Differential Effects of Family and Friend Support in Sexual Minority Aging Adults: Analysis of MIDUS 3

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ABSTRACT

Background: Sexual minority aging adults often face heightened levels of stress, social discrimination, and social isolation, which place them at a greater risk of experiencing adverse mental health outcomes compared to their heterosexual counterparts. Although the role of social support is promoting physical and mental health is well-documented, there is little understanding of its impact on psychological well-being of sexual minority aging adults.

Study objective: This study aimed to investigate the relationship between discrimination, social support, and psychological outcomes (life satisfaction, self-esteem, and social well-being) among sexual minority aging adults compared to their heterosexual counterparts, followed by an examination on the effects of family and friend support on psychological outcomes between sexual minority and heterosexual aging adults.

Methods: This secondary data analysis study used data from the 2013-2014 Midlife Development in the United States (MIDUS 3) study. We conducted adjusted, multiple linear regressions to examine life satisfaction/self-esteem/social well-being in relation to perceived discrimination, family support, friend support, and two-way interactions using backward stepwise regression.

Results: Of the 2,596 U.S. participants (Mean[age]=64.19; SD=11.0), 3% identified as sexual minorities and 9.7 % were racial/ethnic minorities. Sexual minority participants were more likely to perceive discrimination and less likely to have family support compared to their heterosexual counterparts. Regarding to adjusted linear regression models, heterosexual participants with greater family support had greater psychological wellbeing compared to their sexual minority counterparts with greater family support. However, sexual minority participants with greater friend support experienced a steeper increase in psychological outcomes based on life satisfaction, self-esteem, and social well-being compared to heterosexual participants with greater friend support.

Contribution to Evidence-Based Care: The findings highlight the disparities faced by sexual minority aging adults experience, including higher levels of perceived discrimination and lower levels of family support compared to their heterosexual peers. The findings emphasize the importance of considering the differential effects of family and friend support on both physical and psychological well-being among this population. Future research and social programs should address these disparities and develop interventions that target the specific support needs of sexual minority aging adults.

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What do we already know about this topic?

Sexual minority aging populations experienced discrimination and victimization historically and currently which led to adverse physical and psychological well-being. Social support was known to have a moderating effect on stress and well-being and had the potential to alleviate adverse health outcomes. However, little is known about the effects of different social support on psychological well-being among sexual minority aging adults.

What is the main contribution to Evidence-Based Practice from this article?

The findings revealed that sexual minority aging adults experienced disproportionately more lifetime discrimination and lower family support compared to their heterosexual peers. Our findings confirm that different types of social support are associated with different psychological and social functioning among aging adults by sexual orientation.

What are the article's implications towards theory, practice, or policy?

Our findings provide important information for clinical social workers to develop interventions that strengthen different support (information, family, friends, and services, etc.) of sexual minority aging populations and their well-being.

Author' Contribution Statement:

HX and BC conceptualized, designed the study, and conducted the analyses. CS, SK, BC, and HX drafted the original manuscript. CS provided critical revisions. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

INTRODUCTION

Previous studies found that sexual minority individuals who perceived discrimination were at an increased risk of mental health morbidities (Evans-Polce et al., 2020; Mays & Cochran, 2001; Meyer, 2003; Mustanski, Garofalo, & Emerson, 2010; King & Richardson, 2016). These disparities could be worse in sexual minority aging populations due to deteriorating social and physical environments (family and friend support systems), financial hardships, irreversible age-related physiological and psychological changes, and historical oppression (Flatt et al., 2022; Masini & Barrett, 2008; Fredriksen-Goldsen et al., 2013; Fredriksen-Goldsen & Muraco, 2010; Wallace et al., 2011). Lifetime discrimination due to sexual identities (whether kept private or made public) compounded with age discrimination jeopardizes the quality of life and overall well-being of sexual minority aging adults. Many studies revealed that sexual minorities who experienced discrimination and victimization historically and currently (negative responses to the AIDS epidemic, homosexuality being classified as a mental health condition based on chosen deviant behavior, conversion therapy, etc.) might develop tremendous social stress and internalized homophobia (Dean, Wu, & Martin, 1992; Harper & Schneider, 2003; Flatt et al., 2022; Fredriksen-Goldsen et al., 2014; King & Richardson, 2016). Meanwhile, adverse life experiences greatly influenced their decision to come out, with whom they shared their sexual identities, and their likelihood to seek support or health care services (Addis et al., 2009; Choi & Meyer, 2016; Jackson, Johnson, & Roberts, 2008; Savage & Barringer, 2021).

Social support has been widely recognized for its moderating effect on stress and well-being (Cohen & Wills, 1985; Alloway & Bebbington, 1987; McDonald, 2018) and its potential to alleviate adverse health outcomes (Choi & Wodarski, 1996; Kittle et al., 2022; McDonald, 2018; Mereish, & Poteat, 2015). As we age, the amount and types of social support are received tend to decline due to a loss of social roles (e.g., employee and parent-based relationships), changes in the composition of support networks (e.g., death of a spouse or friends), and limitations in functional abilities that restrict social interactions (Adams & Blieszner, 1995; Fredriksen-Goldsen & Muraco, 2010). However, sexual minority aging adults may experience these social "losses" differently and more profoundly than their heterosexual counterparts.

Reseearch by Hays, Fortunato, & Minichiello (1997) found that sexual minorities aging adults feared losing their families or breaking family bonds due to their sexuality, leading them to seek support from chosen families or individuals who accepted their sexuality. This phenomenon was particularly

pronounced among those who also identified as racial/ethnic minorities (Woody, 2017) or lived in rural areas (King & Dabelko-Schoeny, 2009). As a result, their social networks often consisted of friends and peers in their "family of choice" rather than biological family members (Choi & Meyer, 2016; King & Richardson, 2016). This anecdotal evidence was supported by studies conducted by Shippy, Cantor, & Brennan (2004) and Masini & Barrett (2008), which found that social networks of gay men aged 50 and older mainly comprised partners and friends. Moreover, sexual minority aging adults who received support from friends, as opposed to family members, reported better mental health outcomes, including lower levels of depression, anxiety, and internalized homophobia, and higher quality of life. Overall, research has indicated that greater access to certain types of social resources, social support, and larger social networks can lead to improved mental health outcomes from various perspectives (Flatt et al., 2022; Kittle et al., 2022). However, a quantitative study involving 316 midlife and older gay men (Mean[age] =57.78) showed that perceived discrimination significantly affected mental distress regardless of theoretical and protective factors in the forms of resilience and social support at both personal or community levels (King and Richardson, 2016). Nevertheless, we have limited information on how social support functions when individuals face long-term or short discrimination. Considering these factors, it was evidence that exploring the types of social support available to sexual minority aging adults was crucial. The literature emphasized the need to address the potential lack of positive familial and friend support networks in this population and underscored the significance of examining alternative sources of support and understanding their impact on mental health outcomes.

Additionally, aging adults who experienced a loss or decrease in the quality of their networks often turned to religion and spirituality, which was another positive indicator of better mental health outcomes (Halkitis, et al., 2009; Porter, Ronneberg, & Witten, 2013). However, due to historical religious dogma and heteronormative beliefs, oftentimes, sexual minority aging adults were not accepted in religious communities (Coyle & Rafalin, 2001; Jaspal & Cinnirella, 2010; Halkitis, et al., 2009). Therefore, it is crucial to examine different types of social support (such as spirituality) that may benefit this population.

Theoretical framework

The Minority Stress Model (Meyer, 2003) stated that people who had different stigmatized minority identities/positions (e.g., race/ethnicity, sexual orientation, gender identity) consistently experienced high levels of stress, which eventually led to adverse physical or mental health outcomes. Meyer (2003; 2015) proposed three processes by which sexual minority individuals were subjected to minority stress. First, they may experience overt or subtle minority-related prejudice and discrimination in terms of structural barriers and interpersonal bias. The second set of processes involved proximal stressors from individuals, whose negative and internalized attitudes were due to distal stressors, resulting in self-re-evaluation in terms of identity, conditions, and social positions within social contexts. For instance, a sexual minority individual who fears experiencing family rejection due to their sexuality might conceal his/her/their sexual identity to gain support or resources. Those internalized attitudes towards their minority identities could increase stress and mental health issues. The third process was the coping and social support processes. Social support buffered the effect of the stressors, so that negative health outcomes could be avoided or reduced (Meyer, 2003; 2015).

Study aims

As populations continue to age, it is imperative to recognize aging-related disparities in various minority communities. Recent advancements in sexual minority health research highlight a growing body of interventions among aging adults; however, the research continues to remain limited. Thus, guided by the Minority Stress Model (Meyer, 2003), the present study aimed to explore the relationship between discrimination, social support, and psychological outcomes (life satisfaction, self-esteem, and social well-being); followed by investigating the effects of family and friend support on psychological outcomes between sexual minority and heterosexual aging adults. Using national data from the third wave (2013-2014) of the Midlife Development in the United States (MIDUS 3). First, we investigated whether the differences in perceived discrimination and social support existed between heterosexual and sexual minority participants. Informed by previous studies (Savage & Barringer, 2021; Wallace, Cochran, Durazo,

& Ford, 2011; Woody, 2017), we hypothesized that sexual minority aging adults perceived greater discrimination and lower social support from family and friends than their heterosexual counterparts. Second, we examined the moderating effect of family or friend support on a series of psychological outcomes by sexual orientation. Gender identity was not included in MIDUS 3.

METHODS

Participants and procedure

We used data from the third wave (2013-2014) of the Midlife Development in the U.S. (MIDUS 3) survey, which was part of a national longitudinal research study to investigate behavioral, psychological, and social factors of health and well-being in U.S. individuals. The total sample of MIDUS 3 consisted of 3294 English-speaking adults, aged 25-74, in the U.S. Recruitment, which was done through a random digit dialing procedure, followed by a telephone interview and a mailed self-report questionnaire. Information on study design, recruitment, and retention could be found elsewhere (University of Wisconsin Survey Center, 2015). Due to the item response rate of sexual orientation, 2,596 participants remained in the analysis.

Measures

Drawing on the minority stress model proposed by (Meyer, 2003) and utilizing the variables available in the MIDUS 3 dataset, our study aimed to investigate the interplay between perceived discrimination, social support, and mental health outcomes. Perceived discrimination was considered as a distal stressor, social support as a potential moderator, and the mental health outcomes of interest were life satisfaction, self-esteem, and social well-being.

OUTCOME VARIABLES

Life satisfaction. Life satisfaction was measured by a 6-item, 11-point Likert scale assessing participants' satisfaction with life overall, career, health, financial well-being, and family relationships with spouse/partner and children (Fleeson, 2004, pp. 252-272; Prenda & Lachman, 2001). A sample item was self-rated satisfaction levels of the current work situation via a scale ranging from 0 (*the worse possible work situation*) to 10 (*the best possible work situation*) (Fleeson, 2004, pp. 252-272). The mean score of each item was aggregated, with higher scores reflecting higher levels of overall life satisfaction. Cronbach's alpha for life satisfaction was 0.70 in this study.

Self-esteem. Self-esteem was measured by a 7-item, 7-point Likert scale examining individuals' attitudes toward themselves (Rosenberg, 1965). Response options ranged from 1 (*strongly agree*) to 7 (*strongly disagree*). Calculated sum scores were used, with higher scores reflecting greater self-esteem. Cronbach's alpha for self-esteem was 0.76 in this study.

Social well-being. Social well-being was measured by a 14-item instrument capturing five domains: meaningfulness of society, social integration, acceptance of others, social contribution, and social actualization (Keyes, 1998). Each domain had three items except for the meaningfulness of society, which consisted of two items: a) The world is too complex for me; and b) I cannot make sense of what's going on in the world. Participants were asked to indicate their agreement on a scale of 1 (*strongly agree*) to 7 (*strongly disagree*). Calculated sum scores were used, and some items were reverse-coded so that higher scores reflected higher standing on each scale. Cronbach's alpha for social well-being was 0.74 in this study.

PREDICTORS

Perceived discrimination. Perceived discrimination was measured by an 11-item scale assessing individuals' lifetime discriminatory experiences (Williams, Yu, & Jackson, 1997). Participants reported how many times they had experienced discrimination due to their age, gender, race, ethnicity, sexual orientation, physical appearance, religion, and other characteristics. The sum scores were used, with higher scores reflecting greater frequencies in perceived discrimination, and the scale had a high internal consistency (Cronbach's alpha = 0.92) in this study.

Social support. Social support included two domains: family support (not including spouse or partner) and friend support (Schuster, Kessler, & Aseltine, 1990). Each domain was measured by a 4-item, 4-point Likert scale, ranging from 1 (*a lot*) to 4 (*not at all*). An item read, "How much do your family/friends really care about you." Items were reverse-coded so that higher scores reflected greater support. The Cronbach's alpha were 0.83 and 0.86 for

family support and friend support in this study, respectively.

COVARIATES

Control variables included age, sex, race, ethnicity, marital status, and household income. Sexual orientation was self-identifed and grouped as the sexual minority (lesbian/gay/bisexual) and heterosexual. Race was regrouped as non-Hispanic Whites (NHW) and racial/ethnic minorities (REM).

Analytical plans

The MIDUS 3 data was accessed via the Inter-University Consortium for Political and Social Research (ICPSR: https://www.icpsr.umich.edu). Descriptive analyses included age, race/ethnicity, sex, sexual orientation, and other psychological measures listed in Table 1. Next, group differences in perceived discrimination, family support, friend support, life satisfaction, self-esteem, and social well-being by sexual orientation were computed using chi-squared tests /Fisher's exact tests for unadjusted models. A similar procedure was used for adjusted models, controlling for age, cohabitation, household income, race, and sex (Table 2).

To determine the differential effects of perceived discrimination and support from family and friends on outcome variables, we conducted multi-variable linear regression models in two steps. In *Step 1* (full models), perceived discrimination, family support, friend support, and two-way interactions between family/friend support and sexual orientation were entered in predicting one outcome variable (life satisfaction, self-esteem, or social well-being). Based on the backward elimination, in *Step 2* (Selected models), only the main effect and interaction terms that acted between perceived discrimination and family/family support with a p-value at alpha level 0.05 remained in the model. Analyses were adjusted for age, sex, race/ethnicity, marital status, and household income. Regression coefficients (β) and 95% confidence intervals (95%CI) were reported for all main effects and interactions in Table 3. We used unweighted data in this study; and the analysis was performed using IBM SAS 9.4 and SPSS 28.0.

RESULTS

Of the 2,596 participants (Mean [age]=64.19; SD=11.0), 3% were sexual minorities and 9.7 % identified racial/ethnic minorities. More than 45.6% identified as male. Approximately 68.0% of participants were married, and 32.9% reported having an annual income of $100,000 and above (Table 1).

Table 2 provides the unadjusted and adjusted models for the composite variables by sexual orientation. In the unadjusted models, sexual minority aging adults reported significantly lower support from family ($p < 0.001$) and friends ($p = 0.05$), lower levels of life satisfaction ($p < 0.010$) and self-esteem ($p = 0.020$), and greater perceived discrimination ($p < 0.001$) compared to their heterosexual counterparts. There was no difference in social well-being by sexual orientation ($p = 0.66$).

In the adjusted models, sexual minority aging adults still reported perceived greater discrimination ($\beta = 0.46$; $p = 0.01$) and received less levels of family support ($\beta = -0.17$; $p = 0.02$) compared to their heterosexual counterparts. No group differences in friend support, life satisfaction, self-esteem, and social well-being were found between sexual minority and heterosexual aging adults.

Table 3 presents the analyses of the final models (Step 2) of psychological outcomes in relation to perceived discrimination and support from family and friends. For the adjusted linear regression model of life satisfaction ($F_{(12,2316)} = 76.90$, $p < 0.001$; adjusted $R^2 = 0.28$), perceived discrimination was inversely associated with life satisfaction ($\beta = -0.14$; $p < 0.001$), and the interaction between family support and sexual orientation was significantly associated with life satisfaction ($\beta = -0.42$; $p = 0.042$); specifically, life satisfaction increased at a less steep rate for sexual minority aging adults with increasing family support compared to their heterosexual peers. Another interaction between friend support and sexual orientation ($\beta = 0.77$; $p < 0.001$) on life satisfaction was significant, indicating that life satisfaction increased at a steeper rate for sexual minority aging adults with increasing friend support compared to their heterosexual peers (Figure 1).

In predicting self-esteem ($F_{(12,2309)} = 34.67$, $p < 0.001$; adjusted $R^2 = 0.15$), perceived discrimination was a significant factor ($\beta = -0.30$; $p = 0.007$). Also, there was an significant interaction between family support and sexual orientation; specifically, self-esteem increased at a less steep rate for sexual minority aging adults with increasing family support compared to their

heterosexual peers (β = -3,88; p = 0.003). Meanwhile, there was an interaction between friend support and sexual orientation; self-esteem increased at a steeper rate for sexual minority aging adults with increasing friend support compared to their heterosexual peers (β = 3.72; p =0.001; Figure 2).

In predicting social well-being ($F_{(12,2296)}$ = 49.92, p < 0.001; adjusted R^2 = 0.20), perceived discrimination was a significant factor (β = -0.36; p = 0.006). There was an interaction between family support and sexual orientation; specifically, social well-being increased at a less steep rate for sexual minority aging adults with increasing family support compared to their heterosexual peers (β = -7.23; p < 0.001). Meanwhile, there was an interaction between friend support and sexual orientation; social well-being increased at a steeper rate for sexual minority aging adults with increasing friend support compared to their heterosexual peers (β = 6.33; p =0.004; Figure 2).

DISCUSSION

The findings of the present study expand our knowledge of social support and types of social support concerning psychological wellbeing in sexual minority aging adults. The results showed that sexual minority aging adults perceived significantly higher levels of discrimination than their heterosexual peers before and after adjusting for covariates. This discrepancy may be due to the long-term social stigma surrounding sexual minorities reinforced by the heterocentric society (Frost, Hammack, Wilson, Russell, Lightfoot, & Meyer, 2020, Meyer, 2003). Based on the Minority Stress Model (Meyer, 2003), discriminatory experiences related to minority identity increase individuals' likelihood of developing adverse mental health outcomes. Some gerontological studies by Fredriksen-Goldsen et al. (2013) and Kim, Jen, & Fredriksen-Goldsen (2017) provide evidence to support this theoretical approach. Understanding the effects of discriminatory experiences on psychological wellbeing among sexual minority aging individuals is critical. Additionally, the present study provides preliminary findings indicating the presence of poorer family support among sexual minority aging adults compared to their heterosexual counterparts. Additionally, differences in perceived friend support were also found between these two groups, which is consistent with the idea that people choose their friends based on acceptance, shared values, and interests, whereas there may be greater variation in family support due to sexual orientation (Grossman, D'Augelli, & Hershberger, 2000; Hughes, 2016; Hsieh & Wong, 2020). To our knowledge, there are few studies investigating different types of social support and their influence on mental health outcomes by sexual orientation in the aging population in the U.S.

Additionally, the results partially support our hypothesis that sexual minority aging adults may experience lower levels of family support compared to their heterosexual counterparts, while friend support was only marginally lower among sexual minority aging adults in unadjusted models. This could be attributed to discriminatory experiences related to sexual orientation or other minority identities, which may influence individuals' choices in building their support system (e.g., whom they connect with and seek support from). This evidence is supported by Hsieh and Wong (2020), who found that although sexual minority aging adults had significantly less support from partner and family compared to their heterosexual peers, their friend support compensated for the lack of partner or family support, forming the core of their social networks. Similarly, Grossman, D'Augelli, & Hershberger (2000) found that sexual minority aging adults received emotional support from their partners, siblings, and other relatives while socialized support was received from close friends and social acquaintances who were aware of their sexual orientation. Another quantitative study conducted by Jacobs, Rasmussen, and Hohman (1999) reported that sexual minority aging adults perceived services within the LGBT community to be better equipped to meet their needs in times of crisis. This suggests that community-based resources tailored to the needs of this population play a significant role in supporting their well-being.

In our moderation analyses, heterosexual participants with greater family support had greater psychological wellbeing compared to their sexual minority counterparts with greater family support. However, sexual minority participants with greater friend support experienced a steeper increase in psychological outcomes based on life satisfaction, self-esteem, and social well-being compared to heterosexual participants with greater friend support. Greater support from friends among sexual minority aging adults predicted greater quality of life regarding these psychological outcomes. Previous studies

addressed the significant effect of social support on health outcomes among this population (Flatt et al., 2022; Masini & Barrett, 2008; Fredriksen-Goldsen & Muraco, 2010; Wallace, Cochran, Durazo, Ford, 2011; Dorfman et al., 1995; Grossman et al., 2000), yet this study is one of few studies that illustrates the different effects of family and friend support on psychological and social well-being.

Limitation

While our findings provide information on differential effects of social supports on sexual minority aging adults, the results need to be interpreted within the context of the limitations of the study. First, the small sample size of sexual minority individuals may introduce a Type II error and limit the generalizability of our results. However, the representation of sexual minority participants (three percent) in our study aligns with the estimated LGBT population in 2012 (Gates, 2017). Additionally, the homogeneity of our sample, influenced by both response and non-response bias (participants' willingness to disclose sexual orientation during the interview versus participants' failure to participate in the survey), may confound the results and potentially over- or under-estimate the prevalence of psychological symptoms and mental health disorders (Cochran & Mays, 2000; Fredriksen-Goldsen & Muraco, 2010; Grossman et al., 2000). To assess potential non-response bias, we examined the sexual orientation of non-responders by analyzing the sex of their current partner. We found that most non-responders had an opposite-sex partner. Although we could not determine the reason for non-response, previous research, such as the General Social Survey (GSS, a sociological survey initiated by the National Opinion Research Center at the University of Chicago in 1972), has indicated that non-response to questions concerning sexual orientation is associated with low general cooperativeness, rather than specific attitudes towards sexuality (Mays & Cochran, 2001; Smith, 1992). However, a larger sample of sexual minority participants would enhance the reliability and statistical power of the findings. Furthermore, it is crucial to explore unique factors contributing to health disparities among different sexual minority groups. A recent study has indicated that aging bisexual-plus individuals (aged 50 or above) may experience poorer mental health (Lam & Campbell, 2023). Therefore, future data collection efforts should address the lack of sexual minority data or the absence of disaggregated data for various sexual minority subgroups (Flatt et al., 2022). Last but not the least, we excluded marital, religious, and spiritual support from our analyses due to low response rates and limited sample size. However, it is important to acknowledge the potential influence of these factors on social support and consider their implications in future research.

Practical Implications

Overall, this study confirms that different types of social support are associated with different psychological and social functioning among aging adults. While any type of social support –whether it is from family or friends- is associated with greater social and psychological well-being, our study highlights the importance of friend support on sexual minority aging adults. Differential effects of family support and friend support provide important clinical implications for social workers. To provide inclusive services for sexual minority aging adults, social workers are encouraged to examine various functions of social support in coping with perceived discrimination among older adults, and to communicate this information with the larger community and healthcare systems that they work in. For instance, Fredriksen-Goldsen and colleagues (2014) provided 10 core competencies to better serve sexual minority aging adults. Our results complement these competencies by encouraging social workers to be more nuanced in their conceptualization of "social support" when working with clients.

By acknowledging the multiple minoritized status and addressing their needs in a culturally sensitive way, social workers, health care providers, and care agencies can assist sexual minority aging adults to receive LGB-friendly and older-adult-friendly support and resources. That is, to ensure the visibility of sexual minority aging adults, their providers should incorporate culturally sensitive training in order to build a service that is inclusive of all individuals. In addition, we recommend that clinical social workers develop interventions that are designed to strengthen an aging, sexual minority adult's friend support. These programs that articulate different functions and types of social support are often overlooked for various reasons, including funding avenues, community priorities, and logistical barriers. Such programs can assist in certain health problems that are otherwise

often unaddressed such as sexually transmitted diseases (STDs).

CONCLUSION

In summary, sexual minority aging adults experience greater discrimination than their heterosexual peers, leading to mental health disparities, which is consistent with Meyer's Minority Stress theory (2003). The present study provides timely information on the importance of friend support on well-being of sexual minority aging adults. While the field has long valued the role of friendship in aging population, this study highlights the need for additional research that will not only increase our understanding of the role of friends in the care of aging sexual minorities, but also enable the development of programs designed to support friends, who are caregivers to this specific population. Additionally, our results support the need for more research to address mental health disparities and social support among sexual minority aging adults, including the following areas: knowledge about the historical, social, and cultural factors that have long-term impacts on mental distress among aging adults; distinguishing similarities and differences within the subgroups of sexual minority aging adults (King & Richardson, 2017); and developing and engaging in cultural competency training and programs for sexual minority aging populations and their families.

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Conflict of interest

The authors have no conflicts of interest or disclosure

s to report.

Table 1. Demographic statistics for aging adults in MIDUS 3 (n=2596)

Variables	Mean (SD); Range	N (%)
Sexual orientation *age		
Heterosexual	64.2 (11.0)	2519 (97.0)
Sexual minority	61.8 (11.0)	77 (3.0)
Race		
White		2328 (90.3)
Non-White		250 (9.7)
Cohabitation		
Married		1765 (68.0)
Separated/Divorced/Widowed		648 (25.0)
Never married		181 (7.0)
Sex		
Male		1183 (45.6)
Female		1413 (54.4)
Household income		
$0-$9,999		194 (8.0)
$10,000-$19,999		139 (5.6)
$20,000-$34,999		263 (10.7)
$35,000-$54,999		392 (16.1)
$55,000-$74,999		310 (12.6)
$75,000-$99,999		345 (14.1)
$100,000 and above		803 (32.9)
Lifetime perceived discrimination	0.9 (1.4); 0-11	
Family support	3.5 (0.6); 1-4	
Friend support	3.3 (0.6); 1-4	
Life satisfaction	7.6 (1.3); 1.0-10	
Self-esteem	37.8 (7.1); 12-49	
Social well-being	65.2 (12.8); 18-98	

Table 2. Between-group of perceived discrimination, support, and mental health disparities on sexual orientation ((N=2596)

Variable	Unadjusted model			Adjusted model		
	Mean (*SE*)		*t*	Mean (*SE*)		*t*
Perceived discrimination						
Heterosexual	.84	(0.03)	3.35***	1.09	(0.06)	2.50**
Sexual minority	1.41	(0.22)		1.56	(0.18)	
Family support						
Heterosexual	3.52	(0.01)	-4.51***	3.45	(0.02)	-2.35*
Sexual minority	3.22	(0.09)		3.28	(0.07)	
Friend support						
Heterosexual	3.31	(0.01)	-1.96*	3.31	(0.03)	-0.79
Sexual minority	3.16	(0.09)		3.24	(0.07)	
Life satisfaction						
Heterosexual	7.62	(0.03)	-4.27***	7.45	(0.05)	-1.07
Sexual minority	6.98	(0.19)		7.28	(0.15)	
Self-esteem						
Heterosexual	37.91	(0.14)	-2.36*	37.77	(0.29)	-0.49
Sexual minority	35.99	(0.88)		37.34	(0.85)	
Social well-being						
Heterosexual	65.19	(0.26)	0.44	66.34	(0.52)	1.58
Sexual minority	65.85	(1.57)		68.86	(1.55)	

Notes:

* $p \leqslant .05$. ** $p \leqslant .01$. *** $p \leqslant .001$.

Adjusted model: controlling for age, cohabitation, household income, race, and sex.

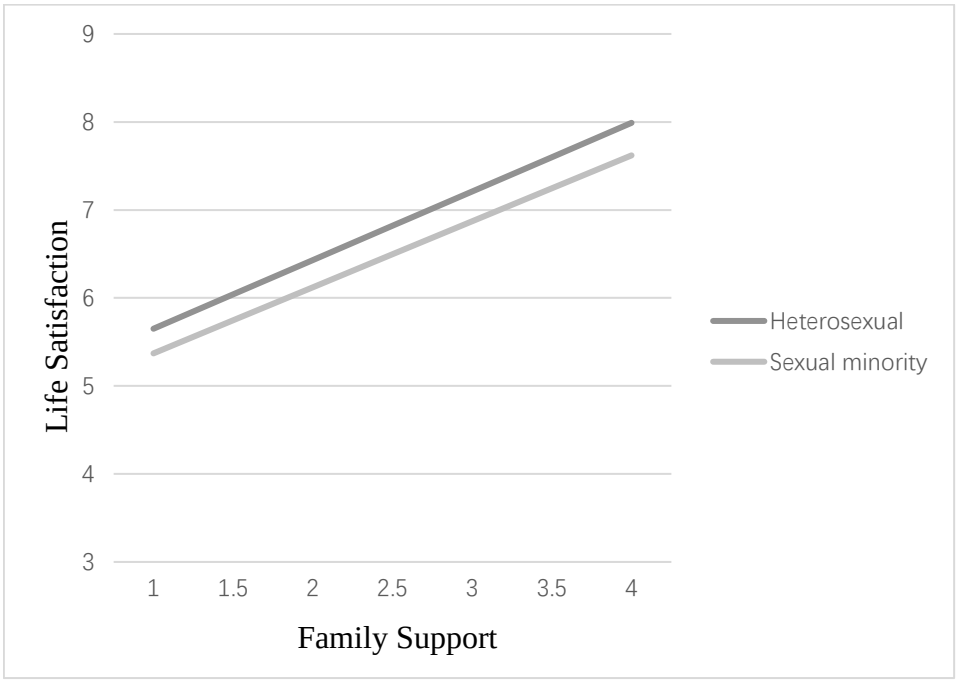
Table 3. Final models of perceived discrimination, support, and mental health outcomes

	Outcome Variables					
	Life Satisfaction		Self-Esteem		Social Well-Being	
Demographics	*β / OR*	95 CI%	*β / OR*	95 CI%	*β / OR*	95 CI%
Male [a]	-0.056	-0.15, -0.04	-1.20***	-1.76, -0.63	-0.44	-1.43, 0.55
Non-Hispanic Whites [a]	-0.07	-0.22, .009	-0.99*	-1.89, -0.08	-2.6***	-4.17, -1.00
Age	0.03***	0.02, 0.03	0.06***	0.03, 0.08	0.04	-0.01, 0.08
Household income	0.09***	0.08, 0.11	0.28***	0.19, 0.37	0.76***	0.60, 0.91
Sexual minorities [a]	-1.111	-2.48, 0.26	0.67	-7.48, 8.82	6.56	-7.79, 20.90
Married [a]	0.37***	0.18, 0.56	1.39*	0.25, 2.52	-1.24	-3.23, 0.75
Separated [a]	0.17	-0.03, 0.37	1.39*	0.20, 2.59	-0.78	-2.89, 1.32
Perceived discrimination	-0.14***	-0.17, -0.11	-0.30**	-0.49, -0.11	-0.36**	-0.69, -0.02
Family support	0.50***	0.41, 0.59	2.67***	2.14, 3.20	4.26***	3.34, 5.19
Friend support	0.29***	0.21, 0.37	1.65***	1.17, 2.13	5.26***	4.42, 6.09
Two-way interactions						
Sexual orientation *Family support	-0.42*	-0.83, -0.02	-3.88**	-6.28, -1.49	-7.23***	-11.43, -3.03
Sexual orientation *Friend support	0.77***	0.34, 1.20	3.72**	1.14, 6.30	6.33**	1.79, 10.87
Adjusted R^2 for equation	.28		.15		.20	
Omnibus *F* value	(12,2316) = 76.90***		(12,2309) = 34.67***		(12,2296) = 49.92***	

Notes:

** p value ⩽ .05.* *** p value ⩽ .01.* **** p value ⩽ .001*

[a] Categorical variable. A logistic regression model used odd ratio and 95%CI to predict variance of outcomes



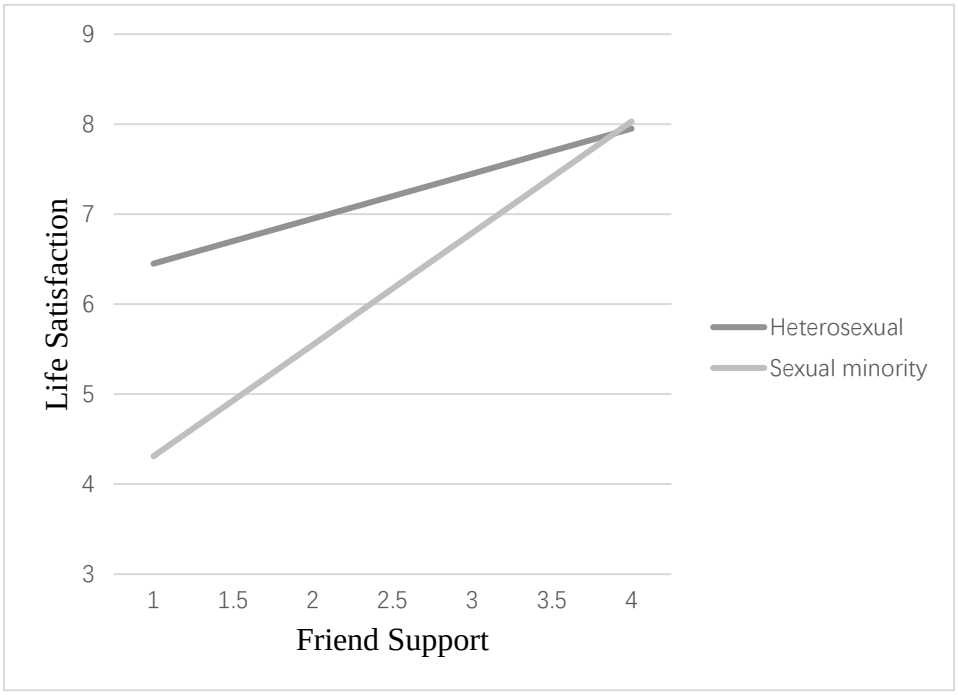
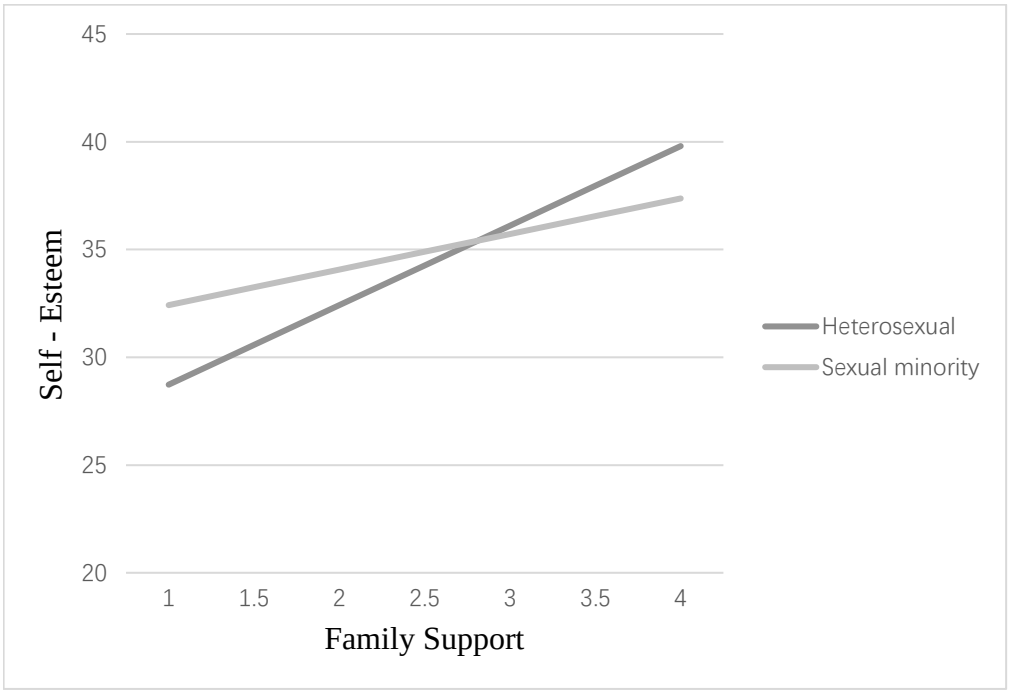


Figure 1. Association of support from family and friends with life satisfaction by sexual orientation



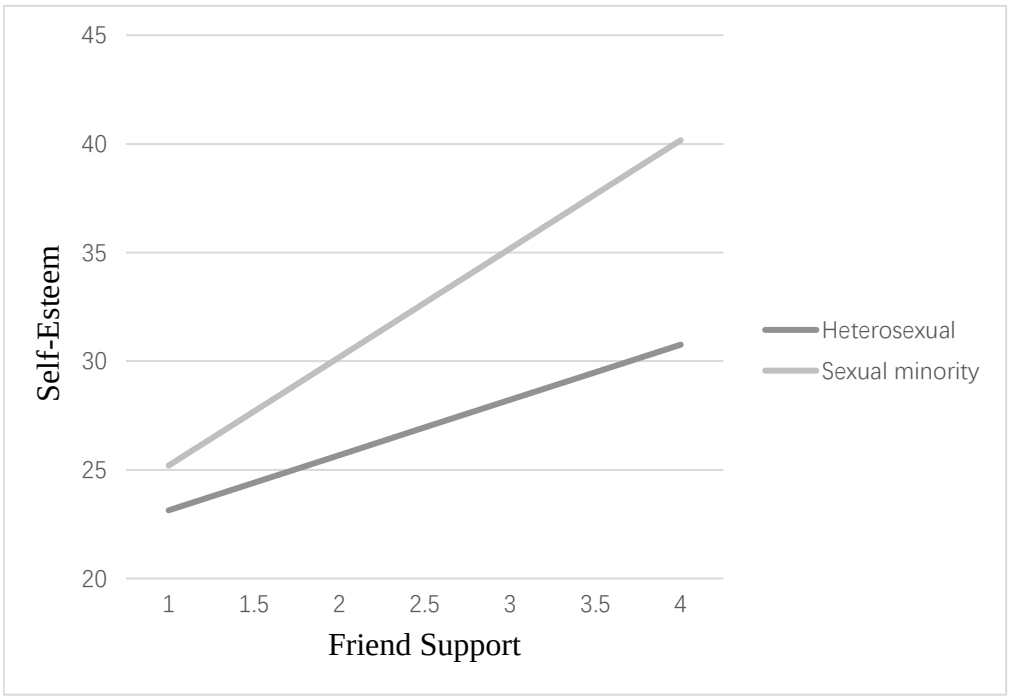
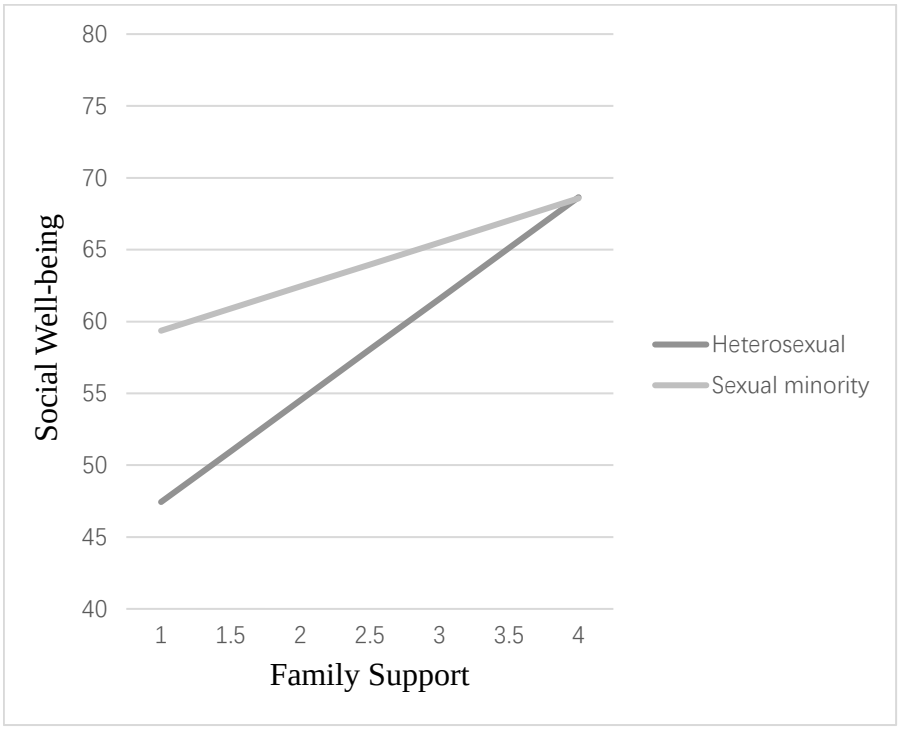


Figure 2. Association of support from family and friends with self-esteem by sexual orientation



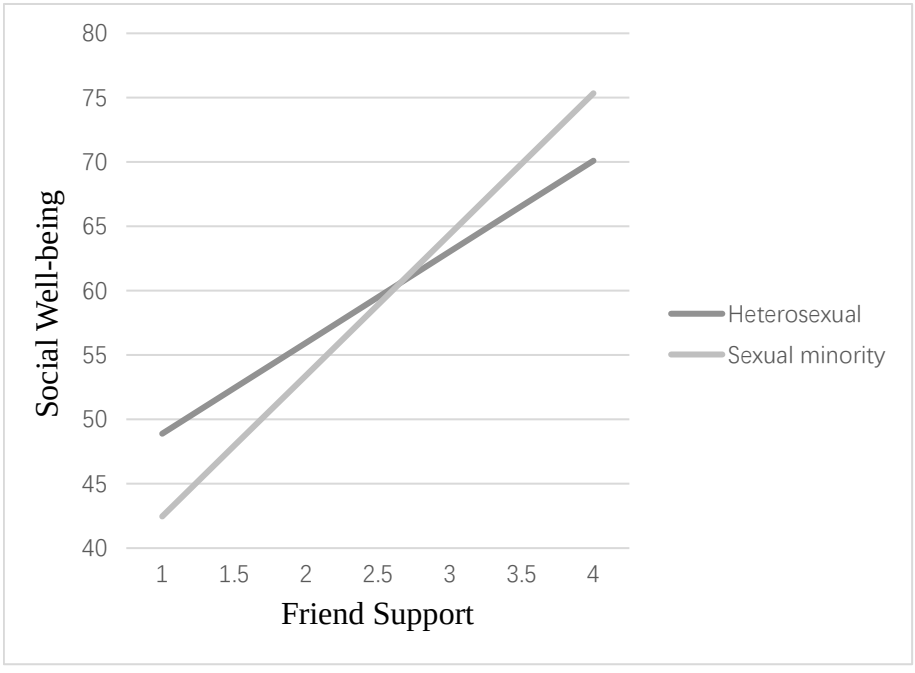


Figure 3. Association of support from family and friends with social well-being by sexual orientation

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