Union Status and Self-Rated Health: Testing Education as a Moderator Using the National Health Interview Survey (1997-2011)

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INTRODUCTION AND BACKGROUND

Socioeconomic status (SES) is a fundamental cause of health disparities (Link and Phelan 1995), but remains underexplored in population studies of same-sex union status and health (Institute of Medicine 2011). Two recent studies report similar, and illustrative, findings on the relationship between union status, SES, and self-rated health. These studies report that when comparing the different-sex marred, same-sex cohabiting, and different-sex cohabiting, different-sex married individuals report better health than other union status groups, while same-sex cohabitors report better health than different-sex cohabitors; socioeconomic status appears to account for the gap between cohabiting groups (Denney, Gorman, and Barrera 2013; Liu, Reczek, and Brown 2013). While these studies take a first step towards highlighting the importance of SES in the relationship between same-sex union status and health, their approach of simply controlling for SES removes variation that reflects the real-world experiences of union status groups that contribute to health disparities (Cherlin 2013). Further, these analyses cannot speak to within-group complexities, such as whether high and low SES affect health differently within union status groups, because they did not test SES by union status interactions. Finally, neither analysis investigated the same-sex married subgroup—a growing group that requires significant research attention. Building upon these limitations and using a cumulative disadvantage and minority stress framework, this study investigates one robust measure of SES, education, as a potential moderator in the relationship between union status and self-rated health to account for potential complexity among union status groups.

Union status affects health across a number of outcomes (e.g. self-rated health, mortality). Overall, different-sex marriage is associated with better health outcomes than different-sex cohabitation (Waite and Gallagher 2010), with same-sex cohabitors reporting higher rates of stress, smoking, HIV diagnosis, asthma, and drug use than different-sex married individuals (Campsmith, Hall, Rhodes, and Green 2010; Conron, Mimiaga, and Landers 2010). In terms of self-rated health, both same-sex and different-sex cohabitors report worse self-rated health than the different-sex married (Denney et al. 2013; Liu et al. 2013). One possible reason for cohabitors' worse health, on average, is lower social acceptance, increased stigma, and reduced access to fewer legal resources relative to the different-sex married (Lau and Strohm 2011; Waite and Gallagher 2000). Selection processes appear to also contribute to the disadvantage of different-sex cohabitors, who have access to marriage but still do not marry (Waite and Gallagher 2000); how selection processes matter for same-sex cohabiters' health is unknown. Further, minority stress theory (Meyer 2003) suggests that sexual minority status produces additional disadvantages for individuals in same-sex unions due to increased stigma and discrimination. Additionally, the stress experienced by same-sex couples and different-sex cohabitors may accumulate with other disadvantaged social statuses to amplify the risk of poor health outcomes (Meyer 2003). Socioeconomic disadvantage through low education is one avenue of investigation to test for this amplification.

SES has long been established as a fundamental determinant of health (Link and Phelan 1995). Education is a key component of SES, and provides a useful starting point for investigating the SES complexities of same-sex cohabitors. It is more likely than other measures to be causally prior to both poor self-rated health (Shavers 2007) and union formation (Ross and Mirowsky 2013). Furthermore, higher education is a very robust predictor of health (Ross and Mirowsky 2010). The process of cumulative disadvantage (Choi and Marks 2013) suggests that low education, along with a lack of institutional resources, may produce elevated negative effects among the cohabiting and same-sex married groups Demographically, education varies by union status, with same-sex cohabitors reporting the highest average education and different-sex cohabitors the lowest (Black, Sanders, and Taylor 2007; Denney et al. 2013; Liu et al. 2013). Because education is a robust predictor of health, and because individuals in same-sex couples report higher education than those in different-sex couples, we hypothesize that, after controlling for education, same-sex cohabitors, same-sex marrieds, and different-sex cohabitors will not differ significantly in their odds of reporting poor health (H1a), but will report worse health than the different-sex married (H1b). Furthermore, accounting for cumulative and minority stress processes (Choi and Marks 2013; Meyer 2003; Meyer, Schwartz, and Frost 2008), we predict a significant interaction of education with union status, such that it will amplify the effect of low education on self-rated health for same-sex married (H2a) and same-sex cohabiting (H2b) couples.

METHOD

We use pooled data from the National Health Interview Survey Sample Adult Core Files (NHIS) from 1997-2011 (Minnesota Population Center 2013). The NHIS is a cross-sectional, nationally representative survey of US households. The total sample size is 518,061. Same-sex couples are identified by finding households where two adults report either married or "unmarried partner" status, and that the partner is the same sex as the householder.

Union status is categorized into four categories: same-sex married, same-sex cohabiting, different-sex married, and different-sex cohabiting. Notably, many in the same-sex married sample report being married before legal marriage was available in 2004. We retain this group for two reasons. First, these individuals may report married status to signify a high level of commitment and symbolic marriage (Reczek, Elliot, and Umberson 2009); in this case their inclusion is still theoretically significant. Second, these individuals may report as same-sex and married because they are gender miscoded heterosexual couples. If this were the case, then their inclusion would only bias any tests comparing them to the different-sex married toward the null. As such, significant effects for that group would be hard to detect. Moreover, because the NHIS is performed in face-to-face interviews the likelihood of such misclassification is diminished.

Our dependent variable, *self-rated health*, is dichotomized into 0 = Excellent/Very Good/Good and 1= Fair/Poor, as per previous studies (Denney et al. 2013; Liu et al. 2013).

Education is divided into four dummy variables: less than high school, high school, some college, and college or above. The interaction term is derived by multiplying the union variables by the education variables.

Other sociodemographic covariates include race (non-Hispanic white, non-Hispanic black, Hispanic white, Hispanic black, and other), gender, age, NHIS survey year, nativity (foreign born or not), and number of children. Other measures of SES are not included as controls because they may mediate the relationship of education and health; this may suppress the relationship if these factors are simply controlled.

Statistical Methods

We use survey weighted binary logistic regression of union status on self-rated health controlling for sociodemographic covariates. In Model 1 we introduce only union status, self-rated health, and sociodemographic covariates. In Model 2 we introduce education for main effects. Model 3 includes all variables and the interaction term to test for effect modification. Effects are tested at $p < 0.05$, and Wald tests are used to detect model significance. The regressions are survey weighted using Stata 12 "svy" commands (StataCorp 2011).

SELECTED RESULTS

Descriptive results are shown in Table 1, which presents the weighted means for self-rated health, education, and sociodemographic variables by union status. Results show that the different-sex cohabiting report worse health than the different-sex married; both the same-sex cohabiting and same-sex married report generally higher rates of education than the different-sex married.

The regression analyses presented in Table 2 gives a preliminary glimpse of hypothesis tests. Model 1 shows the basic relationship of union status and self-rated health controlling for sociodemographic factors but not education. Consistent with prior research, same-sex cohabitors and different-sex cohabitors are more likely to report poor health than the different-sex married, and different-sex cohabitors are more likely to report poor health than same-sex cohabitors. The same-sex married do not differ from any group in their odds of reporting poor health.

Model 2 shows the effect of adding education. In line with our expectations, adding education reduces the difference between the same-sex married, different-sex cohabiting, and same-sex cohabiting (H1a), but the cohabiting groups remain more likely to report poor self-rated health than the different-sex married (H1b). Interestingly, the point estimate for the same-sex cohabiting becomes higher than that of the different-sex cohabiting, but this effect is not significant.

Model 3 shows the additional effect of adding the education interaction. Our hypotheses here were not supported. The addition of an interaction term did not increase the model fit ($F = 1.78$, $p = 0.068$). This suggests that education does not moderate the relationship between union status and self-rated health.

Our analysis suggests that education is a strong factor in the relationship between union status and self-rated health, but that it does not moderate the relationship. Still, based on the point estimates, a same-sex cohabitor with a less than high school education will have a 13.86 odds ratio of reporting poor health compared to a different-sex married respondent with a college or higher education. Comparable different-sex married (8.25) and different-sex cohabiting (12.54) groups reveal wide group disparities between union statuses that are important for documenting the way education affects health among different union statuses. Future analyses are planned to investigate the hypotheses of this study in gender subgroups as well as testing income-based and composite measures of SES to better capture the relationship.

Table 1: Weighted Descriptives for Same-Sex Married, Same-Sex Cohabiting, Different-Sex Married, and Different-Sex Cohabiting (N=518,061)

	Union Status			
	SSM	SSC	DSM	DSC
Health (Percent)				
Good to Excellent	91.6	91.3	91.7	90.0*
Fair to Poor	8.4	8.7	8.3	10.0*
Sex (Percent)				
Female	56.3*	49.6	49.4	50.9*
Male	43.7*	50.4	50.6	49.1*
Race (Percent)				
NH White	72.9	80.5*	75.9	69.5*
NH Black	11.1	8.3	7.6	14.0*
H White	10.3	7.0*	10.6	12.0*
H Black	0.2	0.5	0.2	0.5*
Other	5.6	3.7*	5.6	3.9*
Region (Percent)				
Northeast	30.5	21.0	17.9	18.1
North Central/Midwest	14.8	18.0	24.4	25.7
South	31.2	34.4	36.5	33.4
West	23.5	26.6	21.3	22.8
Nativity (Percent)				
Foreign Born	81.9	91.9*	83.1	87.6*
Native Born	18.1	8.1*	16.9	12.4*
Education (Percent)				
Less than HS	11.6	5.9*	12.4	18.2*
HS/GED	23.7*	21.4*	29.5	35.7*
Some College	22.8	26.5	25.3	27.7*
College/Post-College	41.8*	46.2*	32.8	18.4*
Age (Mean, SD)				
Mean	43.4	39.9*	43.9	34.8*
SD	0.7	0.3	0.0	0.1
Children (Mean, SD)				
Mean	0.8*	0.3*	1.2*	0.8*
SD	0.1	0.0	0.0	0.0
N (Sample)	629	3627	461835	51970

* Differs from Different-Sex Married ($p < 0.05$)

TABLE 2—Weighted Logistic Regression of Self-Rated Health on Union Status and Union Status by Education

	Model 1		Model 2		Model 3	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Union Status (Ref: Different-Sex Married)						
Same-Sex Married	1.08	0.76, 1.54	1.18	0.82, 1.69	1.28	0.64, 2.55
Same-Sex Cohabiting	1.36***	1.17, 1.58	1.68***	1.44, 1.95	1.39*	1.05, 1.83
Different-Sex Cohabiting	1.87***	1.79, 1.96	1.52***	1.46, 1.60	1.43***	1.24, 1.65
Education (Ref: BA or Higher)						
Less than High School			8.25***	7.85, 8.67	8.30***	7.88, 8.75
High School/GED			3.41***	3.27, 3.56	3.37***	3.23, 3.53
Some College/AA			2.60***	2.49, 2.72	2.56***	2.45, 2.68
Union Status x Education						
Same-Sex Married X Less than High School					0.88	0.32, 2.41
Same-Sex Married X High School/GED					0.91	0.35, 2.35
Same-Sex Married X Some College/AA					0.91	0.39, 2.10
Same-Sex Cohabiting X Less than High School					1.44	0.91, 2.27
Same-Sex Cohabiting X High School/GED					1.29	0.89, 1.85
Same-Sex Cohabiting X Some College/AA					1.22	0.84, 1.78
Different-Sex Cohabiting X Less than High School					0.97	0.83, 1.14
Different-Sex Cohabiting X High School/GED					1.11	0.95, 1.31
Different-Sex Cohabiting X Some College/AA					1.15	0.98, 1.35

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Note: Controlling for age (5 year groups) , race (non-Hispanic white, non-Hispanic black, Hispanic white, Hispanic black, other), sex, foreign born, survey year, region (Northeast, North Central/Midwest, Southeast, West)

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