friend strain and participated in community activities less often than heterosexual people with no same-sex experience.

Regression Results: Differences in Loneliness and Social Relationships by Sexual Orientation

Many of the disadvantages in loneliness and social relationships experienced by older LGB adults remained significant when sociodemographic characteristics were held constant. In support of Hypothesis 1, Table 2 shows that LGB individuals were significantly lonelier than heterosexual individuals with no same-sex experience ($b = .35, p < .01$). LGB people were also much more likely than heterosexual people with no same-sex experience to be never married (relative risk ratio [RRR] = 13.29, $p < .001$) and divorced, separated, or widowed (RRR = 2.58, $p < .01$). However, married/cohabiting LGB people reported very similar levels of partner support and partner strain as married/cohabiting heterosexual people (with or without same-sex experience). Regarding family, LGB people had fewer close family members (odds ratio [OR] = 0.51, $p < .05$) and lower levels of family support ($b = -.45, p < .01$), but did not report higher levels of family strain than their heterosexual counterparts.

Although we expected that older LGB adults would have a larger number of friends than their heterosexual counterparts, the results in Table 2 do not support this premise: Number of friends did not differ significantly between these groups (OR = 0.76, $p = .21$). However, LGB people did report receiving more support from friends ($b = .24, p < .05$), although they also experienced more strain in their friendships ($b = .28, p < .001$). These findings suggest that older LGB adults may feel more ambivalent toward their friends than their heterosexual counterparts.

The results in Table 2 also show that older LGB adults participated in community activities less frequently than older heterosexual adults with no same-sex experience ($b = -.33, p < .01$). These results support the argument that LGB people were less involved in communities that serve either the general population or LGBTQ populations because of heterosexism, ageism, and/or sexism. Finally, contrary to our expectation, we found that

LGB people perceived similar levels of neighborhood cohesion, including both positive and negative neighborhood qualities, as their heterosexual counterparts.

Because some older sexual minorities do not identify (or identify openly) with the LGB label, we also compared heterosexual people with and without same-sex experience. However, the results in Table 2 suggest that while heterosexual people with same-sex experience felt moderately lonelier than those with no same-sex experience ($b = .12, p < .05$), social relationship characteristics were largely similar across the two groups.

Explaining the Loneliness Gap: Which Relationships Matter?

Although we hypothesized that any disadvantages in social relationships experienced by LGB individuals could potentially contribute to higher levels of loneliness (Hypothesis 2), the results indicate that only certain aspects of social relationships matter. Table 3 shows the link between selected social relationship variables and the loneliness gap by sexual orientation. Due to space limitations, we do not present models that include partnership quality and neighborhood quality because additional analyses suggested that they provided little explanation for the observed loneliness gap (results available upon request).

A comparison of the results of Models 1 and 2 in Table 3 suggests that marital status explains a substantial portion (37%) of the loneliness gap between LGB individuals and heterosexual individuals with no same-sex experience. As shown in Model 2, being never-married was related to higher levels of loneliness ($b = .41, p < .001$) as was being divorced, separated, or widowed ($b = .43, p < .001$). Controlling for marital status reduced the loneliness gap from 0.35 to 0.22 ($b = .13, t = 4.41, p < .001$).

A comparison of Models 1 and 3 also suggests that family support and strain explain a significant share (28%) of the loneliness gap. Specifically, as shown in Model 3, family support was negatively associated with loneliness ($b = -.19, p < .001$) while family strain was positively associated with loneliness ($b = .27, p < .001$). Adjusting for family support and strain reduced the loneliness gap from 0.35 to 0.25 ($b = .10, t = 2.01, p < .05$). Additional analyses, however, indicated that family support was the main contributor while family strain played only a minor role (results available upon request). By contrast, number of close family members did not have a statistically significant effect on loneliness when quality of family relationship was held constant.

Moreover, a comparison of Models 1 and 4 suggests that friendship also matters for loneliness, explaining a moderate proportion (17%) of the loneliness gap. Having more friends, particularly more than 10 friends ($b = -.38, p < .01$), and having more friend support ($b = -.13, p < .001$) were both associated with lower levels of loneliness, while experiencing more friend strain was associated with higher levels of loneliness ($b = .26, p < .001$). Together, these variables were responsible for a decrease in the loneliness gap from 0.35 to 0.29 ($b = .06, t = 1.93, p = .054$). Additional analyses, however, revealed that this attenuation was largely due to friend strain and much less due to number of friends or friend support (results available upon request).

A comparison of the results of Models 1 and 5 shows that community participation makes a small but significant contribution (6%) to the loneliness gap by sexual orientation. Controlling for community participation reduced the loneliness gap from 0.35 to 0.33 ($b = .02, t = 2.30, p = .02$). Notably, although community participation was also associated with lower levels of loneliness ($b = -.08, p < .001$), it had a much smaller effect than marital status, family relationship, and friendship.

Finally, a comparison of Models 1 and 6 suggests that when all the social relationship variables are controlled, the loneliness gap between LGB people and heterosexual people with no same-sex experience decreases by 66% ($b = .23, t = 4.11, p < .001$) and becomes statistically insignificant. Although heterosexual people with same-sex experience (some of whom may be sexual minorities) also reported more loneliness than heterosexual people with no same-sex experience, none of the social relationship variables produced a statistically significant attenuation in this gap. A comparison of Models 1 and 6 also shows that the difference in loneliness between heterosexual older adults with and without same-sex experience decreases from 0.12 to 0.08 with the addition of social relationship variables; however, this change does not reach statistical significance ($b = .03, t = 1.24, p = .21$).

In Figure 2, we summarized the extent to which each and all domains of social relationships explained the loneliness gap between sexual orientation groups. Consistent with Hypothesis 3, Figure 2 shows that the conventionally defined inner layers of relationships (e.g., those with partners and family) contributed more to the loneliness disparity than the outer layers of relationships (e.g., those with friends and the community). Marriage/partnership and family carried the most weight, followed by friendship and then community relationships, in explaining the loneliness gap between sexual orientation groups.

Discussion

A large body of research has shown that loneliness is an increasingly common concern of older Americans (Cacioppo et al., 2010; Chen & Feeley, 2014). However, it is unclear whether loneliness is more prevalent among sexual minority older adults than heterosexual older adults due to their differences in social relationships. The current study based on nationally representative data confirms that older LGB adults feel significantly lonelier than their heterosexual counterparts. This disparity in loneliness is largely explained by quantitative and qualitative differences in social relationships between these groups, with the conventionally defined innermost layer of relationships (e.g., with spouses/partners and family members) contributing more to the disparity than the outer layers of relationships (e.g., with friends and community members). The findings demonstrate that social relationships differ by sexual orientation, highlighting major social disadvantages among older LGB adults.

Partnership

An absence of the companionship provided by a married or cohabiting partner is the most important factor underlying elevated levels of loneliness among older LGB adults relative to their heterosexual counterparts. Our results showed that LGB people were less likely to be married or cohabiting than their heterosexual counterparts; this difference in marital status

explained 37% of the loneliness disparity between LGB and heterosexual individuals. Institutional forms of discrimination, such as historical laws banning same-sex marriages and prejudice against sexual minorities, have hindered LGB individuals from establishing intimate relationships (Fokkema & Kuyper, 2009; Fredriksen-Goldsen et al., 2013). However, a more critical attitude toward the institution of marriage among LGB people may also have led to a reluctance to marry despite knowledge of the benefits associated with marriage (Goldberg & Kivalanka, 2012), which could have contributed to lower marriage rates. Having a spouse/partner, especially in the context of a legally protected and culturally accepted relationship, has long been identified as a key mechanism for both cultivating a sense of belonging and meaning and expanding social connections (e.g., families-in-law, a spouse's friendship networks). The higher prevalence of being single among older LGB adults is a major risk factor for loneliness.

Notably, despite the unique minority stress faced by LGB couples, coupled LGB people did not report different levels of partner strain or support than their coupled heterosexual counterparts. Consistent with previous studies on younger and middle-aged same-sex couples, the findings suggest that same-sex couples have similar, if not better, relationship quality than heterosexual couples. This pattern likely emerges because partners in same-sex couples provide support and care to one another in a more egalitarian way (Reczek & Umberson, 2012; Umberson et al., 2015), which might ameliorate some of the relationship challenges caused by couple-level minority stress (LeBlanc et al., 2015).

Family

Another important contributor to the loneliness of older LGB adults is lower levels of family support. We found that older LGB adults had fewer close family members than their heterosexual counterparts, although this difference explained little of the loneliness gap between the two groups. Instead, poorer quality of family relationships was the primary family factor underlying elevated loneliness among LGB people. They reported receiving lower levels of support from family members (but having similar levels of family strain)—indicating distance from their families—than their heterosexual counterparts. Having poorer relationships with family members explained about 28% of the loneliness disparity between LGB and heterosexual older adults. This finding is consistent with previous research suggesting that sexual minorities face more difficulties in relationships with their biological families because of their stigmatized sexual orientation (Barker et al., 2006; Cronin & King, 2014; Fokkema & Kuyper, 2009; Grossman et al., 2000). Moreover, the higher proportion of childlessness among LGB older adults may also contribute to their lower levels of family support. Prior studies have shown that childless older adults tend to receive less social support than those with children (Wu & Pollard, 1998).

Friendship

We found no significant difference in number of friends between LGB and heterosexual people. However, while older LGB adults reported lower quality family relationships, this group had deeper involvement in friendships than their heterosexual counterparts, as indicated by higher levels of both support and strain from friends. Researchers have long argued that friend support is an essential aspect of older LGB adults' lives (de Vries &

Hoctel, 2007; Grossman et al., 2000), explaining that they have built networks of friends in order to both cope with minority stress and compensate for the lack of a marital/cohabiting partner and family support (Fokkema & Kuyper, 2009; Meyer, 2003). However, friendships are not free of problems. The current results revealed that older LGB adults suffered more strain from their friends, which accounted for about 17% of the loneliness gap between LGB and heterosexual older adults. Friend strain may result from heavy reliance on friends for sick or elderly care in the LGB community; both caregivers and care recipients may feel tensions due to additional stress on finances, time, and health on the part of caregivers and feelings of being a burden on the part of care recipients (Muraco & Fredriksen-Goldsen, 2011).

Community

A lower average level of community participation is also related to loneliness, but plays a much smaller role in explaining the loneliness disparity by sexual orientation than the relationships discussed above. Moreover, we found that LGB and heterosexual older adults perceived similar levels of neighborhood cohesion (likely because LGB people consciously select neighborhoods that are more LGB friendly or adapt to the nature of the environment after years of residence), and neighborhood cohesion did not contribute to the loneliness disparity. Overall, these results suggest that community participation and perceived neighborhood cohesion, both of which represent the outermost layer of social relationships, are much less important for LGB people's feelings of loneliness than the inner layers of social relationships. This finding is consistent with previous studies noting that older adults tend to seek support from a marital/cohabiting partner first, followed by other close family members, friends, and then community members (Carstensen, 1992; Shanas, 1979). Lack of support from the two primary relationships—a partner and family—is the most important factor in elevated loneliness among older LGB adults.

Finally, we found that heterosexual individuals with same-sex experience, a group that likely includes sexual minorities who do not identify (or identify openly) with the LGB label, also reported modestly higher levels of loneliness than heterosexual individuals with no same-sex experience. However, none of the social relationship variables explained this gap in a significant way. Those who have same-sex experience but identify as heterosexual likely have quite different life experiences than LGB-identified individuals. In a supplementary analysis comparing discrimination experience by sexual orientation, older heterosexual adults with and without same-sex experience did not differ significantly, while older LGB adults were more likely than older heterosexual adults with no same-sex experience to report being treated with less courtesy and cite sexual orientation as the main reason for this unfair treatment (results available upon request). Perhaps some heterosexual people with lifetime same-sex experience are simply more sexually adventuresome and do not live through the same level of discrimination and prejudice that sexual minorities do. Future studies should continue to explore potential mechanisms (other than social relationships) underlying the loneliness gap between heterosexual individuals with and without same-sex experience.

Limitations

This study has several limitations. First, although the NSHAP is a nationally representative study of older adults in the United States and is one of the most comprehensive datasets that collect information on both social relationships and sexual orientation, the sample size for LGB older adults is relatively small, which limits our ability to detect further heterogeneity among sexual minorities. More population-based data collection that oversamples sexual minorities is needed to understand the differential experiences of sexual minority subgroups at older ages. Second, while we cover a variety of major social relationships, past relationships (e.g., partner history) and other relationships (e.g., with therapists) may also be important to the loneliness of older LGB adults. In addition, unobserved factors such as the ratio of the number of close family members to total family size as well as relationship expectations (e.g., desired quantity or quality of relationships) may shape the risk of loneliness (de Jong Gierveld et al., 2006). Future research should explore additional relationship correlates of loneliness. Third, the loneliness measure used in this study is a simplified version of the UCLA Loneliness Scale. Other loneliness measures, such as the 20-item UCLA Loneliness Scale, would provide more refined calibration of loneliness. Fourth, from a stress process perspective, relationship strain is a source of stress and may further compromise health and well-being. Understanding how older sexual minorities experience more relationship strain (e.g., friend strain) and whether this strain translates into poorer health outcomes through loneliness will require additional research. Lastly, because the data are cross-sectional, we can only assess associations and cannot make causal inferences.

Conclusion

Individuals in late adulthood are especially vulnerable to loneliness. This study shows that this vulnerability is even more pronounced for sexual minority older adults than for their heterosexual counterparts due to multiple disadvantages in the former group's social relationships. Specifically, disadvantages in inner-layer relationships, such as the lack of a spouse/partner and low levels of support from family, are major factors driving the elevated levels of loneliness among sexual minorities. As the first population-based analysis of the social lives of older sexual minorities, this study demonstrates that continued efforts to strengthen the partnerships and family relationships of sexual minorities (for example, by fully destigmatizing minority identities through education and public policy) are essential to eliminating the loneliness gap by sexual orientation. Given the long-documented severe consequences of loneliness on health and well-being, these findings encourage more research on the challenges faced by aging sexual minorities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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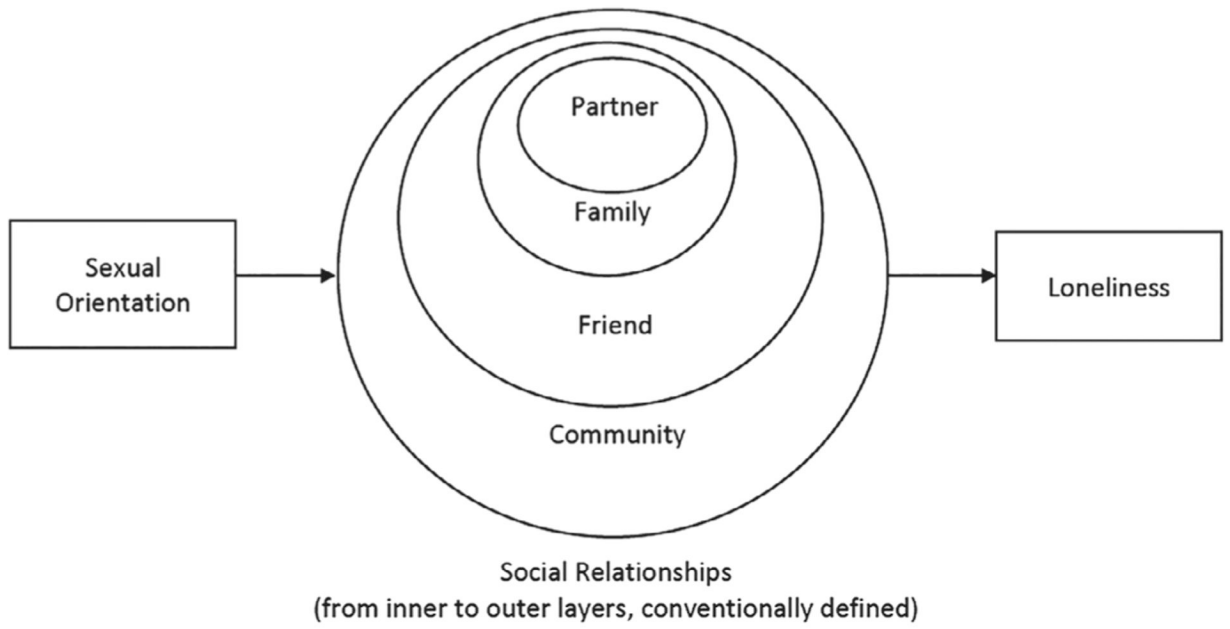


Figure I.
Conceptual Framework of Sexual Orientation, Social Relationships, and Loneliness.

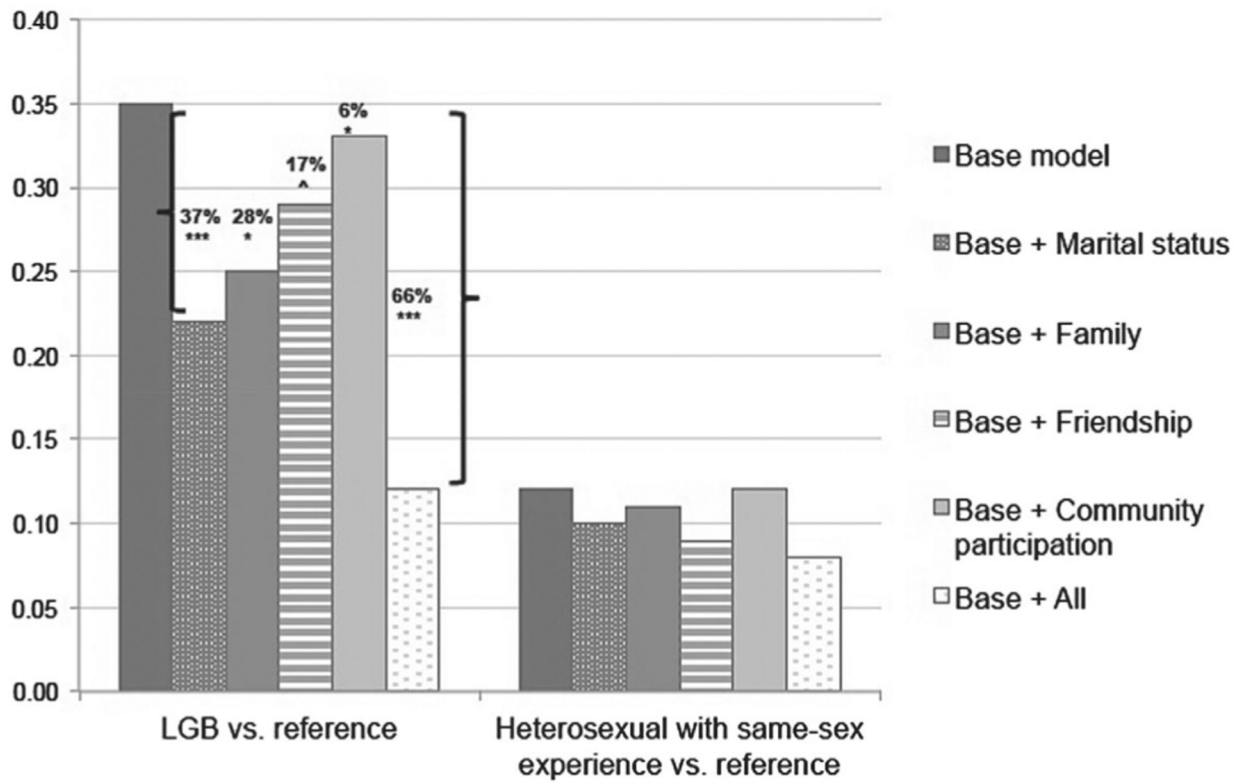


Figure 2. Proportion of Loneliness Gap between Sexual Orientation Groups Attributable to Social Relationships.
 Note: ^ $p < .10$. * $p < .05$, ** $p < .01$. *** $p < .001$. Reference group is heterosexuals with no same-sex experience.

Table 1.

Descriptive Statistics by Sexual Orientation, N = 3,567

	(1) LGB n = 81		(2) Heterosexual with same-sex experience n = 273		(3) Heterosexual with no same-sex experience n = 3,213	
	Mean/%	SD	Mean/%	SD	Mean/%	SD
Sociodemographics						
Age (range: 50–97) ^b	65	(10.33)	69	(11.39)	67	(10.42)
Gender (% female)	45		51		55	
Education (%)^d						
Less than high school	4		11		9	
High school or equivalent	14		24		23	
Some college/associate degree	36		32		37	
Bachelor's degree or more	46		33		31	
Race/ethnicity (%)^d						
White, non-Hispanic	67		79		82	
Black, non-Hispanic	11		9		9	
Hispanic	10		6		5	
Other	12		6		3	
Loneliness (range: -1.2–2.3) ^d	0.31	(0.95)	0.08	(0.94)	-0.02	(0.98)
Social relationships						
Marital status (%)^d						
Married/cohabiting	44		67		71	
Divorced/separated/widowed	30		28		25	
Never married	26		5		3	
Partner support (range: -5.14–1.12)	0.06	(0.81)	0.01	(1.00)	0.04	(0.99)
Partner strain (range: -1.97–2.84)	-0.03	(0.92)	0.05	(0.93)	-0.01	(0.98)
Number of close family (%)^d						
0	11		4		3	
1	12		5		9	

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	(1) LGB <i>n</i> = 81		(2) Heterosexual with same-sex experience <i>n</i> = 273		(3) Heterosexual with no same-sex experience <i>n</i> = 3,213	
	Mean/%	SD	Mean/%	SD	Mean/%	SD
2-3	44		40		38	
4-9	22		40		38	
10+	10		11		12	
Family support (range: -3.61-1.37) ^a	-0.43	(1.34)	-0.01	(1.10)	0.04	(1.08)
Family strain (range: -2.06 -- -3.13)	0.09	(1.08)	-0.06	(0.90)	-0.01	(1.06)
Number of friends (%)						
0	2		3		1	
1	2		2		2	
2-3	28		24		23	
4-9	44		42		39	
10+	24		29		35	
Friend support (range: -2.79-1.52)	0.25	(0.93)	0.04	(1.08)	0.05	(1.05)
Friend strain (range: -1.69-3.66) ^a	0.32	(0.71)	0.01	(0.89)	-0.04	(1.05)
Community participation (range: -1.16-1.82) ^a	-0.24	(1.06)	0.05	(0.99)	0.03	(1.05)
Positive neighborhood quality (range: -2.70-2.47)	-0.09	(1.29)	-0.05	(0.94)	0.03	(1.10)
Negative neighborhood quality (range: -1.84-3.33)	-0.03	(1.00)	-0.04	(0.91)	-0.14	(1.05)

^aDifference between (1) and (3) is at the *p* < .05 significance level.

^bDifference between (2) and (3) is at the *p* < .05 significance level. Partner support and strain are observed only for married/cohabiting individuals (*n* = 2,500).

Table 2.

Summary of Adjusted Differences in Social Relationships by Sexual Orientation (Reference: Heterosexual with No Same-Sex Experience), N = 3,567

Dependent variables	LGB vs. reference	Heterosexual with same-sex experience vs. reference
Loneliness (coefficient)	0.35 ** (0.11)	0.12 * (0.06)
Marital status (relative risk ratio)		
Married/cohabiting (base category)	—	—
Divorced/separated/widowed	2.58 ** (0.85)	1.12 (0.18)
Never married	13.29 *** (4.56)	1.86 (0.59)
Partner support (coefficient)	0.01 (0.13)	-0.04 (0.08)
Partner strain (coefficient)	-0.08 (0.15)	0.06 (0.07)
Number of close family (odds ratio)	0.51 * (0.14)	1.01 (0.13)
Family support (coefficient)	-0.45 ** (0.15)	-0.03 (0.07)
Family strain (coefficient)	0.05 (0.12)	-0.00 (0.05)
Number of friends (odds ratio)	0.76 (0.17)	0.79 (0.10)
Friend support (coefficient)	0.24 * (0.10)	0.04 (0.06)
Friend strain (coefficient)	0.28 *** (0.08)	0.07 (0.05)
Community participation (coefficient)	-0.33 ** (0.12)	0.02 (0.06)
Positive neighborhood quality (coefficient)	-0.11 (0.14)	-0.09 (0.06)
Negative neighborhood quality (coefficient)	0.16 (0.10)	0.08 (0.05)

Note: Each dependent variable represents a stand-alone regression model. Differences by sexual orientation are all adjusted for age, gender, education, and race/ethnicity. Partner support and strain are observed only for married/cohabiting individuals ($n = 2,500$).

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3.

OLS Regression of Loneliness on Social Relationship Variables, N = 3,567

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Sexual orientation (ref: heterosexual with no same-sex experience)						
LGB	0.35** (0.11)	0.22* (0.11)	0.25** (0.11)	0.29** (0.10)	0.33** (0.11)	0.12 (0.10)
Heterosexual with same-sex experience						
	0.12* (0.06)	0.10 (0.06)	0.11* (0.06)	0.09 (0.05)	0.12* (0.06)	0.08 (0.05)
Age						
	-0.01** (0.00)	-0.01*** (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00* (0.00)	-0.00 (0.00)
Female						
	0.13*** (0.03)	0.06 (0.03)	0.18*** (0.03)	0.22*** (0.03)	0.15*** (0.03)	0.15*** (0.03)
Education (ref: less than high school)						
High school or equivalent	-0.04 (0.07)	-0.03 (0.07)	-0.05 (0.06)	-0.03 (0.07)	-0.02 (0.07)	-0.04 (0.06)
Some college/associate degree	-0.02 (0.06)	-0.00 (0.06)	-0.02 (0.06)	-0.01 (0.06)	0.02 (0.06)	0.02 (0.06)
Bachelor's degree and more	-0.08 (0.07)	-0.04 (0.06)	-0.06 (0.06)	-0.03 (0.06)	-0.02 (0.07)	0.02 (0.06)
Race/ethnicity (ref: white)						
Black	0.09 (0.05)	0.02 (0.05)	0.01 (0.05)	-0.03 (0.05)	0.11* (0.05)	-0.11* (0.05)
Hispanic	-0.05 (0.07)	-0.06 (0.06)	-0.11 (0.06)	-0.19** (0.06)	-0.06 (0.07)	-0.18** (0.06)
Other	-0.09 (0.08)	-0.08 (0.08)	-0.16* (0.08)	-0.21** (0.08)	-0.09 (0.08)	-0.20** (0.08)
Marital status (ref: married/cohabiting)						
Divorced/separated/widowed		0.43*** (0.04)				0.42*** (0.04)
Never married		0.41*** (0.04)				0.36*** (0.04)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Number of close family (ref: 0)		(0.08)				(0.08)
1			0.14 (0.12)			0.12 (0.11)
2-3			0.16 (0.11)			0.16 (0.10)
4-9			0.08 (0.11)			0.13 (0.10)
10+			0.05 (0.11)			0.15 (0.11)
Family support			-0.19*** (0.02)			-0.16*** (0.02)
Family strain			0.27*** (0.02)			0.22*** (0.02)
Number of friends (ref: 0)						
1				-0.09 (0.16)		-0.09 (0.15)
2-3				-0.18 (0.13)		-0.17 (0.13)
4-9				-0.22 (0.13)		-0.18 (0.13)
10+				-0.38*** (0.13)		-0.29* (0.13)
Friend support				-0.13*** (0.02)		-0.07** (0.02)
Friend strain				0.26*** (0.02)		0.14*** (0.02)
Community participation						
Constant	0.24	0.35**	0.59**	-0.21	-0.08***	-0.02 (0.02)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	(0.13)	(0.13)	(0.19)	(0.12)	(0.13)	(0.19)

Note: Partnership quality and neighborhood quality are not included in the table because additional analysis suggested that they provided little explanation for the observed loneliness gap.

* $p < .05$.

** $p < .01$.

*** $p < .001$.