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Changes in Neighborhood Characteristics and Depression Among Sexual Minority Young Adults

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Abstract

Using the National Longitudinal Study of Adolescent Health, this study examined the relationship between changes in neighborhood characteristics during the transition from adolescence to young adulthood and depression among sexual minority young adults. Previous research has found that neighborhood characteristics influence sexual minority mental health and that sexual minorities are more likely to move to more urban and politically liberal locations. No study to date, however, has examined the impact of changes in neighborhood characteristics on sexual minority depression. The results from this study show that decreases in the percent urban was associated with increased risk of depression and decreases in the percent Republican voters in sexual minority's neighborhood was associated with decreases in risk of depression. The results suggest that clinicians may want to screen sexual minority youth for recent changes in their neighborhoods to assess if these changes may be related to the onset or exacerbation of depressive episodes.

Keywords

mental health; social environment; stigma; sexual minority

Multiple studies have documented that sexual minorities (persons whose sexual behaviors, attractions, and/or identity are not exclusively heterosexual) experience poorer mental health functioning compared to heterosexuals, including more depression and depressive symptoms (for a review, see Institute of Medicine, 2011). The minority stress theory (Meyer 1995, 2003) attributes this excess risk of depression to increased exposure to stigma and discrimination associated with a sexual minority status. Both minority stress theory and other theories of stigma (Hatzenbuehler, Keyes, & Hasin, 2009; Hatzenbuehler, Phelan, & Link, 2013; Krieger, 2008; Link & Phelan, 1995) argue that stigma operates at multiple levels, including the neighborhood context, to generate health disparities. Building on these theories, new studies have demonstrated that the contextual factors, measured as state- and neighborhood-level characteristics, can be a source of a minority stress and affect sexual minority mental health (Hatzenbuehler, 2010). Other studies have suggested that sexual minorities seek out less stigmatizing social environments as a way of reducing exposure to stigma to increase social networks (Aldrich, 2004; Cooke & Rapino, 2007). No research to date, however, has used nationally representative, prospective data to test whether changes in neighborhood characteristics are associated with reduced depression among sexual minorities. This study, therefore, builds on existing research by examining the relationship

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between change in neighborhood characteristics between adolescence and young adulthood and sexual minority (defined in this study as persons who report a mostly heterosexual, bisexual, mostly gay, or exclusively gay) depression and depressive symptoms.

Minority Stress and the Neighborhood Context

The minority stress theory posits that occupying a minority status, such as identifying as nonheterosexual, is associated with increased levels of both interpersonal and structural discrimination and stigmatization (Meyer, 1995, 2003). Proximate sources of minority stress, such as interpersonal victimization and discrimination, have been established as having important implications for sexual minority mental health (Katz-Wise & Hyde, 2012). More recently, studies have shown that state and neighborhood contexts also influence sexual minority health (for a review, see Hatzenbuehler, 2010, 2011). For example, studies have shown that in states where same-sex marriage has been banned, higher levels of depressive symptoms among sexual minorities have been documented (Fingerhut, Riggle, & Rostosky, 2011; Hatzenbuehler, McLaughlin, Keyes, & Hasin, 2010; Riggle, Rostosky, & Horne, 2010; Rostosky, Riggle, Horne, Denton, & Huellemier, 2010; Rostosky, Riggle, Horne, & Miller, 2009).

Less research has examine the relationship between neighborhood characteristics and sexual minority mental health, but studies show that there are certain features of neighborhoods that may be connected to mental health (Hatzenbuehler et al., 2010; Hatzenbuehler et al., 2013). For example, rural environments have been identified as being more hostile toward sexual minorities than urban environments (Bell & Valentine, 1995; D'Augelli & Hart, 1987; Kosciw, Greytak, & Diaz, 2009; Poon & Saewyc, 2009).

Sexual minorities who reside in neighborhoods with higher concentrations of people with characteristics related to increased homophobia therefore may be exposed to, at the population level, more homophobic attitudes and micro-aggressions (McCabe, Dragowski, & Robinson, 2013; Nadal et al., 2011; Sarno & Wright, 2013; Woodford, Howell, Kulick, & Silverschanz, 2012), which can affect mental health. Studies examining the correlates of homophobia have documented that as education increases homophobic attitudes decrease (Walch, Orlosky, Sinkkanen, & Stevens, 2010) and that sexual minority youth in neighborhoods with lower adult levels of education may face higher levels of stigma and discrimination (Kosciw et al., 2009). Political party affiliation has also been linked to homophobic attitudes and fear of AIDS: Republican-identified persons are more likely to have homophobic attitudes and fear of AIDS compared to Democrats (Morrison & Morrison, 2003; Oswald & Culton, 2004; Walch et al., 2010).

Changes in Neighborhood Context and Mental Health

The transition from adolescence to young adulthood is important for many reasons, including, for many, moving out of their parent or guardian's household. Studies that have investigated gay migration suggest that sexual minority men and women are more likely to move to urban and politically liberal areas (Aldrich, 2004; Black, Gates, Sanders, & Taylor, 2002; Cooke & Rapino, 2007; Knopp & Brown, 2003; Walther & Poston, 2004; Weston, 1995) and also locations with higher concentrations of gay men and lesbians (Aldrich, 2004; Cooke & Rapino, 2007). These moves have been suggested as a specific strategy for improving sexual minority quality of life by reducing exposure to stigma and discrimination, increasing sexual minority social networks, and improved access to a variety of social resources (Aldrich, 2004; Cooke & Rapino, 2007). Public health campaigns have also embraced this strategy. For example, the message of the extremely popular "It Gets Better" campaign, endorsed as a clinical resource for U.S. mental health service providers (Substance Abuse and Mental Health Services Administration, 2012), in large part hinges on

providing queer youth with hope that if they can tolerate adolescence, in the future, they can change their surroundings and improve their well-being.

The effect of compositional changes in neighborhood characteristics over time on sexual minority depression and depressive symptoms, however, is unknown. This study adds to the existing literature by documenting the relationship between change in several neighborhood-level sociodemographic characteristics correlated with homophobic attitudes (percent college degrees, percent urban, percent voted Republican), the percentage of same-sex couples in respondent neighborhoods, and both depressive symptoms and clinical depression cutoffs. The following hypotheses were tested:

- Hypothesis 1** Decreases in the percent urban in respondent neighborhoods will be associated with increases in depressive symptoms.
- Hypothesis 2** Decreases in the percentage of Republican voters in respondent neighborhoods will be associated with decreases in depressive symptoms.
- Hypothesis 3** Decreases in the percentage of adults with college degrees in respondents' neighborhoods will be associated with increases in depressive symptoms.
- Hypothesis 4** Sexual minorities who reside in neighborhoods with higher percentages of same-sex couples will have fewer depressive symptoms than sexual minorities in neighborhoods with no same-sex couples.

Methods

Data

The data come from Waves I and III of the National Longitudinal Study of Adolescent Health (Add Health). The Add Health data are a nationally representative longitudinal study of U.S. adolescents, collected by the Carolina Population Center, that began in the fall of 1994, initially drawn from 80 high schools and 52 middle schools with unequal probabilities of selection (for detailed information on survey design, see Bearman, Jones, & Udry, 1997). A random subsample of respondents ($N = 20,747$) and their parents were asked to fill out an additional in-depth survey covering a variety of topics including sexual orientation and a variety of health-related topics.¹ These respondents were contacted for additional follow-up surveys in subsequent waves of data collection. High school seniors in Wave I of Add Health were not selected for follow-up for Wave II but were reclaimed for the Wave III sample; thus, the sample is restricted to Waves I and III of the survey. Response rates for this study were 79% for Wave I and 77.4% for Wave III.

During the time of in-home interviews, GPS coordinates were taken at the respondents' households in both Waves I and III of the survey. Respondents' household GPS coordinates were then linked to a variety of contextual-level data sources (e.g., the U.S. Census, the Center for Disease Control and Prevention, election results, and *Family Law Quarterly*). Thus, in addition to the individual survey responses, data are provided for a variety of the respondents' neighborhood sociodemographic characteristics. To ensure the privacy of respondents, respondent household GPS coordinates were removed from the data released to users to analyze. Restricted data use was accessed through a remote desktop and complies with all Add Health security requirements provided on the Add Health website.²

¹For additional survey information, see <http://www.cpc.unc.edu/projects/addhealth/codebooks>

²<http://www.cpc.unc.edu/projects/addhealth/data/restricteduse/security>

The Add Health survey also asks respondents about their sexual orientation identity at Wave III of the survey. These data, therefore, are ideal for the purposes of this study as they are nationally representative, longitudinal, and provide information on depressive symptoms, sexual orientation, and neighborhood characteristics. Because this study focuses on investigating the effect changes in neighborhood characteristics on sexual minorities depressive symptoms, the sample was restricted to respondents who report a mostly straight, bisexual, mostly gay, or gay identity at Wave III of the survey ($N = 1,328$). Respondents who reported an “exclusively heterosexual” identity were removed from analyses. The mean age at Wave I was 16.2 years, and 22.5 years at Wave III.

Measures

Sexual Minority Status—In this study, sexual minority is defined as respondents who reported a mostly heterosexual, bisexual, mostly gay, or exclusively gay identity at Wave III. To produce more stable estimates, respondents who reported a mostly straight or bisexual identity were collapsed into a single category, as were respondents that reported a mostly gay or exclusively gay identity. Sensitivity analyses revealed that mostly gay and exclusively gay respondents did not statistically differ in depressive symptoms or depression in the multivariate results. Similarly, mostly heterosexual and bisexual respondents did not statistically differ and were also combined.

Depressive Symptoms—The measure of depressive symptoms follows the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) using the abbreviated 10-item scale (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). The depressive symptoms scale was derived from a series of 10 questions that asked respondents

How often was each of the following things true in the past seven days: you were bothered by things that usually don't bother you; you felt that you were just as good as other people; you had trouble keeping your mind on what you were doing; you felt depressed; you felt that you were too tied to do things; you enjoyed life; you felt that people disliked you; you cried frequently.³

The scale is the sum of these 10 questions and ranges from 0 to 30. The CES-D 10-item scale for the sample had a Chronbach's alpha of .76 at Wave I and a Chronbach's alpha of .80 at Wave III.

Depression was also measured as a dichotomous variable using the clinical cutoff of a score of 10 or higher on the CES-D 10-item scale (Irwin, 1999), where 1 = *clinical cutoff met* and 0 = *clinical cutoff not met* (referent).

Neighborhood-Level Variables—Neighborhood context and change in neighborhood context was measured using four sociodemographic characteristics: percent urban, percent Republican voters, percent college educated, and percent same-sex couples.

Percent urban was measured using U.S. Census data matched to respondent home GPS coordinates. The measure captured the percentage of individuals in a respondents' census block living in an urbanized area at Wave I and Wave III and ranges from 0% to 100%. The measure was recoded into deciles (e.g., 0% to 9.9% = 1; 10% to 19.9% = 2; 20% to 29.9% = 3; . . . 90% to 100%) ranging from 1 to 10, such that a one-unit changes is associated with a 10% increase in urbanization. Change in the percent urban in respondents' neighborhood was created subtracting the Wave III percent urban from the Wave I percent urban and

³Items “you were happy” and “you enjoyed life” were reversed coded so that increases in the scale indicate increases in depressive symptoms.

ranges from -10 to 10. For example, if a respondent lives in a neighborhood that is 30% urbanized at Wave I and 80% urbanized at Wave III, their change score would be -5 ($3 - 8 = -5$), or a 50% increase in urbanization. Increases in the change score, therefore, indicate a decrease in urbanization.

Percent Republican was measured using county-level data on proportion of voters that voted for the Republican gubernatorial candidate in 1995 in Wave I and 2001 in Wave III matched to GPS coordinates for a respondent's county. Similar to the coding strategy for percent urbanized, percent Republican ranges from 0% to 100% and was recoded into deciles ranging from 1 to 10 such that a one-unit increase in percent Republican indicates a 10% increase in Republican voters. A change score was also created subtracting Wave III percent Republican from Wave I percent Republican and ranges from -10 to 10. Thus, if a respondent lives in a neighborhood that is 70% Republican at Wave I and 50% Republican at Wave III, their change score would be 2 ($7 - 5 = 2$). Increases in the change score, therefore, indicate a decrease in percent Republicans.

Percent college degrees in a respondent's neighborhood was measured using U.S. Census block-level information on the proportion of individuals over the age of 25 that have college degrees GPS matched to a respondent's census block at Wave I and III. The measure ranged from 0% to 100%, and similar to the previous variables, the measure was recoded into deciles ranging from 1 to 10. A change score was calculated subtracting the Wave III value from Wave I and ranged from -10 to 10. Increases in the change score indicate a decrease in percent with college degrees.

A measure of the percent same-sex couples from the U.S. Census was GPS matched to respondents census block at Wave III. This information, however, was only available in Wave III as the U.S. Census began providing data on same-sex couples in 2000. No change score was therefore included in the analysis. Because of the very small range of the variable (0% to 8%), this variable was coded into a series of dummy variables that capture whether respondents live in an area with 0% same-sex couples (referent), 1.0% same-sex couples, or 2.0% to 8.0% same-sex couples.

Individual-Level Covariates—This study controlled for respondents' gender, race/ethnicity, education level, and depressive symptoms at Wave I. Gender was coded as a dummy variable that measures whether respondents are female or male (referent). Race/ethnicity was coded as a series of dummy variables that measures whether respondents identify as non-Hispanic White (referent), non-Hispanic Black, Hispanic, non-Hispanic Asian, or other race. Age was coded as a continuous variable that ranges from 18 to 26 years of age.

Analytical Approach

First, descriptive statistics were calculated for all covariates used in the analysis. Second, ordinary least squares (OLS) multiple regression was used to assess the impact of neighborhood characteristics and change in characteristics on sexual minority depressive symptoms. Results are presented in terms of betas such that a one-unit increase in the independent variable is associated with the beta coefficient increase in depressive symptoms. Positive betas therefore indicate increases in depressive symptoms, and negative betas indicate decreases in depressive symptoms. R^2 statistics are provided and give the amount of variation in the depressive symptoms across the sample that is explained by the covariates included in the analysis.

Finally, logistic regression was used to assess the effect of neighborhood characteristics on the probability of meeting clinical depression cutoffs. Results are presented in terms of the

exponentiated coefficient, or the odds ratio. The odds ratio provides an estimate of the probability increase, or decrease, in meeting clinical depression cutoffs associated with a one-unit increase in the independent variable controlling for all other variables in the model. Odds ratios above one indicate an increase in the probability of meeting clinical depression cutoffs, and odds ratios below one indicate a decrease in the probability of meeting clinical depression cutoffs.

All models for both OLS and logistic regressions controlled for respondents' sexual orientation identity, gender, and race/ethnicity. Model 1 additionally controlled for percent urban in respondents' census block at Wave I and change in percent urban between Waves I and III. Model 2 controlled for the percent Republican voters at Wave I in a respondent's census block and change in Republican voters between Waves I and III. Model 3 controlled for percent with college degrees in respondents' census block at Wave I and change in percent with college degrees between Waves I and III. Model 4 controlled for percent of same-sex couples in respondents' census block at Wave III. Model 5 controlled for all neighborhood measures as well as depressive symptoms at Wave I. All models passed VIF tests for multicollinearity. All analyses were conducted using Stata 12.0 and uses the "svy" commands to account for Add Health's complex sampling frame.

Results

Descriptive Statistics

The descriptive statistics are presented in Table 1. The majority of respondents reported mostly heterosexual or bisexual identity (85.5%), and 15.5% reported a mostly gay or exclusively gay identity. The sample was largely female (71.8%). This gender difference was due to the large number of women who report mostly heterosexual and bisexual identities at Wave III compared to men. The sample is roughly 75% non-Hispanic white and the mean age was 22.3.

The descriptive statistics for neighborhood characteristics show that at Wave I, the average respondent percent urbanized score was 6.25, or just over 60% urbanized. The mean change score of -1.5 suggests that, on average, sexual minorities move to more urbanized environments. For example, if a respondent's neighborhood had a score of 6 (60%) on the percent urban scale at Wave I and a 7.5 (75%) percent urban score at Wave III, the change score would be -1.5 ($6.0 - 7.5$), which translates to roughly a 15% increase in percent urbanized.

At Wave I, the average percent Republican in respondent census blocks was 5.91 and the average change was 0.58. This means that, on average, sexual minorities are living in less Republican voting neighborhoods at Wave III than Wave I. These results are in line with other research that has shown sexual minorities are more likely to move to more liberal, urban environments (Aldrich, 2004; Black et al., 2002; Cooke & Rapino, 2007; Weston, 1995). The average score of percent college graduate was 3.03 (30%) and the change score was only 0.02, suggesting relatively no change in educational environments between waves on average.

Fifty-three percent of sexual minorities lived in areas that report 0% same-sex couples, 37% lived in environments with 1.0% same-sex couples, and 8% lived in environments with 2.0% to 8.0% same-sex couples. The average depressive symptoms scores were 7.7 at Wave I and 7.3 at Wave III out of possible score of 30. The clinical cutoff for the CES-D 10-item scale is 10, suggesting that, on average, the sample falls below the clinical depression cutoffs. The clinical cutoff measure shows that 21.6% of the sample met clinical depression cutoffs.

Multivariate Results

Table 2 presents the betas from OLS regression examining the relationship neighborhood characteristics at Wave I, the change in neighborhood characteristics between Waves I and III, and depressive symptoms at Wave III. Results are also summarized in Table 3.

Model 1 controlled for percent urban and change in the percent urban between Waves I and III. The results show that the percent urban at Wave I was not statistically associated with depressive symptoms at Wave III. However, a one-unit change in the percent urban, or a move to a less urban environment, was associated with a 0.11 increase in the depressive symptom score ($p < .05$). For example, a 60% decrease in urbanization in a respondent's neighborhood is associated with a 0.66 increase in depressive symptoms at Wave III ($0.11 \times 6 = 0.66$).

Model 2 controls for percent Republican and shows that a one-unit increase in the percent Republican voter score at Wave I was associated with a 0.29 ($p < .05$) increase in depressive symptoms. Respondents in very politically conservative neighborhoods, for example, 80% Republican voters, will on average have depressive symptom scores 2.3 points higher ($8 \times 0.29 = 2.3$) than respondents who live in neighborhoods with no Republican voters. As stated before, a one-unit increase in the Republican voter change score indicates a decrease in the percent Republican voters in a respondent's neighborhood at Wave III and was associated with a 0.34 decrease in depressive symptoms ($\beta = -0.34, p < .001$). A change to a 30% less Republican voting neighborhood would therefore translate to a 1.02 decrease in the depressive symptoms score (3×-0.34).

Model 3 shows there was no statistical relationship between the percent persons with college degrees at Wave I or change in percent of college degrees between Waves I and III and depressive symptoms. Model 4 is suggestive of a relationship between the percent same-sex couples and depressive symptoms; however, this relationship is not significant at the .05 level.

Model 5 controlled for all covariates and added a control for depressive symptoms reported at Wave I. The results from Model 5 show that residing in neighborhoods with fewer Republican voters at Wave III was associated with a decrease in depressive symptoms at Wave III ($\beta = -0.31, p < .001$).

Table 4 presents the results from a series of logistics regressions examining the relationship between neighborhood characteristics and clinical depression cutoffs. The results show that similar to the results presented in Model 2, a one-unit increase in the Republican voter change score, or a 10% decrease in percent republican voters, was associated with a 12% ($1 - .88 = 12$) decrease in the probability of meeting clinical depression cutoffs (odds ratio = 0.88, $p < .01$).

Controlling for all variables in Model 5 shows that a 10% decrease in the percent republican is associated with a 12% decrease (odds ratio = 0.88, $p < .05$) in the probability of meeting clinical depression cutoffs.

Discussion

This study examined how changes in neighborhood characteristics during the transition from adolescence to adulthood affect both depressive symptoms and the probability of meeting clinical depression cutoffs. The results from this study provide new insights into the relationship between the neighborhood context and sexual minority mental health in several key ways. The results show that sexual minorities over time, on average, end up in less

politically conservative, more urban environments and that these changes may be an important mechanism for improving mental health. Previous research has documented similar migration patterns among sexual minorities (Aldrich, 2004; Black et al., 2002; Cooke & Rapino, 2007) but not linked them to mental health outcomes. Thus, the results from this study are the first to use nationally representative, longitudinal data to document that changes in these characteristics at the neighborhood level are indeed associated with mental health.

Specifically, in line with Hypotheses 1 and 2, decreases in the percent urban in a respondent's neighborhood was associated with more depressive symptoms, whereas decreases in the percent Republican voters was associated with fewer depressive symptoms and lower risk of clinical depression. Previous studies have suggested that rural environments are associated with poorer mental health among sexual minorities compared to more urban environments (Galliher, Rostosky, & Hughes, 2004; Poon & Saewyc, 2009). And while some research has linked specific political policies to mental health outcomes among sexual minorities (Fingerhut et al., 2011; Hatzenbuehler et al., 2009; Rostosky et al., 2009), this is the first study to link neighborhood-level political party representation to depression among sexual minorities. Change in the percent of individuals with college degrees in respondent neighborhoods, however, was not related to either depressive symptoms or clinical depression cutoffs.

I did not find support for Hypothesis 4, which posited that respondents in neighborhoods with same-sex couples have fewer depressive symptoms than respondents who live in neighborhoods with no same-sex couples. While the results are suggestive of a trend toward fewer depressive symptoms, the lack of statistical significance is likely due to issues related to sample size. Future research should continue to investigate the role of living in environments with higher levels of same-sex couples. Increased exposure to other same-sex couples may serve to both increase social networks and resources, reduce exposure to discrimination, and may also provide sexual minorities with a normative context that affirms their sexual orientation identity and sexuality (Aldrich, 2004; Cooke & Rapino, 2007).

Unfortunately, not every sexual minority adolescent may have the economic or social resources required to move and others may be bound to their hometowns by familial or other social obligations. Moreover, some sexual minority youth may, either by choice or obligation, move toward *more* rural and politically conservative neighborhoods. It is in these environments where sexual minorities may be exposed to more minority stress and also find themselves increasingly socially isolated as other sexual minorities move away. Indeed, the results also showed that sexual minorities in neighborhoods with no same-sex couples had higher levels of depressive symptoms. Thus, it is in these areas that sexual minorities may be in the most need of LGBT social and mental health services that it may be the hardest to implement and provide such resources.

This is not to say that sexual minorities in rural, conservative settings are engendered to lives of depression. Recent research suggests that some sexual minorities in rural settings may not merely be "left behind" but rather actively choose and enjoy their rural locations and form their own grass-roots social activist networks (Gray, 2009). Other researchers have also argued that changes in the political and social environment at the national level have led to a decrease in stigma associated with same-sex sexual orientation over time and substantial improvements in the well-being of all sexual minorities (Eccles, Sayegh, Fortenberry, & Zimet, 2004; Russell, 2003, 2005; Savin-Williams, 2005). The baseline mental health for all sexual minorities may indeed be improving; however, these results suggest that there remains variation at the neighborhood level in mental health outcomes among sexual minorities.

This article has several limitations. First, because of the GPS coordinates have been removed from Wave I and Wave III before the data were released for analysis, it is impossible to determine if respondents have moved geographical locations, how far, and where they may have moved to between Waves. Rather, the results focus on assessing how changes in several neighborhood characteristics are related to depressive symptoms and depression. It may be that respondents in fact did move between waves, alternatively it may also be that there were major changes in the environment in the 5 years between Waves I and III. The results may also vary by the recency of the move, which cannot be assessed in this study. For example, some respondents may have experienced changes in the social environment in the previous 6 months before the survey, while for others these changes may have occurred years ago.

Despite these limitations, the results have important implications for public health policy and mental health providers. Public health campaigns, such as the “It Gets Better” Project, send messages to youth that the future holds promises for improvements in their quality of life if they can survive adolescence. The results from this study suggest that changes in neighborhood characteristics are an important mechanism through which sexual minorities may make improvements in their mental health. Alternatively, if interpreted negatively, the findings also suggest that sexual minorities who move to more rural and more Republican neighborhoods may experience *more* depressive symptoms and increased risk of meeting clinical depression cutoffs. Thus, rather than “It Gets Better,” perhaps more fitting slogan would be “It *Can* Get Better,” in particular for those who experience moves to more liberal and urban neighborhoods. The onus of responsibility, however, should not be on sexual minority youth to reduce their exposure to discrimination through migration, especially in light of the fact that many sexual minority youth may be unable or may not want to move. Public health policy should focus efforts to decrease homophobic attitudes among the general population with more concerted efforts to provide mental health services in geographically rural and conservative areas.

The findings presented here have important implications for mental health providers in both clinical and school settings. Clinicians should take into account the social context in which individuals are living in as an important factor for mental health outcomes. While it is common practice to ask patients questions about their home-life and interpersonal relationships, features of the social environment and neighborhoods in which patients live are assessed much less frequently. As such, it is difficult to develop intervention and treatment programs to address the impact of the social environment on mental health. Moreover, sexual minorities who have recently moved to more rural and politically conservative environments may need additional counseling and coping mechanisms to deal with new sources of minority stress. Clinicians should begin regular assessment of neighborhood features as a risk factor for depression and work to develop sexual minority-specific resources and service strategies for helping clients who may be experiencing stress related to their social environment. Clinicians may also consider screening sexual minority youth for recent changes in their neighborhoods to assess if these changes may be related to the onset of depressive episodes.

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Table 1

Descriptive Statistics for All Covariates Used in the Analyses.

Individual-level covariates	
Sexual orientation identity (%)	
Gay/mostly gay	15.51
Bisexual/mostly heterosexual	84.49
Female (%)	71.79
Age (<i>M</i>)	22.25
Race/ethnicity (%)	
Non-Hispanic White	75.02
Non-Hispanic Black	7.99
Hispanic	11.56
Asian	3.27
Other race/ethnicity	2.16
Depressive symptoms, Wave I (<i>M</i>)	7.71
Neighborhood characteristics	
Percent urban (<i>M</i>)	6.25
Percent urban change, Wave I to Wave III (<i>M</i>)	−1.50
Percent Republican (<i>M</i>)	5.91
Percent Republican change, Wave I to Wave III (<i>M</i>)	0.58
Percent college degrees (<i>M</i>)	3.03
Percent college degree change, Wave I to Wave III (<i>M</i>)	0.02
Same-sex couples, 0% (%)	53.04
Same-sex couples, 1.0% (%)	38.61
Same-sex couples, 2.0% to 8.0% (%)	8.35
Dependent variable	7.71
Depressive symptoms, Wave III (<i>M</i>)	7.30
Clinical depression cutoff (%)	21.59

Source. Waves I and III of the National Longitudinal Study of Adolescent Health.

Table 2

Betas for Depressive Symptoms at Wave III Among Sexual Minority Respondents.

	Model 1		Model 2		Model 3		Model 4		Model 5		
	β	SE	β	SE	β	SE	β	SE	β	SE	
Individual-level characteristics											
Bisexual/mostly heterosexual (gay/mostly gay)	0.67	0.44	0.94	0.44	*	0.70	0.44	0.65	0.44	0.68	0.42
Female (male)	1.57	0.42	***	1.38	0.41	***	1.64	0.41	***	1.63	0.42
Race/ethnicity (non-Hispanic White)											
Non-Hispanic Black	1.33	0.60	*	1.33	0.60	*	1.20	0.60	*	1.35	0.60
Hispanic	1.35	0.58	*	1.34	0.57	*	1.33	0.58	*	1.47	0.57
Asian	1.32	0.84		1.66	0.79	*	1.58	0.77	*	1.47	0.77
Other race/ethnicity	1.40	0.74		1.27	0.72		1.27	0.74		1.29	0.75
Age	-0.23	0.10	*	-0.24	0.10	*	-0.26	0.10	**	-0.24	0.10
Depressive symptoms, Wave I										-0.34	0.09
										0.33	0.04
Neighborhood characteristics											
Percent urban	0.02	0.04								0.09	0.04
Percent urban change, Wave I to Wave III	0.11	0.05	*							0.06	0.05
Percent Republican			0.29	0.15	*					0.22	0.14
Percent Republican change, Wave I to Wave III			-0.34	0.10	***					-0.31	0.10
Percent college degrees						-0.16	0.09			-0.07	0.10
Percent college degree change, Wave I to Wave III						0.05	0.08			0.01	0.09
Same-sex couples, 0%								-0.27	0.37	-0.02	0.36
Same-sex couples, 1.0%								-0.94	0.54	-0.94	0.53
Same-sex couples, 2.0% to 8.0%											
Constant	10.59	2.21	***	9.11	2.31	***	11.42	2.16	***	10.81	2.16
R ²	0.06			0.06		0.05		0.05		0.05	0.18

Note. SE = standard error.

Source. National Longitudinal Study of Adolescent Health.

* p .05.

** p .01.

.100' d

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Table 3

Results Summary for Neighborhood Change Variables.

Variable	Direction	Results	Significant?
Change in percent urban	Increase in change score indicates decrease in urbanization	Decreases in percent urbanized are associated with increases in depressive symptoms and probability of meeting clinical depression cutoffs	Yes (depressive symptoms)/No (clinical cutoff)
Change in percent Republican voters	Increase change score indicates decreases in percent Republican voters	Decreases in percent Republican voters are associated with decreases in depressive symptoms and probability of meeting clinical depression cutoffs	Yes
Change in percent college educated	Increase in change score indicates decrease in percent college educated	Decreases in percent college educated are associated with increases in depressive symptoms and probability of meeting clinical depression cutoffs	No

Table 4

Odds Ratios for Clinical Depression Cutoffs at Wave III Among Sexual Minority Respondents.

	Model 1		Model 2		Model 3		Model 4		Model 5					
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE				
Individual-level characteristics														
Bisexual/mostly heterosexual (gay/mostly gay)	1.60	0.46	1.81	0.54	*	1.66	0.47	1.62	0.46	1.68	0.51			
Female (male)	2.05	0.53	1.90	0.49	*	2.11	0.53	**	2.07	0.53	**	1.56	0.41	
Race/ethnicity (non-Hispanic White)														
Non-Hispanic black	1.65	0.45	1.72	0.47		1.53	0.42	1.66	0.45	1.48	0.45			
Hispanic	1.61	0.42	1.57	0.41		1.58	0.41	1.68	0.43	*	1.32	0.39		
Asian	1.19	0.49	1.35	0.52		1.23	0.50	1.16	0.46	0.98	0.40			
Other race/ethnicity	2.06	0.84	1.97	0.86		1.94	0.80	2.01	0.84	1.49	0.62			
Age	0.94	0.05	0.93	0.05		0.92	0.05	0.93	0.05	0.89	0.05	1.12	0.02	***
Depressive symptoms, Wave I														
Neighborhood characteristics														
Percent urban	1.00	0.02								1.02	0.03			
Percent urban change, Wave I to Wave III	1.04	0.01								1.07	0.03			
Percent Republican			1.09	0.08						1.07	0.08			
Percent Republican change, Wave I to Wave III			0.88	0.04	**					0.88	0.05	*		
Percent college degrees						0.91	0.05			0.92	0.06			
Percent college degree change, Wave I to Wave III						1.01	0.04			1.02	0.06			
Same-sex couples, 0%														
Same-sex couples, 1.0%								0.87	0.15	0.94	0.18			
Same-sex couples, 2.0% to 8.0%								0.70	0.22	0.59	0.20			

Note. OR = odds ratio; SE = standard error.

Source. National Longitudinal Study of Adolescent Health.

*
p .05.**
p .01.***
p .001.