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## Advancing Research on Structural Stigma and Sexual Orientation Disparities in Mental Health Among Youth

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### Abstract

Psychological research on stigma has focused largely on the perceptions of stigmatized individuals and their interpersonal interactions with the nonstigmatized. This work has been critical in documenting many of the ways in which stigma operates to harm those who are targeted. However, this research has also tended to overlook broader structural forms of stigma, which refer to societal-level conditions, cultural norms, and institutional policies and practices that constrain the lives of the stigmatized. In this article I describe the emerging field of research on structural stigma and review evidence documenting the harmful consequences of structural stigma for the mental/behavioral health of lesbian, gay, and bisexual youth. This research demonstrates that structural stigma represents an important, but thus far largely underrecognized, mechanism underlying mental health disparities related to sexual orientation among youth. I offer several suggestions to advance research in this area, including (a) adopting a life-course approach to the study of structural stigma; (b) developing novel measures of structural stigma; (c) expanding both the range of methods used for studying structural stigma and the sequelae of structural stigma that are evaluated; (d) identifying potential mediators and moderators of the structural stigma–health relationship; (e) examining intersectionalities; and (f) testing generalizability of structural stigma across other groups, with a particular focus on transgender youth. The implications of this research for preventive interventions and for public policy are also discussed.

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Epidemiologic evidence from both community- and population-based studies consistently points to large sexual-orientation-related disparities in mental/behavioral health among youth. These disparities exist across a range of outcomes, with sexual minority youth (i.e., youth identifying as lesbian, gay, and bisexual [LGB], or reporting same-sex attractions and behaviors) experiencing significantly higher levels of depression (e.g., Hatzenbuehler, McLaughlin, & Nolen-Hoeksema, 2008), anxiety (e.g., Fergusson, Horwood, & Beautrais, 1999), and suicidality (e.g., Haas et al., 2010), as well as substance use and problematic use (e.g., Corliss et al., 2010), compared to their heterosexual peers. Research into the causes of these disparities has proliferated in the past two decades. Stigma, which has been conceptualized as a fundamental cause of health inequalities (Hatzenbuehler, Phelan, & Link, 2013), is one of the most frequently hypothesized risk factors explaining LGB mental health disparities (for a review, see Meyer, 2003).

Stigma is conceptualized as a multilevel construct, ranging from individual to structural levels (Link & Phelan, 2001). *Individual stigma* refers to the cognitive, affective, and behavioral processes in which stigmatized individuals engage in response to stigma-related stressors. Several individual-level stigma processes have been examined in the literature. For instance, self-stigma is defined as the internalization of negative societal attitudes about one's social group (e.g., Corrigan, Sokol, & Rüsck, 2013); in the context of sexual orientation, this process has been termed *internalized homophobia* (Williamson, 2000). Experiences with stigma also make LGB individuals sensitive to rejection. Stigma-based rejection sensitivity describes the psychological process through which some individuals learn to anxiously anticipate rejection because of previous experiences with prejudice and discrimination toward their group, such as race (e.g., Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002) or sexual orientation (Pachankis, Goldfried, & Ramrattan, 2008). Experiences with sexual orientation-related stigma can also lead LGB individuals to conceal their identity from others to avoid future victimization (e.g., Pachankis, 2007). In turn, each of these individual forms of stigma (i.e., self-stigma, sensitivity to status-based rejection, and concealment) is associated with adverse health outcomes among LGB youth and adults (e.g., Cole, Kemeny, & Taylor, 1997; Frable, Platt, & Hoey, 1998; Meyer, 2003; Newcomb & Mustanski, 2010; Pachankis, Cochran, & Mays, 2015).

In contrast to stigma at the individual level, *interpersonal stigma* refers to interactional processes that occur between the stigmatized and the nonstigmatized. This form of stigma includes intentional, overt actions, such as bias-based hate crimes (e.g., Herek, 2009), and more covert events, like microaggressions (e.g., Woodford, Howell, Kulick, & Silverschanz, 2013), meaning "brief and commonplace daily verbal, behavioral, or environmental indignities, whether intentional or unintentional, that communicate hostile, derogatory, or negative ... slights or insults" directed at members of marginalized groups (Sue et al., 2007, p. 271). Research on interpersonal stigma among LGB youth has tended to focus on two forms: (a) peer victimization and bullying (e.g., Friedman et al., 2011; Olsen, Kann, Vivolo-Kantor, Kinchen, & McManus, 2014) and (b) parental rejection (e.g., D'Augelli, Hershberger, & Pilkington, 1998; Goldfried & Goldfried, 2001). Both forms of interpersonal stigma are associated with adverse mental/behavioral health outcomes for LGB youth (e.g., S. T. Russell & Joyner, 2001; Ryan, Huebner, Diaz, & Sanchez, 2009).

The vast majority of research on stigma and the mental health of LGB youth has existed at either the individual or interpersonal levels of analysis. This research is important because it has documented many of the ways in which stigma operates to harm the mental health of LGB youth. At the same time, stigma research has been criticized for overlooking *structural stigma*—referring to forms of stigma above the individual and interpersonal levels—which also shapes the lives of the stigmatized (Corrigan et al., 2005; Link & Phelan, 2001; Parker & Aggleton, 2003). Despite repeated calls for research on structural forms of stigma, there has been a dearth of empirical research on the consequences of structural stigma for members of stigmatized groups. This has led prominent stigma researchers to call this lack of research on structural stigma "a dramatic shortcoming in the literature on stigma," as the processes involved are likely key drivers of unequal outcomes (Link, Yang, Phelan, & Collins, 2004, pp. 515–516).

In the past several years, however, an emerging line of research has begun to address this lacuna. The current article reviews this new field on structural stigma and LGB<sup>1</sup> mental/behavioral health through addressing three issues: (a) defining structural stigma and discussing various measurement and methodological approaches that have been used to study it, (b) evaluating evidence regarding the mental/behavioral health consequences of structural stigma for LGB youth, and (c) outlining ways to advance the research on structural stigma and sexual-orientation-related mental/behavioral health disparities among youth.

## STRUCTURAL STIGMA: DEFINITION, MEASUREMENT, AND METHODS

Link and Phelan's (2001) widely cited conceptualization of stigma was among the first to introduce the notion that stigma occurred at different levels, including structural. According to Link and Phelan, the concept of structural stigma "sensitizes us to the fact that all manner of disadvantage can result outside of a model in which one person does something bad to another" (p. 372). The authors noted that structural stigma shares theoretical linkages with conceptually similar frameworks, such as institutional/systemic racism (Feagin & Hernan, 2000), but broadens that concept to include other groups that have historical experiences with social disadvantage.<sup>2</sup> Drawing on these initial insights, Hatzenbuehler and Link (2014) proposed the following definition of structural stigma: "societal-level conditions, cultural norms, and institutional policies that constrain the opportunities, resources, and wellbeing of the stigmatized" (p. 2).

This definition, in turn, has facilitated the operationalization and measurement of structural stigma in research studies. Measures of structural stigma typically take two forms. The first is laws and policies, which represent an important mechanism through which stigma is promulgated (Burris, 2006). With respect to the policy landscape surrounding LGB youth, there are several examples of laws and policies that exacerbate stigma against sexual minority youth. One example is "No Promo Homo" laws, which forbid teachers from discussing LGB and transgender (LGBT) issues in school classrooms in a positive light, and in some extreme cases require negative or inaccurate portrayals of LGBT people (GLSEN, 2015). Structural stigma theory also points to the importance of policy inaction (Link & Hatzenbuehler, 2016). That is, there are active laws and policies that either enact stigma (e.g., "No Promo Homo") or mitigate it (e.g., hate crime laws that include sexual orientation as a protected class). At the same time, there is policy inattention toward the concerns of stigmatized groups. Such inaction either can be the result of motivations (e.g., those in power directly benefit from the stigma) or can occur because powerful groups attend to their own concerns, remaining inattentive to the needs of the stigmatized (Link & Hatzenbuehler, 2016). One clear example of this within the context of LGB youth is the fact that only 18 of

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<sup>1</sup>There is currently a dearth of research on structural stigma among transgender youth. Consequently, the focus of this article is on structural stigma in relation to sexual orientation. However, I discuss the application of this research to transgender youth in the section on future directions.

<sup>2</sup>Institutional racism can be conceptualized as a distinct subtype of structural stigma—specifically, structural stigma that is unique to race. However, the literatures on these two concepts have been developed and pursued largely along separate tracks. Consequently, research is needed to further explore the overlaps (and potential areas of divergence) between structural stigma and institutional racism to determine whether greater cross-fertilization among these literatures is warranted (Link & Hatzenbuehler, 2016).

50 U.S. states currently include protections related to students' sexual orientation (and gender identity) in harassment and/or bullying laws.

A second measure of structural stigma that has been employed in the literature is aggregated measures of social attitudes toward members of stigmatized groups. In this approach, researchers obtain data on individuals' attitudes toward members of stigmatized groups, which are then aggregated up to the community level (which can be defined at different geographic scales, such as neighborhoods, counties, or states). This approach enables researchers to compare the level of structural stigma across communities, and it has been used to study structural forms of stigma related to sexual orientation (Hatzenbuehler, Belatorre et al., 2014), as well as mental illness (Evans-Lacko, Brohan, Mojtabai, & Thornicroft, 2012) and HIV/AIDS (Miller, Grover, Bunn, & Solomon, 2011).

The predominant approach to studying structural stigma and health involves multilevel or population-average models that provide an estimate of the effect of structural stigma on health, net of individual and structural factors that may serve as confounders of the structural stigma–health relationship (Hatzenbuehler, 2014). For instance, in a study examining associations between state-level structural stigma and smoking among sexual minority youth, Hatzenbuehler, Jun, Corliss, and Austin (2015) controlled for several individual-level factors (race/ethnicity, sex, age, and family income), as well as structural-level factors (state-level income inequality, state-level median household income, and state-level prevalence of smoking). To evaluate the health consequences of structural stigma, it is necessary to sample stigmatized individuals across multiple geographic regions (e.g., counties, states, countries) that offer sufficient variation in levels of structural stigma. Typically, data on structural stigma (e.g., social policies, community-level attitudes) are obtained from external sources (e.g., legislative records, publicly available data sources like the General Social Survey) and are then linked to data on individual-level health outcomes among stigmatized individuals.

One of the initial barriers to studying structural stigma and mental/behavioral health among LGB youth was the lack of data structures that included measures of sexual orientation, health outcomes, and geographic information (e.g., ZIP codes) that would enable researchers to link structural stigma variables to individual-level data on mental/behavioral health. Fortunately, some new data structures have recently become available that have afforded the unique opportunity to explore the mental/behavioral health consequences of structural stigma for LGB youth, the topic to which I now turn.

## **MENTAL/BEHAVIORAL HEALTH CONSEQUENCES OF STRUCTURAL STIGMA FOR LGB YOUTH**

Recent research has begun to demonstrate the powerful role of structural stigma in shaping adverse health outcomes for LGB individuals. A comprehensive review of this literature is beyond the scope of this article (for a review, see Hatzenbuehler, in press); instead, this section describes illustrative examples of this research from our research lab. Evidence is presented across a range of mental/behavioral health outcomes (e.g., psychiatric morbidity, tobacco use, physiological stress response) and from a variety of methodological approaches, including observational (both cross-sectional and prospective), quasi-

experimental, and laboratory designs. This section focuses on youth but draws on research among LGB adults where data on youth are currently lacking. Table 1 summarizes illustrative studies that have examined relationships between structural stigma and mental/behavioral health outcomes among LGB youth and young adults.

### Cross-Sectional Studies

Cross-sectional, observational designs can establish whether structural stigma is associated with adverse mental/behavioral health outcomes among LGB youth. In one example of this work, we obtained data on the prevalence of inclusive antibullying policies (i.e., policies that specifically included sexual orientation as a protected class) from student handbooks in 197 school districts in Oregon and then aggregated these data to the county level (34 Oregon counties). This measure of structural stigma was hypothesized to reflect environments that did (vs. those that did not) provide institutional supports for LGB youth. There was substantial variation across counties with respect to whether their school districts included sexual orientation as a protected class in antibullying policies; for instance, in only 15% of the counties did all of the school districts have these inclusive policies. Information on inclusive antibullying policies at the county level was linked to individual-level data on mental health, peer victimization, and sexual orientation from a population-based survey of 31,852 eleventh-grade public school students ( $N = 1,413$  LGB youth) who participated in the Oregon Healthy Teens study. Lesbian and gay youth living in counties that had fewer school districts with inclusive antibullying policies were 2.25 times more likely to have attempted suicide in the past year compared to those living in counties where more districts had these policies (Hatzenbuehler & Keyes, 2013). These results remained robust after adjustment for sociodemographic characteristics and exposure to peer victimization. In addition, there was no relationship between inclusive antibullying policies and suicide attempts among heterosexual youth.

### Prospective Studies

In addition to cross-sectional observational studies, researchers have used prospective designs to study the mental/behavioral health consequences of structural stigma for LGB youth. Prospective designs strengthen causal inferences because they can establish temporal ordering of the relationship between structural stigma and health. In one example of this work, we constructed a composite measure of structural stigma surrounding LGB youth, which included four items at the state level: (a) density of same-sex couples, (b) proportion of Gay-Straight Alliances per public high school, (c) five policies related to sexual orientation discrimination (e.g., same-sex marriage bans, employment nondiscrimination acts that included sexual orientation), and (d) public opinion toward homosexuality (aggregated responses from 41 national polls). We then linked this information on state-level structural stigma to individual-level data on tobacco and illicit drug use from the Growing Up Today Study, a prospective cohort study of youth. Structural stigma was coded in 2000, and tobacco and illicit drug use variables were measured in 2001, 2003, and 2005 (illicit drug use was also assessed in 2007 and 2010). After controlling for individual- and state-level confounders, sexual minority youth living in low structural stigma states were less likely to smoke over time than sexual minority youth in high structural stigma states (Hatzenbuehler, Jun, Corliss, & Austin, 2014); these results were not obtained for

heterosexual youth. Further, sexual orientation disparities in marijuana use and other illicit drug use were significantly attenuated among youth in low structural stigma states compared to youth in high structural stigma states (Hatzenbuehler et al., 2015).

### Quasi- and Natural Experiments

In quasi- and natural experiments, researchers take advantage of naturally occurring changes in structural stigma (typically following a change in social policies) to determine whether the health of stigmatized individuals changes following the policy change. Designs emerging from circumstances like these are extremely useful in minimizing the threat to validity of self-selection into the exposure status (i.e., structural stigma). These types of studies have only recently been used to study the health consequences of structural stigma for members of stigmatized groups (e.g., Krieger, Chen, Coull, Waterman, & Beckfield, 2013), in large part because of the challenges in conducting them, including requirements that there are measures of the health variables before and after the implementation of the policy.

Despite these challenges, we have been able to use quasi-experiments to test the health consequences of structural stigma for LGB populations (Hatzenbuehler, McLaughlin, Keyes, & Hasin, 2010; Hatzenbuehler, O’Cleirigh et al., 2012). Although this work has been conducted with LGB adults, the results are instructive for LGB youth, so I review an example of this work. Several states passed constitutional amendments banning same-sex marriage during 2004–2005. These amendments were passed between two waves of data collection in a nationally representative, prospective study called the National Epidemiologic Survey on Alcohol and Related Conditions. The National Epidemiologic Survey respondents were first interviewed in 2001 and then reinter-viewed in 2005, following the passage of the same-sex marriage bans, which provided a natural experiment. Results indicated that LGB adults who lived in states that passed same-sex marriage bans experienced significant increases in psychiatric morbidity, including a 37% increase in mood disorders and a 248% increase in generalized anxiety disorders, between the two waves (Hatzenbuehler et al., 2010). In contrast, LGB respondents who lived in states without these bans did not experience a significant increase in psychiatric morbidity during the study period. Moreover, the bans did not affect the mental health of heterosexuals living in states that passed the bans, documenting specificity of the results to the LGB respondents.

**Laboratory Designs**—Laboratory experiments represent another methodological approach for evaluating the health consequences of structural stigma for LGB youth. In these studies, LGB individuals are not randomly assigned to structural stigma (which is, of course, unethical); rather, they are recruited based on their previous exposure to structural stigma (high vs. low) and then participate in different laboratory tasks. This approach enables researchers to examine whether structural stigma moderates psychological, behavioral, and physiological responses to the same stimulus in the lab.

In one lab study, we recruited 74 LGB young adults who were raised in 24 states as adolescents. These states differed substantially in terms of the level of structural stigma, which was coded based on a composite measure (Hatzenbuehler & McLaughlin, 2014). All respondents, who were currently living in New York (a low structural stigma state),

completed a well-validated laboratory stressor, the Trier Social Stress Test (TSST). Neuroendocrine measures were collected before, during, and after the TSST. Our research question of interest concerned whether prior exposure to structural stigma as adolescents shaped LGB young adults' current physiological stress responses to a social-evaluative stressor in the lab. Our results confirmed this hypothesis: LGB young adults who grew up in high structural stigma states (compared to low structural stigma states) evidenced a blunted cortisol response following the TSST (Hatzenbuehler & McLaughlin, 2014). This same pattern of hypocortisolism has been documented in other youth exposed to chronic life stressors, such as childhood maltreatment (Gunnar, Frenn, Wewerka, & Van Ryzin, 2009). In addition, this study was one of the first to include a measure of stigma at both the individual and structural levels. When both were entered simultaneously into the model, only structural stigma remained significantly associated with cortisol reactivity, suggesting that structural stigma may be a stronger correlate of hypothalamic-pituitary-adrenocortical axis functioning than subjective appraisals of stigma at the individual level. These results provide preliminary evidence that the stress of growing up in high structural stigma environments may disrupt the stress response system, which in turn has health consequences later in the life course.

The findings reviewed in this section represent exciting recent developments in the study of structural stigma and LGB mental/behavioral health. Nevertheless, the field is still in its inchoate stages and thus numerous important questions remain unanswered. Next, I summarize several priorities that are needed to advance this literature.

## **FUTURE DIRECTIONS IN RESEARCH**

Although there are many directions for future research on structural stigma and the health of LGB youth, I highlight six that are likely to generate significant advancements to the field: (a) adopting a life-course approach to the study of structural stigma; (b) developing novel measures of structural stigma; (c) expanding both the range of methods used for studying structural stigma and the sequelae of structural stigma that are evaluated; (d) identifying potential mediators and moderators of the structural stigma–health relationship; (e) examining intersectionalities; and (f) testing generalizability of structural stigma across other groups, with a particular focus on transgender youth. I discuss each of these six areas in turn.

### **Adopting a Life-Course Approach to the Study of Structural Stigma**

Although research on structural stigma and LGB health has been conducted among adolescents (e.g., Duncan & Hatzenbuehler, 2014; Hatzenbuehler & Keyes, 2013), young adults (e.g., Hatzenbuehler & McLaughlin, 2014; Pachankis, Hatzenbuehler, & Starks, 2014), and adults (e.g., Hatzenbuehler, Bellatorre et al., 2014; Hatzenbuehler et al., 2010; Hatzenbuehler, O'Leirigh et al., 2012), attention to developmental timing and chronicity of exposure to structural stigma has been relatively lacking. The timing of contextual influences has differential effects on health (e.g., Bronfenbrenner & Evans, 2000), but most research on structural stigma and LGB health examines exposure to structural stigma at a single point in development (e.g., Hatzenbuehler et al., 2010). Pachankis and colleagues (2014) suggested that exposure to structural stigma at one point in the life course (e.g.,

during adolescence, when feelings of same-sex attraction are first experienced) might have different effects on the health of LGB populations than exposure to structural stigma at other points in development (e.g., during young adulthood, when a sexual minority identity is being formed), as has been shown in research on the health consequences of exposure to adverse socioeconomic conditions (e.g., Claussen, Smith, & Thelle, 2003). With rare exception (Pachankis et al., 2014), however, this hypothesis has not been empirically tested.

Taking advantage of divergent geographic mobility patterns that naturally occur in longitudinal studies offers one way to test this hypothesis. Studies could determine whether LGB youth raised in low structural stigma environments but who later move to high structural stigma environments as young adults or adults are buffered against the negative effects of structural stigma in the current environment. Alternatively, it is possible that structural stigma in the current environment could erode the health benefits that were accrued from growing up in a low structural stigma context. These designs could also be used to test dose–response relationships between length of exposure to structural stigma and adverse outcomes among LGB youth and young adults. Addressing these questions is increasingly possible as large-scale longitudinal studies of youth begin to include measures of sexual orientation (e.g., National Longitudinal Study of Adolescent Health, Growing Up Today Study).

### **Developing Novel Measures of Structural Stigma**

As demonstrated in Table 1, existing studies have utilized a range of measures of structural stigma as it relates to LGB mental/behavioral health, including composite measures of laws and aggregated attitudes toward gays and lesbians (e.g., Hatzenbuehler, Bellatorre et al., 2014); neighborhood-level LGBT hate crimes (e.g., Duncan & Hatzenbuehler, 2014); and a variety of indicators of school climate, such as presence of Gay-Straight Alliances (e.g., Saewyc, Konishi, Rose, & Homma, 2014). Although these existing measures capture a diversity of processes through which structural stigma operates, it is evident that some factors related to structural stigma have been underexamined and therefore warrant greater attention in future research. For instance, the social climate surrounding LGB youth is shaped, in part, by the religious debate regarding the legitimacy and morality of homosexuality (e.g., Olson, Cadge, & Harrison, 2006); however, only one study to my knowledge has created a structural measure of religiosity and linked it to mental/behavioral health outcomes among LGB youth (Hatzenbuehler, Pachankis, & Wolff, 2012). Moreover, research has examined the impact of several laws -including employment nondiscrimination policies, hate crime laws, and constitutional amendments banning same sex marriage—on the health of LGB adults (Hatzenbuehler, 2010). Currently, however, only a very small number of laws and policies have been explored in relation to the health of LGB youth (e.g., prevalence of inclusive antibullying policies; Hatzenbuehler & Keyes, 2013). Future research should thus explore a wider range of policies, including those that at first glance might appear to affect only adults (e.g., employment laws), given that these laws both reflect and shape the social context in which LGB youth are embedded.

In addition to developing new measures of structural stigma that affect LGB youth, research is needed to address the limitations of some existing measures. For instance, measures of



structural stigma that rely on respondents' explicit attitudes about members of stigmatized groups (e.g., Evans-Lacko et al., 2012; Hatzenbuehler, Bellatorre, et al., 2014; Miller et al., 2011) may be subject to social desirability biases. Emerging research has begun to address the limitation of these self-reported measures of social attitudes through the use of Google searches, which minimize social desirability biases because respondents are less likely to censor their socially deviant attitudes on the Internet. In one study, Chae and colleagues (2015) developed a measure of community-level racial prejudice by aggregating Google searches of racial epithets. They then linked this measure to a health data set and found that Blacks who lived in communities characterized by greater racial animus (via the Google measure) had increased mortality risk compared to Blacks living in low-prejudice communities (Chae et al., 2015). Similar approaches could be used to study structural stigma related to sexual orientation, for example, through the use of Google searches for homophobic terms (e.g., "fag"). Moreover, Google Street View has been used to identify environmental factors that place youths at risk for poor mental and physical health outcomes (e.g., Odgers, Caspi, Bates, Sampson, & Moffitt, 2012), and these techniques might similarly be harnessed to characterize the social environment surrounding LGB youths (e.g., anti-LGB graffiti or billboards in certain neighborhoods).

With some exceptions (e.g., Hatzenbuehler, 2011; Hatzenbuehler, Jun, et al., 2014), studies have tended to use measures of only one aspect of structural stigma (e.g., state laws, or social attitudes). This approach may be appropriate for research questions that seek to evaluate which individual components of structural stigma are most robustly associated with the health of LGB youth, which can provide policy- and intervention-relevant data. At the same time, there are at least two instances where single measures of structural stigma may not be appropriate.

First, under some circumstances it might be desirable to develop comprehensive measures of structural stigma that tap into shared variance in order to eliminate or minimize unique variance (e.g., unmeasured variables that reflect constructs other than structural stigma). In these cases, research is needed to test the reliability and validity of comprehensive measures of structural stigma that capture its multiple components (e.g., laws, institutional practices, social norms), which will reduce measurement error, thereby increasing both construct and statistical conclusion validity. There have been some initial attempts to create such comprehensive measures (e.g., Hatzenbuehler, 2011; Hatzenbuehler et al., 2015), but more work is needed in this area.

Second, there may be instances in which it would be productive to interrogate unshared measurement variance between specific indicators of structural stigma, which is not possible when single measures of structural stigma are used. For instance, political scientists have introduced the concept of a "democratic deficit," which occurs when policy is incongruent with majority opinion (Lax & Phillips, 2012). This occurs with surprising regularity; Lax and Phillips (2012) found that opinion majorities are in conflict with state laws (i.e., their views are not reflected in state laws) roughly half the time, and this is true across a range of topics relevant to stigmatized groups (e.g., immigration, gay and lesbian rights, abortion). The existence of the democratic deficit creates an interesting design feature that can be exploited to further study the health effects of structural stigma among LGB youth. For

example, when democratic deficits are operable, it is possible to examine such research questions as the following: Are health outcomes among LGB youth worse in states where attitudes are in conflict with laws (e.g., a state has a law that supports same-sex adoption but less than half of the population supports it) than in states where laws and attitudes are consonant in denying support to LGB individuals? This kind of question presents certain data challenges (e.g., having a large-enough sample size of LGB populations in states with and without a democratic deficit), but with the advent of new population-based samples with large sample sizes of LGB respondents (e.g., Gallup Daily Tracking Survey) this kind of approach is increasingly possible and represents novel ways of testing associations between structural stigma and the health of LGB youth.

**Expanding Methods Used to Study Structural Stigma and the Sequelae of Structural Stigma That Are Evaluated**—In addition to using multiple measures of structural stigma, existing research has utilized a variety of methods to explore relationships between structural stigma and LGB health, including quasi-experiments (e.g., Hatzenbuehler et al., 2010; Hatzenbuehler, O’Cleirigh, et al., 2012) and laboratory studies (e.g., Hatzenbuehler & McLaughlin, 2014). Nevertheless, expanding the range of methods will improve the ability to draw causal inferences about the relationship between structural stigma and adverse outcomes among LGB youth, because it will enable researchers to triangulate evidence across several methodological approaches. I briefly highlight one example of a method—agent-based models—that has yet to be employed to study structural stigma.

Agent-based models (ABMs) are a tool for exploring complex systems across multiple levels of influence (El-Sayed, Scarborough, Seemann, & Galea, 2012). In ABMs, researchers simulate agents that follow prespecified rules of interaction within spatial and social contexts across simulated time. This approach allows researchers to explore how changes in the agent rules and the spatial and social contexts affect the group properties emerging from interactions (Marshall & Galea, 2014). ABMs are particularly well suited for situations in which “agent behavior represents a complex function of agent attributes and characteristics, environments, and inter-agent interaction over time” (El-Sayed et al., 2012, p. 5) and in which the use of regression-based models may be problematic or infeasible.

An ABM approach is thus appropriate for stigma, which, as noted in the introduction, involves understanding multifaceted interactions between the stigmatized and nonstigmatized (interpersonal stigma), understanding the responses of stigmatized individuals to these interactions and anticipating such interactions in the future (individual stigma), as well as understanding how the social context shapes these interactions and responses (structural stigma). Despite calls for treating stigma within such a complex systems framework (see Pescosolido & Martin, 2015), ABMs have only recently been used to study determinants of outcomes among members of stigmatized groups, such as individuals including LGB populations.

It would be possible, for instance, to use an ABM approach to explore the relationships between individual, interpersonal, and structural stigma as a cause of depression among LGB youth. In such a study, agents (LGB individuals) would be given a series of

characteristics— for example, depression, experience of interpersonal discrimination, concealment of sexual minority status—and would interact with the nonstigmatized (heterosexuals) in simulated time and space. At the structural level, one could model a variety of group-level constructs, such as the aggregated attitude of all agents toward sexual minorities and the degree to which the simulated government had passed policies that offer protections to LGB populations (e.g., protected employment status, inclusive antibullying laws). By contrasting the results generated by simulation runs with different starting assumptions, ABMs allow inference about the effects of intervening in complex systems, conditional on the assumption that the system is adequately represented by the simulation (Marshall & Galea, 2014). Thus, a number of research questions could be pursued based on these specified simulations. For example, from an intervention standpoint, what will reduce depression among LGB youth the most? Do laws/policies reduce depression more than changing the attitudes of individual agents? As with all methods, ABMs are not without limitations (El-Sayed et al., 2012). But, used together with other methodological approaches, they hold promise for revealing new insights about the effects of structural stigma for LGB youth, the pathways through which structural stigma creates adverse health outcomes, and which intervention targets might be most promising.

In addition to expanding the range of methods used to study structural stigma, future research should expand the range of outcomes that might be related to structural stigma beyond those reviewed here. As Table 1 demonstrates, studies on structural stigma have largely focused on mental (e.g., suicide attempts) and behavioral (e.g., tobacco use) health outcomes among youth. Future research should consider whether structural stigma is associated with other outcomes that are important to youth development, such as academic achievement, victimization/violence, self-regulation, and measured biomarkers that are responsive to psychosocial stressors (e.g., inflammation, immune functioning, telomere length).

### Identifying Mediators and Moderators

Research has begun to identify potential mechanisms linking structural stigma to health among LGB populations. This work has focused on two primary pathways: stress mechanisms and psychosocial mechanisms. Evidence for a stress pathway comes from both direct and indirect tests. In terms of direct tests, research just reviewed indicates that structural stigma is associated with dysregulated physiological stress responses among LGB young adults (Hatzenbuehler & McLaughlin, 2014). Evidence for stress pathways has also come from more indirect tests. For instance, in one study we obtained data from medical records from a community-based health clinic in Massachusetts to examine the effect of the same-sex marriage law on health care use and costs among sexual minority men. We found substantial reductions in several stress-related disorders—including a 14% reduction in depression and an 18% reduction in hypertension—in the 12 months after the legalization of same-sex marriage compared to the 12 months before, providing suggestive evidence for a stress pathway linking reductions in structural stigma to improvements in sexual minority health (Hatzenbuehler, O’Cleirigh, et al., 2012).

A second potential pathway linking structural stigma to LGB health may involve psychosocial mechanisms, such as social isolation and maladaptive forms of emotion regulation (Hatzenbuehler, 2009; Hatzenbuehler et al., 2013). In general, research has rarely explored these mechanisms, in part because many of the early studies on structural stigma have been conducted with large-scale epidemiologic surveys that did not include measures of psychosocial mechanisms at the individual or interpersonal level. However, studies are increasingly exploring these factors. For example, LGB respondents who lived in high structural stigma states (i.e., those with policies that do not extend protections to gays and lesbians) reported increased hypervigilance and rumination (G. M. Russell & Richards, 2003), a form of emotion dysregulation (Lyubomirsky, Tucker, Caldwell, & Berg, 1999). Testing additional psychosocial mechanisms that explain how structural stigma operates to impair the mental health of LGB youth represents an important avenue for future inquiry, especially because this information can suggest potential targets for preventive interventions.

In addition to identifying mediators, research is needed to determine what factors moderate the structural stigma–health association, either to exacerbate or to attenuate the negative mental health consequences of structural stigma among LGB youth. Although many LGB youth confront structural forms of stigma, it is clear that most do not develop mental health problems, which suggests the existence of protective factors. However, investigation of protective processes in LGB youth has been very limited. Recent conceptual work (e.g., Herrick, Egan, Coulter, Friedman, & Stall, 2014) has suggested that resilience factors in LGB youth likely occur at multiple levels, including individual (e.g., positive sexual orientation identity), interpersonal (e.g., family support), and community (e.g., acceptance and integration into LGB communities). None of these factors has been examined in relation to structural stigma, which remains an important area for future study. Exploring moderators will provide a better understanding of the heterogeneity in response to structural forms of stigma among LGB youth.

Identifying moderators will also aid in the development of more targeted secondary prevention interventions for LGB youth at greatest risk of adverse health outcomes in the context of exposure to structural stigma. For instance, in a study by Pachankis and colleagues (2014), structural stigma interacted with rejection sensitivity, a measure of stigma at the individual level (Mendoza-Denton et al., 2002; Pachankis et al., 2008), to predict tobacco and alcohol use among young sexual minority men. Specifically, sexual minority men who lived in high structural stigma states and who reported high levels of rejection sensitivity based on their sexual orientation were at greatest risk for tobacco and alcohol use. This research demonstrates that structural stigma may interact synergistically with stigma at the individual level to increase risk for adverse mental/behavioral health outcomes among LGB youth. This work also highlights how tests of moderation of the structural stigma–health relationship can suggest the deployment of interventions for LGB youth who live in high-stigma locales and who match certain psychosocial profiles, such as reporting high levels of rejection sensitivity. For example, a recently developed cognitive-behavioral intervention for young men who have sex with men significantly reduced several stigma-related stressors among young men who have sex with men, including rejection sensitivity (Pachankis, Hatzenbuehler, Rendina, Safren, & Parsons, 2015). Whether interventions like this one are effective among LGB youth in high structural stigma environments remains to

be empirically tested (see the upcoming Future Directions in Preventive Interventions section).

### **Examining Intersectionalities**

Research to date has explored structural forms of stigma that are shared by LGB populations related to their sexual orientation. This work is important but has tended to obscure the fact that LGB individuals have other identities that are relevant to health (e.g., race, ethnicity, gender, socioeconomic status). This raises the question of how structural forms of stigma interact to confer risk for, or protection against, poor health. For instance, LGB adolescents with multiple intersecting identities, such as young, Black gay men, confront structural stigma related to both race and sexual orientation. Do these different forms of structural stigma interact, either additively or multiplicatively, to create poor health outcomes?

Answering these and related questions opens up new avenues for exploring structural stigma and health among LGB youth.

### **Testing Generalizability of Structural Stigma Across Other Groups, Particularly Transgender Youth**

Finally, although this article has focused on LGB youth, the methods, theories, and approaches reviewed here can be used to evaluate the extent to which results are generalizable to youth from other stigmatized groups. In particular, transgender youth, like sexual minority youth, confront stigma across individual, interpersonal, and structural levels (Hughto, Reisner, & Pachankis, 2015). However, research on the impact of structural forms of stigma related to gender identity has been lacking in comparison to research on structural stigma related to sexual orientation.

There are at least two reasons for the relative dearth of research on structural stigma related to gender identity. One is that this research requires the use of large-scale data sets with sufficient variation in structural stigma and with measures of gender identity. Until recently, however, few such data sets have existed. Another reason is that, until very recently, there was not sufficient variation in many forms of structural stigma related to gender identity, because most states did not address gender identity in laws and policies. However, the policy landscape surrounding transgender populations is rapidly changing (Hughto et al., 2015), which has provided new opportunities for exploring structural stigma and health outcomes among transgender youth, an important direction for future research.

## **FUTURE DIRECTIONS IN PREVENTIVE INTERVENTIONS**

Structural stigma is important not only because of its direct effects on health but also because of the role it may play in undermining the efficacy of individual-level psychological interventions. A recent article by Reid and colleagues (2014) elegantly demonstrates this point. The researchers reanalyzed a previously published meta-analytic database with information on effect sizes from 78 HIV prevention interventions targeted toward improving condom use among African Americans. Reid and colleagues (2014) took advantage of the fact that these individual-level interventions took place across the United States in communities that differed widely in terms of the level of structural stigma surrounding

African Americans (operationalized via measures of anti-Black attitudes and racial residential segregation).

The results of the study were striking. The psychological interventions improved condom use among African Americans only in low structural stigma communities (i.e., those with relatively positive attitudes toward African Americans and low levels of residential segregation). In addition, in communities with the lowest levels of prejudicial attitudes toward African Americans, the intervention effectiveness improved over time. In contrast, the effect size was 0 in the highest structural stigma communities, indicating that interventions failed when conducted in these environments. These results persisted after controlling for several potential confounders (Reid et al., 2014).

Applied to the context of LGB youth, this study raises important questions about whether structural stigma attenuates the efficacy of existing individual-level interventions aimed at improving health outcomes among this population (e.g., Diamond et al., 2012; Pachankis et al., 2015). If so, this would suggest the importance of designing modules that can be added to existing interventions conducted in high structural stigma communities, consistent with the literature on adaptive interventions (e.g., Almirall & Chronis-Tuscano, 2016). One feasible way to test whether these additional modules improve intervention efficacy would be to develop Internet-based interventions for LGB youth in high structural stigma environments. These youth could be randomly assigned to receive additional modules that target different mechanisms known to link structural stigma and LGB health (e.g., emotion dysregulation, internalized stigma). Researchers could then evaluate which of these adjunctive modules, in combination with other approaches (e.g., cognitive-behavioral therapy; Pachankis et al., 2015), are most effective in improving health outcomes among LGB youth. This experimental approach would have the added benefit of determining whether mechanisms identified in observational research do, in fact, mediate the relationship between structural stigma and health outcomes among this group.

## CONCLUSIONS

In this article I discussed how structural stigma is defined, measured, and evaluated, and I described how this construct differs from existing psychological research on stigma, which has tended to focus on stigma at the individual and interpersonal levels (Major & O'Brien, 2005). I also reviewed evidence demonstrating the far-reaching health consequences of structural stigma for LGB youth across multiple health outcomes. This evidence comes from several methodological approaches, including observational, quasi-experimental, and laboratory designs, which have produced consistent and robust effects.

Thus, the field has generated a reliable body of evidence indicating that structural stigma is a significant, but thus far largely underexamined, mechanism underlying mental health disparities related to sexual orientation among youth. To advance this emerging literature, I offered several suggestions for both research and interventions. The successful implementation of this new research agenda requires overcoming several key challenges, including regulatory obstacles (Mustanski, 2015), lack of funding, and political climate. Additional challenges include issues of data availability. In particular, many population-

based studies of youth that provide substantial geographic variation do not currently include measures of sexual orientation, which prevents researchers from measuring the impact of structural stigma on the health of LGB youth. This is beginning to change, but progress has been uneven. In addition, several population-based data sets that measure sexual orientation do not release information on geographic residence of the respondents (to protect participant confidentiality). Although perhaps unwitting, this practice ensures that researchers continue to study individual- and interpersonal-level factors to the exclusion of structural-level mechanisms, such as structural stigma. Issues of confidentiality must always be protected, but this cannot come at the expense of advancing knowledge necessary for understanding and ultimately reducing sexual orientation health disparities. Multisectoral partnerships that bring together data scientists, social scientists, ethicists, legal scholars, and policymakers are especially needed to address these challenges in order to facilitate the next generation of research on structural stigma and sexual-orientation-based health disparities among youth.

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Illustrative Studies Examining Structural Stigma and Mental Health Outcomes Among Lesbian, Gay, and Bisexual Youth and Young Adults

TABLE 1

Unit of Analysis	Measure	Health Outcome	Sample Characteristics	Citation(s)
State	Composite variable of (a) density of same-sex couples, (b) proportion of Gay-Straight Alliances per public high school, (c) five policies related to sexual orientation discrimination (e.g., same-sex marriage bans, employment nondiscrimination acts that included sexual orientation), and (d) public opinion toward LGB-related policies (e.g., same-sex adoption, public accommodations)	Cigarette smoking	Prospective cohort study ( $N = 2,190$ sexual minorities); $M$ age at baseline = 17.74	Hatzenbuehler, Jun et al. (2014)
County	Composite variable of state laws and attitudes toward homosexuality Prevalence of school districts whose antibullying policies include sexual orientation as an enumerated class (aggregated to the county level) Proportion of religious adherents from religious denominations that were supportive (vs. unsupportive) of homosexuality Composite variable of (a) the proportion of same-sex couples; (b) the proportion of registered Democrats; (c) the proportion of schools with Gay-Straight Alliances; and (d) proportion of schools with nondiscrimination and antibullying policies that specifically protected lesbian, gay, and bisexual students	Illicit drug use	Prospective cohort study ( $N = 2,190$ sexual minorities); $M$ age at baseline = 17.30	Hatzenbuehler et al. (2015)
		Cortisol response	Laboratory study of LGB young adults ( $N = 74$ ); $M$ age = 23.68	Hatzenbuehler and McLaughlin (2014)
		Tobacco and alcohol use	Longitudinal convenience sample of young adult sexual minority men ( $N = 119$ ); $M$ age = 20.61	Pachankis et al. (2014)
		Suicide attempts	Cross-sectional, population-based sample of youth in 11th grade ( $N = 1,413$ LGB respondents)	Hatzenbuehler and Keyes(2013)
Neighborhood	LGBT assault hate crimes (obtained via police records)	Alcohol abuse symptoms, number of sexual partners	Cross-sectional, population-based sample of youth in 11th grade ( $N = 1,413$ LGB respondents)	Hatzenbuehler, Pachankis et al. (2012)
		Suicide attempts	Cross-sectional, population-based sample of youth in 11th grade ( $N = 1,413$ LGB respondents)	Hatzenbuehler (2011)
		Tobacco use	Cross-sectional, population-based sample of youth in 11th grade ( $N = 1,413$ LGB respondents)	Hatzenbuehler, Wieringa, and Keyes (2011)
School	Composite indicator of school climate from CDC's School Health Profile Data: (a) have a Gay-Straight Alliance and safe space for LGBTQ youths, (b) provide curricula on health matters relevant to LGBTQ youths (e.g., HIV), (c) prohibit harassment based on sexual orientation or gender identity, (d) encourage staff to attend trainings on creating supportive environments for LGBTQ youths, and (e) facilitate access to providers off school property that provide health and other services specifically targeted to LGBTQ youths	Suicide ideation/attempts	Cross-sectional, population-based sample of public high school students ( $N = 102$ sexual minorities); $M$ age = 16	Duncan and Hatzenbuehler (2014)
		Illicit drug use	Cross-sectional, population-based sample of public high school students ( $N = 102$ sexual minorities); $M$ age = 16	Duncan, Hatzenbuehler, and Johnson (2014)
School		Suicide ideation, plan and attempts	Cross-sectional, population-based sample of public high school students in 8 states and cities ( $N = 2,782$ LGB youth); $M$ age = 15.8	Hatzenbuehler, Birkett, Van Wagenen, and Meyer (2014)

Unit of Analysis	Measure	Health Outcome	Sample Characteristics	Citation(s)
Gay-Straight Alliances		Illicit drug use, prescription drug misuse	Cross-sectional, convenience online sample of high school students ( $N=475$ LGBT); $M_{age} = 16.79$	Heck et al. (2014)
		Suicidal ideation and attempts	Longitudinal data on GSAs combined with cross-sectional, population-based sample of students in Grades 7–12 ( $N=723$ LGB)	Saewyc et al. (2014)
		Suicide attempts	Cross-sectional, population-based sample of adolescents ( $N=202$ sexual minority youth)	Goodenow, Szalacha, and Westheimer (2006)

*Note:* LGBTQ = lesbian, gay, bisexual, transgender, and questioning; CDC = Centers for Disease Control and Prevention.