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How do anxiety and depression trajectories vary among Black, Latinx, and Afro-Latinx sexual minority young men? Uncovering variation in development with intersectional subgroups

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Abstract:

The current study investigated whether patterns of intersectional stigma experiences were associated with differences in the developmental, parallel trajectories of anxious and depressive symptoms across the transition to adulthood among Black Latinx, and Afro-Latinx cisgender sexual minority young men. Data were from the Healthy Young Men's Cohort Study collected semi-annually from 2016 to 2020 in Los Angeles and included 426 cisgender Black, Latinx, and Afro-Latinx sexual minority young men between the ages of 18 and 25 at baseline. Multi-domain latent growth modeling with a complex grouping variable was used to estimate the parallel trajectories of anxious and depressive symptoms and whether these trajectories varied based on patterns of intersectional stigma at baseline. Models were adjusted for individually varying age of observations to approximate the growth processes from ages 18 to 29. Results demonstrated a general decline in anxious symptoms and depressive symptoms over time. Relative to all other patterns of stigma experiences, the subgroup characterized by a pattern of compounding racism and heterosexism exhibited the highest levels of anxious and depressive symptoms and an earlier peak in anxious symptoms. This compound stigma group also exhibited an earlier and the highest peak in anxious symptoms compared to all other groups. Results highlight the impact of intersecting stigma on mental health across early adult development, the need for mental health intervention early or before the transition to adulthood, and continued effort to challenge and combat racist and heterosexist biases.

Keywords: homophobia, racism, intersectionality, mental health trajectories, disparities

Public Health Significance: Subgroups of Black, Latinx, and Afro-Latinx sexual minority men who experience different patterns of intersectional stigma early in the transition to adulthood also experience higher levels of anxiety and depression. Young men experiencing compounded racism and heterosexism are likely to need earlier intervention to prevent the higher levels and earlier peak in mental health symptoms.

Comprehensive research on mental health developmental trajectories for Black, Latinx, and Afro-Latinx sexual minority men, who experience multiple and intersecting forms of marginalization (Gopaldas & DeRoy, 2015), remains sparse. Germane developmental research on mental health during the transition to adulthood is primarily conducted between groups and focused only on a single-axis of identity comparisons, including comparisons by either sexual minority status or racial and ethnic groups (Schubert et al., 2017). For example, between-group comparisons by sexual identity find that sexual minority adolescent and young men—often from predominantly white samples—have more anxiety and depression problems and diagnoses than their heterosexual peers (Plöderl & Tremblay, 2015; Strutz et al., 2015), while comparisons by race or ethnicity often suggest that Black, Latinx, and Afro-Latinx young men (presumably heterosexual and cisgender) have similar or lower levels of mental health symptoms and diagnoses relative to white young men (Mojtabai et al., 2016). Furthermore, most research on mental health among Black, Latinx, and Afro-Latinx young men or on sexual minority young men is cross-sectional and demonstrates these differences exist statically, and is therefore unable to provide conclusions about when and how depression and anxiety trajectories change across the transition to adulthood (Collins-Anderson et al., 2022; Galvan & La Barrie, 2024; Malik et al., 2023; Plöderl & Tremblay, 2015). As a result, longitudinal, within-group research is necessary to understand nuanced, diverse experiences of Black, Latinx, and Afro-Latinx sexuality minority men who may exhibit multiple, distinct mental health trajectories across the transition to adulthood.

Stigma is a fundamental driver of mental health disparities, including among Black, Latinx, and Afro-Latinx sexual minority young men (Cyrus, 2017; Hatzenbuehler et al., 2013; Phelan & Link, 2013). Research on the health and development of sexual minority men of color

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can strongly benefit from attention to the intersecting cultural and social power structures that sexually and racially minoritize people and foster persistence in minority stressors (Cyrus, 2017; Herek et al., 2009; Jones, 2000). For Black, Latinx, and Afro-Latinx sexual minority men, experiences of intersecting minority stress may be distal (e.g., cultural attitudes, restrictive policies) or proximal (e.g., internalized stigma, interpersonal discrimination) (Cyrus, 2017; Meyer, 2003). Distal stressors, including structural racism and heterosexism, have been linked to worse mental health outcomes among Black, Latinx, and Afro-Latinx sexual minority men (Jackson et al., 2020; Parra & Hastings, 2018; Ramirez & Paz Galupo, 2019; Schmitz et al., 2020). Single-axis longitudinal research focused only on sexual minority men in early in adulthood shows that yearly increases in heterosexist discrimination are associated with yearly increases of depressive symptoms across eight years of early adulthood (Pachankis et al., 2018). Parallel research focused on racial and ethnic minority adolescents and young adults also provides evidence that increasing racist discrimination across adolescent to early adult development is associated with more depressive symptoms (Smith-Bynum et al., 2014) and that experiences of racist discrimination of young adult men of color are associated with later depression (Le & Iwamoto, 2022). An intersectional approach can build on these prior studies to uncover and emphasize how intersecting systems of oppression manifested through stigmatizing experiences may differentiate developmental trajectories.

An Intersectional Framework

An intersectional approach recognizes that interlocking systems of oppression and privilege shape the socio-structural environment and codify meanings ascribed to, and distribute power based on, social categories (e.g., minority/minoritized), thereby uniquely targeting minoritized people with stressors that impact their health (Crenshaw, 1991). Intersectionality

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moves beyond single-axis approaches to examine the interlocking nature of multiple minority stressors (e.g., racism, heterosexism) on health (Khan et al., 2017; Quinn, 2022; Ramirez & Paz Galupo, 2019; Turan et al., 2019), including their impact on the mental health of sexual minority people of color (DiGuiseppi et al., 2022; Mallory & Russell, 2021). For example, greater exposure to ethnicity-based discrimination is linked to higher internalized racism *and* heterosexism among Latinx sexual minority men (López et al., 2023). In addition, emerging longitudinal evidence demonstrates the potential for these intersecting stressors to precede later mental health concerns. In a longitudinal study of Black, Latinx, and multiracial sexual minority men, results demonstrated that experiences of racist discrimination and anticipated heterosexist discrimination together predicted internalizing mental health symptoms (English et al., 2018). These example studies could be described as demonstrating an *intra*categorical, intersectional approach to minority stress and mental health research that centers on within-group analyses, rather than between-group comparisons (*inter*categortical) with white sexual minority men as a referent group (McCall, 2005). These "within-group" analyses focus on intersectional analysis that characterize the often-shared experience for people of color living in a white, heterosexist society while also acknowledging the further diversity of culture, identity, experience of stigma that exists among Black, Latinx, and Afro-Latinx sexual minority men. Furthermore, by centering on the multiple forms of stigma that impact groups rather than on social categories (e.g., race, ethnicity, sexuality), intersectionality research can help to identify modifiable pathways to promote mental health equity among minoritized populations (Bauer & Scheim, 2019).

Life Course Development

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Aligned with a life course perspective, experiences of multiple minority stigma among Black, Latinx, Afro-Latinx sexual minority men that occur during emerging adulthood (Arnett, 2000, 2012)—a developmental period of rapid change and diversity in new experience—— converge with continued ethnic or racial identity (Erikson, 1968; Kroger et al., 2010; Phinney, 2006) and sexual identity (Morgan, 2013; Patterson, 2008) exploration and formation to complicate healthy psychosocial adjustment (Marshal et al., 2013; Parra & Hastings, 2018, 2020). Indeed, it is expected that this developmental transition would be characterized by introduction to new contexts and experiences (Arnett, 2014; Layland et al., 2018) and exposure to new and changing relationships (McNamara Barry et al., 2014). When applying this perspective of developmental change to Black, Latinx, and Afro-Latinx sexuality minority men, these changing contexts and relationships could also mean variability in exposure to racism and heterosexism and differential impact on mental health. For example, increased experiences of racism during the transition to adulthood for Black young men were associated with greater anxiety and depression later in adulthood (Assari et al., 2017). This is preceded by a lifetime of overt and covert racist and heterosexist messages, which may plausibly affect mental health in before and during the transition to adulthood. (Baker, 2013; Iruka et al., 2022; Poteat, 2007; Trent et al., 2019). Taken together, intersecting experiences of stigma leading up to and early in adulthood may contribute to later mental health.

The transition to adulthood is also an age period when disparities in depression and anxiety are largest between sexual minority and heterosexual groups (Rice et al., 2019) and when peaks in anxious and depression symptoms are highest generally (Kwong et al., 2019). Moreover, experiences of racist and heterosexist discrimination contribute to challenges to ethnic, racial, or sexual identity integration among racial or ethnic and sexual minoritized

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persons (Patterson, 2008; Umaña-Taylor et al., 2015). Among sexual minority Latinx young adults, experiences of heterosexist and racist discrimination create conflicts in coalescing their ethnic and sexual identities (Morales, 1989; Shramko et al., 2018) and this conflict is predictive of biological and psychological indicators of depression (Parra & Hastings, 2020; Santos & VanDaalen, 2016; Sarno et al., 2015; Shramko et al., 2018). Thus, when considering developmental change in mental health and divergence in mental health trajectories among Black, Latinx, and Afro-Latinx sexuality minority men, it is imperative to consider the intersecting impact of racism and heterosexism experienced during this transition. Further, because exposure to racism and heterosexism varies among Black, Latinx, and Afro-Latinx sexual minority men, considering heterogeneity in their exposure to these intersecting minority stressors can identify subgroups who exhibit elevated levels of depressive and anxious symptoms and when during the transition to adulthood differences in anxiety and depression are greatest.

Bridging Intersectionality and Life Course Perspectives

Traditional developmental theories emphasize the multiple environmental systems that shape the development of individuals (e.g., ecological systems theory; Bronfenbrenner, 1977), and an intersectional approach makes visible the reality of multiple, intersecting systems that co-exist and converge to create uniquely stigmatizing environments for development among those who experience multiple marginalizations (Syed et al., 2018). Because theories of minoritized development are typically single axis (e.g., minority stress, Brooks, 1981; Meyer, 2003; theory of racial socialization, Smith-Bynum, 2023), an intersectional framework is necessary to understand how multiple sources and systems of oppression converge to shape development within a diverse group (Santos & Toomey, 2018). For sexual minority men of color, an intersectional approach to development calls for consideration of both racism and heterosexism

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together and how they uniquely converge to create new patterns and experiences of stigma and stress. For example, intersecting racism and heterosexism may contribute to anxiety and depression by exacerbating processes known to impact development such as restricting availability of resources (Layland, Maggs, et al., 2022) across the lifespan (Parra et al., 2023), limiting social relationships (Eaton & Rios, 2017), internalizing self-stigma (Newcomb & Mustanski, 2010), challenging identity integration (Parra & Hastings, 2020), and prompting maladaptive coping behaviors (Feinstein et al., 2017). Intersectionality challenges conventional ways of doing psychological research (Santos & Toomey, 2018) by considering multiple systems of oppression comprising the developmental environment and contributing to differential development outcomes.

Novel Methods for Identifying within Group Disparities

Person-centered methods can be used to uncover heterogeneity in the stigma experiences of Black, Latinx, and Afro-Latinx sexual minority young men, by identifying latent subgroups characterized by unique, complex patterns of stigma experiences (Collins & Lanza, 2010; Turan et al., 2019). Contrasted with traditional, variable-centered approaches to quantitative analyses, person-centered methods identify distinct subgroups characterized by patterns of shared or similar experiences, characteristics, or behaviors (Collins & Lanza, 2010). To reflect an intersectional framework, person-centered methods can allow consideration of multiple, co-occurring stigma experiences concurrently within latent subgroups, in contrast to variable centered approaches wherein multiple dimensions of stigma experiences are modeled independently (Layland, Maggs, et al., 2022; Turan et al., 2019). This approach models intersecting stigma as a holistic, embodied experience without artificial siloing into single identities or experiences. Once patterns of stigma are identified, these latent subgroups can then

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be used to investigate how experiences of intersecting racism and heterosexism may vary within a population and how this variation in stigma experience patterns may explain differences in health outcomes concurrently and over time. Unlike variable-centered approaches, person-centered methods estimate the association between the overall pattern of stigma experiences and health outcomes, rather than estimating independent estimates of each type of stigma with a given health outcome (Collins & Lanza, 2010). Overall, this approach allows researchers to use existing or new data to, first, identify distinct patterns and subgroups within a population and, second, to identify differential health outcomes within the population based on common but complex patterns of intersecting stigma experiences.

Person-centered methods are increasingly used to identify subgroups with different patterns of mental health (Barton et al., 2017; Essau & de la Torre-Luque, 2019; Rose et al., 2017), however, only recently and to a lesser extent have researchers used person-centered methods to uncover distinct, complex patterns of stigma experiences (Cooper et al., 2021; Earnshaw et al., 2018; Garnett et al., 2014; Giano et al., 2020). Once identified, researchers can treat subgroups characterized by distinct patterns of stigma similarly to other antecedents to mental health by examining differences among groups in diverse health outcomes, including trajectories of across anxiety and depression across development.

Recent research among Black, Latinx, and Afro-Latinx sexual minority men in the Healthy Young Men's Cohort Study (the same sample as the current study) identified five latent subgroups characterized by unique patterns of intersecting racist and heterosexist experiences (Layland, Maggs, et al., 2022): Minimal Stigma, Select Social Stigma, Multiform Heterosexism, Multiform Racism, and Compound Stigma (Table 1). Based on experienced stigma, each subgroup delineates a unique configuration of racist and heterosexist experiences across various

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domains, including social setting (e.g., work, gay bars), perpetrator (e.g., family, police), severity (e.g., violent victimization, discomfort), and frequency (e.g., never, 1-2 times, many times). In Select Social Stigma, for example, participants were likely to experience occasional racist and heterosexist stigma experiences, typically perpetrated by family, friends, or other close relationships. In contrast, in the Compound Stigma class, stigma was pervasive and ubiquitous across all measured contexts, perpetrators, and stigma types, including violent and non-violent racist and heterosexist experiences. Three additional subgroups include Minimal Stigma (i.e., infrequent racist and heterosexist experiences); Multiform Heterosexism (i.e., enacted and anticipated heterosexist stigma, heterosexist violence, and internalized heterosexism); and Multiform Racism (i.e., frequent racist stigma of many types, including police harassment, mistreatment, sexual racism). Building from these established intersectional stigma subgroups, we can examine how subgroups may differ in trajectories of anxiety and depression across the transition to adulthood among Black, Latinx, and Afro-Latinx sexual minority men.

Current Study

In a longitudinal cohort of Black, Latinx, and Afro-Latinx sexual minority young men, we examined differences in parallel growth processes of both anxious and depressive symptoms conditional on previously established intersectional stigma subgroups stigma (Layland, Maggs, et al., 2022). First, we investigated the unconditional mean trajectories of anxious and depressive symptoms independently. This allowed us to estimate covarying change in anxious symptoms and separately in depressive symptoms from the youngest (18 years old) to oldest ages (29 years old) represented among participants across all repeated observations. Drawing from research on anxious and depressive symptoms trajectories during the transition from adolescence to emerging adulthood among general samples (Kwong et al., 2019), we anticipated a curvilinear

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pattern such that anxious and depressive symptoms would increase from youngest ages, peak in early to mid-twenties, and decline again into the late twenties, following a typical developmental pattern. We then investigated differences in intercept, linear slope, and quadratic slope across latent intersectional stigma subgroups. It was expected that belonging to subgroups characterized by frequent, diverse, multidimensional stigma (i.e., Compound Stigma) compared to subgroups characterized by low or no stigma (i.e., Minimal Stigma) would be associated with greater levels, change, and peaks in anxious and depressive symptoms; thereby suggesting that trajectories of anxious and depressive symptoms vary based on complex patterns of intersecting stigma experiences.

Methods

The Healthy Young Men's Cohort Study (HYM) is a semiannual, longitudinal study in Los Angeles, California, with data for the current study provided from 2016 to 2020 (Kipke et al., 2019). The study utilized social media (e.g., Facebook, Instagram) and dating app (e.g., Grindr, Jack'd) ads, LGBTQ+ venue- and event-based recruitment, participant referrals, and health clinic other community organization referrals to identify eligible individuals who (1) were 16 to 24 years old at recruitment; (2) were assigned male sex at birth; (3) self-identified as gay, bisexual, queer, same-gender loving, any other sexual minority identity, or otherwise uncertain about their sexual identity; (4) reported sex with a man within the past year; (5) self-identified as Black or Latinx; and (6) lived in the Los Angeles area. Participants completed all surveys in person using a combination of computer-assisted self-interviewing and interviewer administered surveys. Ethical research approval was provided by Children's Hospital Los Angeles. Participants provided written informed consent.

Sample

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The analytical sample (*n*=426) included participants who identified as cisgender men and were at least 18 years old at baseline. Participants under 18 years old were excluded due to sparseness of data from ages 16 to 17 overall (*n*=9) and across intersectional stigma subgroups (e.g., no participants under 18 in multiple subgroups). Most of the sample was recruited via social media and dating apps (75.2%) followed by venues and events (10.3%) and participant referrals (7.8%). The sample was 58.7% non-Black Latinx (*n*=243), 21.3% non-Latinx Black (*n*=88), and 20.0% Afro-Latinx (*n*=83). At baseline, the sample was between 18.0 to 25.2 years old (*M*=22.4, *SD*=1.9). Participants completed baseline assessments and every six months for three years, yielding seven waves for analysis with high retention against baseline (Wave 2: 89%; Wave 3: 88%; Wave 4: 89%; Wave 5: 93%; Wave 6: 89%; Wave 7: 83%). Analyses included all available data from each participant, regardless of whether they provided data for all seven waves. Participants lost to follow-up at any wave were invited to reengage at later waves. Compared to retained participants, attriters at Wave 7 did not significantly differ on average at baseline by race and ethnicity, unmet basic needs, HIV status, depressive symptoms, anxious symptoms, or intersectional stigma subgroup. Participants lost to follow-up were, on average, younger than participants who were retained in the sample ($p = .05$) and more likely to be recruited via social media and dating apps than from other sources ($p = .05$). A summary of difference tests between retained participants and those lost to follow-up is included in Supplemental Table 1.

Measures

Racism and heterosexism. Experiences of racist and heterosexist stigma were operationalized as latent subgroups of intersecting stigma (see Table 1) identified by 17 three-level racism and heterosexism indicators (Layland, Maggs, et al., 2022) derived from items in

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Diaz and colleagues' (2001) measure of racism and homophobia and Ross and Rosser's (1996) Reactions to Homosexuality scale, to measure internalized homophobia. Stigma indicators represented frequency of self-reported stigma experiences across many perpetrators (e.g., family, sexual partners, police), contexts (e.g., gay bars, workplace, home), and levels (i.e., internalized, anticipated, enacted stigma). Example items included, "How often have you been treated rudely or unfairly because of your race or ethnicity?", "How often have you had to move away from friends or family because of your sexuality?" (Diaz et al., 2001), and "Sometimes I dislike myself for being sexually attracted to men," (Ross & Rosser, 1996). For racism and heterosexism items, the recall period at baseline was ever in adulthood and responses were coded into three levels for analysis: *never*, *occasionally* (collapsing response options "once or twice" and "a few times"), and *many times*.

Using participant reports of racist and heterosexist experiences, the marginal approach to longitudinal latent class analysis (LCA) uncovered subgroups with similar configurations of stigma experiences at each occasion (Diggle et al., 2002; Vermunt, 2010). All participant data records across all waves were simultaneously analyzed to identify classes (i.e., subgroups) representing all available data with standard errors adjusted to account for repeated measures within persons. This method identifies sample-level means and allows an individual participant to belong to any latent subgroup at each wave (Vermunt, 2010). Extensive detail regarding the selection and identification of the latent subgroups is detailed elsewhere (Layland, Maggs, et al., 2022). In the current analyses, we used baseline subgroup membership to indicate the pattern of intersectional stigma each participant was mostly likely to experience at the onset of data collection. Because the latent class variable is categorical, subgroup membership was recoded to

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create four binary variables for Minimal Stigma, Select Social Stigma, Multiform Heterosexism, and Multiform Racism, compared to Compound Stigma as referent.

Anxious and depressive symptoms. Anxious and depressive symptoms were measured with the Brief Symptoms Inventory (BSI; Derogatis & Melisaratos, 1983). The BSI includes 6-item subscales measuring severity of anxious and depressive symptoms; see Supplemental Table 2 for all items. Participants reported how bothered they were by each of the symptoms over the past seven days (0 = *not at all*; 4 = *extremely*). Subscales were mean scored and achieved high internal consistency at every wave (symptoms: anxious: $\alpha = 0.82 – 0.88$; depressive: $\alpha = 0.84 – 0.90$). Anxious and depressive symptoms were assessed for normality using skewness and kurtosis thresholds of ± 2 and visual review of distribution. To correct for skewness, a log transformation was applied to both anxious and depressive symptoms.

Covariates. Covariates included race and ethnicity and unmet basic needs to approximate economic hardship. Racial and ethnic groups included Black, Afro-Latinx, and Latinx (referent). Unmet basic needs were reported as past 6-month frequency (never, <once a month, once a month, 1–3 times a month, once a week, many times a week) of running out of money to meet basic needs (e.g., food, rent, utilities) with scores ranging from one to six. Time invariant unmet basic needs scores were created by averaging unmet basic need scores across waves within persons.

Age. Age was calculated as time in years from date of birth to date of assessment. Age was grand mean centered (M=24.05, SD=2.15) prior to analysis.

Analytical Plan

To determine whether anxious and depressive symptoms change over time and to investigate whether this change differs across intersectional stigma subgroups, we proceeded

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through three major analytical steps. First, we used latent growth models to test change in anxious and depressive symptoms independently over time. Second, we used multidomain latent growth models to account for the covariance of anxious and depressive symptoms together. Third, we investigated whether parallel change in anxious and depressive symptoms over time differed as a function of intersectional stigma subgroup membership.

Change in anxious and depressive symptoms over time. Initially, two latent growth curves (Meredith & Tisak, 1990) were estimated to describe trajectories of anxious and depressive symptoms independently. Both linear and quadratic effects were estimated to confirm linear and quadratic change over time in anxious symptoms and then in depressive symptoms. These models capture the hypothesized differences in growth by estimating intercepts means of anxious symptoms (defined as the mean level of anxious symptoms at the grand mean age), linear slope (change over time), and quadratic slope (variation in change over time) for the growth processes and the correlations between the intercept, slope, and quadratic slope. Models also accounted for associations among intercept, slope, and quadratic slope within each mental health process. Results of these initial models were used to select the best fitting model and the most conceptually sound model for integration into later stages of analysis.

To account for individually varying age of observations between participants, all growth models were modified by adjusting the time spacing between repeated observations of anxious and depressive symptoms. A typical growth model with structured time assumes the time spacing between observations to be equivalent across all people and observations within a given data set (McNeish & Matta, 2018). From a developmental perspective, when participants in a data set have meaningful differences in their age, modification of the growth model is necessary to adjust for points in development during which participants provide data and contribute to the overall

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estimated growth trajectory. Because the Healthy Young Men's Cohort Study uses a repeated-measures structure with individually varying ages at each observation (ranging from age 18 to 25 at baseline), we modified our model by adjusting the time spacing between repeated measures based on individual age at each observation. That is, we grand-mean centered age across all participants and observations and applied this mean centering to adjust time spacing of the growth curve model based on individual age at each observation relative to the grand mean. Therefore, rather than time spacing being equal to one-unit increments—as with a typical growth curve model using equal ages or data collection wave as the time metric—the time spacing was adjusted to reflect individual age above or below the grand mean. For example, participant *j* aged 20.25 years old at $time_1$ would have a $time_1$ spacing adjustment of -3.80 (grand mean [24.05] - $time_1$ age_j [20.25] = -3.80). To facilitate complex model convergence, these time spacing adjustments were modified by a scalar (e.g., divided by ten).

Parallel trajectories of anxious and depressive symptoms. In the second stage of analysis, parallel trajectories of both anxious and depressive symptoms were modeled simultaneously. Typical approaches to latent growth curve analysis model a single outcome and its change over time, as illustrated in the first stage of analysis. Multiple domain latent growth modeling (MDLGM) allows the modeling of trajectories of multiple outcomes each measured at multiple occasions over time (Willet & Sayer, 1996). This makes it possible to estimate growth trajectories of two potentially related processes at the same time. MDLGM maximizes power beyond multiple individual latent growth models and accounts for possible intercorrelation of these multiple processes (Lee & Whittaker, 2018). Relative to models with fewer parameters (e.g., excluding non-significant linear or quadratic slopes), the best fitting model was selected

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according to relative fit statistics (e.g., Satorra-Bentler Scaled χ^2, Akaike's Information Criterion (AIC), sample-size adjusted Bayesian Information Criterion (a-BIC)).

When combining latent growth models for anxious and depressive symptom change over time, the association between anxious and depressive symptoms were accounted for and estimated in multiple ways. First, observed values of anxious and depressive symptoms were covaried within waves, such that first wave anxious symptoms was covaried with first wave depressive symptoms. Second, associations between process intercepts and slopes were estimated such that the intercept of anxious symptoms was covaried with the intercept of depressive symptoms, and the slope of anxious symptoms was covaries with the slope of depression. Significant coefficients corresponding to the regression pathways between anxious and depressive symptoms indicate a link between anxious and depressive symptoms over time.

Intersectional stigma subgroup differences in trajectories. To test whether parallel trajectories of anxious and depressive symptoms differed as a function of intersectional stigma experiences, a complex grouping variable—based on previously established latent subgroups characterized by intersectional stigma experiences (Layland, Maggs, et al., 2022)—was added to the best fitting multidomain latent growth models estimated in the prior stage. Figure 1 illustrates the hypothesized model including parallel growth processes of both domains of anxious and depressive symptoms and variation as a function of intersectional latent class membership at $time_1$. Significant associations between subgroup membership and intercept or slope of anxious and depressive symptoms indicated differences in trajectories among subgroups.

Prior to the current study, participants were assigned to latent subgroups characterized by intersectional stigma (Layland, Maggs, et al., 2022). Specifically, we identified a five-subgroup latent class model based on indicators of racism (10 items) and heterosexism (7 items);

additional details regarding model selection and fit criteria are available (Layland, Maggs, et al., 2022). Participant records at each wave were assigned to subgroups using modal posterior probabilities. The current study capitalizes on this work by integrating baseline subgroup membership as a grouping variable when modeling covarying trajectories of anxious and depressive symptoms across the transition to adulthood.

By integrating a complex grouping variable into MDLGM, it becomes possible to not only identify subgroups based on shared characteristics or experiences but then to estimate developmental differences between these subgroups on given outcomes. The Compound Stigma subgroup was selected as the referent subgroup based on prior work demonstrating the uniquely elevated sociostructural (Layland, Maggs, et al., 2022) and behavioral health challenges (Layland, Bray, et al., 2022) associated with membership in this subgroup, compared to the other subgroups. Additionally, though analytically distinct, variable-centered models have demonstrated associations between elevated levels of mental health concerns and intersecting racism and heterosexism (Mallory & Russell, 2021). Therefore, the resultant model included the parallel trajectories of anxious and depressive symptoms estimated previously and the addition of the complex grouping variable to estimate how trajectories differ over time as a function of subgroup membership, compared to the referent.

Openness and transparency

The HYM sample size was determined with power analysis to detect small-to-medium effects for generalized linear and multilevel modeling in aims specified in the parent study. The sample was considered acceptable for the current analysis based on conventions for growth curve analysis (Maas & Hox, 2005; Wolf et al., 2013). Data is available upon request. All data exclusions, manipulations to data, and measures are reported. Analysis code is available at

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https://osf.io/9hng3/?view_only=d177ab1346964e0d9bd66d7bbc003557. All models were estimated using Mplus Version 8.8 (Muthén & Muthén, 1998-2017). Time spacing adjustment to account for individually varying age of observation was implemented using the TSCORE function of mixture modeling in Mplus (see Becht et al., 2018 and Muthén & Muthén, 1998-2017 for more detail). All models were adjusted for participant race/ethnicity (Latinx as referent) and a time-invariant score of unmet financial needs (person-level mean across all observations).

Results

A total of 426 participants provided 2,689 observations across three years (seven waves) for analysis. Table 2 summarizes race and ethnicity, age, baseline intersectional stigma subgroup membership, and mental health symptoms across waves. Correlations among intersectional stigma classes, covariates, and anxious and depressive symptoms are presented in Supplemental Table 3-4.

How do anxious and depressive symptoms change together over time?

Initial models of anxious and depressive symptoms, modeled separately, converged normally and estimated significant linear slopes for anxious and depressive symptoms and a quadratic slope for anxious but not depressive symptoms. Because no evidence was found for a quadratic effect of depressive symptoms (η_{23}= -.09, p = .535; see Supplemental Table 5) a more parsimonious model without a quadratic effect for depressive symptoms was fit. This parsimonious unconditional means model was contrasted with the hypothesized model which included quadratic slopes for both anxious and depressive symptoms. The more parsimonious model demonstrated equal fit to the data when compared to the hypothesized model (Satorra-Bentler Scaled $\chi^2(5) = 1.66$, $p = 0.89$), thus, going forward results are presented from the parsimonious model without a quadratic effect for depressive symptoms.

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Results of the multidomain model—with anxious and depressive symptoms modeled concurrently—indicated that, on average, anxious symptoms were highest at age 18 followed by a decline as indicated by significant negative slope (η_{12}= -.49, p <.001) and negative quadratic slope (η_{13}= -.30, p = .002), as shown in Table 3. For anxious symptoms, the linear slope was not correlated with the intercept or the quadratic slope. The intercept and quadratic slope were correlated for anxious symptoms (ψ= -.08, p = .007), indicating that when participants started with a relatively higher level of anxious symptoms, the quadratic effect showing an increase towards a peak was dampened. Significant variance for the intercept (ϕ= .07, p < .001) and linear slope (ϕ= .20, p < .018) but not quadratic slope suggested that the levels and rates of change in anxious symptoms varied between participants.

Depressive symptoms were highest, on average, among the youngest participants and decreased over time as indicated by significant negative slope (η_{22}= -.37, p <.001). The intercept and linear slope for anxious symptoms were not correlated. Significant variance for the intercept (ϕ= .07, p < .001) and linear slope (ϕ= .22, p = .012) suggested that the levels and rate of change in depressive symptoms exhibited significant differences between participants.

Across parallel growth processes for anxious and depressive symptoms, intercepts and linear slopes were positively correlated. That is, on average, participants that started with relatively higher anxious symptoms also exhibited higher depressive symptoms (ψ = .06, p < .001) and participants with greater decline in anxious symptoms also exhibited greater decline in depressive symptoms (ψ = .17, p = .024). Within each wave, anxious and depressive scores were positively correlated.

How are trajectories of anxious and depressive symptoms associated with intersectional stigma subgroups?

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As shown in Table 4, the multidomain model with intersectional stigma grouping variable demonstrated better model fit when compared to the unconditional means multidomain model (Satorra-Bentler Scaled $\chi^2(28) = 105.95$, $p <.001$) and improved relative fit criteria (ΔAIC = 50.76; Δadjusted-BIC = 26.09). In this model with complex grouping variable, there was evidence of correlation between intercept and quadratic slope for anxious symptoms ($\psi= -.08$, $p = .006$) and between intercepts for anxious and depressive symptoms ($\psi= .04$, $p <.001$). Within each wave, anxious and depressive scores were positively correlated. No other within- or across-process correlations were significant. Results of the latent growth model with complex grouping variable are presented first for the Compound Stigma subgroup (referent) and then for each other intersectional stigma subgroup in comparison to Compound Stigma.

For Compound Stigma, like in the unconditional means model, anxious symptoms declined over time, as indicated by significant negative linear slope ($\eta_{12} = -.42$, $p <.001$) and visualized in Figure 3. When multiplied by time spacing adjustment for individually varying age of observation, the highest level of anxious symptoms was estimated to be around age 18 for Compound stigma—about two years earlier than peaks in Select Social Stigma, Multiform Heterosexism, and Multiform Racism and four years earlier than the peak in Minimal Stigma, as demonstrated by the negative quadratic slope ($\eta_{13} = -.31$, $p = .002$) (see Figure 3). The minor increase to a peak in anxious symptoms was followed by a decline in anxious symptoms that accelerated over time. Depressive symptoms were highest, on average, among the youngest participants and decreased over time as indicated by significant negative linear slope ($\eta_{22} = -.89$, $p <.001$). When contrasted with other intersectional stigma subgroups, the Compound Stigma intercepts for both anxious and depressive symptoms were higher, and the rate of decline over time (linear slope) was faster. For anxious and depressive symptoms trajectories, all subgroups

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were at comparable levels around age 24 years old at which age all subgroup symptoms trajectories continued on a gradual decline.

Compared to Compound Stigma, we found a general pattern of other latent class subgroups having, on average, lower initial levels of anxious and depressive symptoms and slower rates of linear decline in symptoms over time (see Figure 2). Minimal Stigma ($\eta_{11} = -.12$, $p = .011$), Multiform Heterosexism ($\eta_{11} = -.22$, $p < .001$), and Multiform Racism ($\eta_{11} = -.10$, $p = .027$) all had, on average, lower initial levels of anxious symptoms than Compound Stigma, and Minimal Stigma ($\eta_{12} = .50$, $p = .003$) and Multiform Heterosexism ($\eta_{12} = .34$, $p = .046$) had slower rates of decline over time compared to Compound Stigma, as indicated by positive linear slopes. Only Multiform Heterosexism ($\eta_{21} = -.20$, $p < .001$) had, on average, lower initial levels of depressive symptoms than Compound stigma. Minimal Stigma ($\eta_{22} = .46$, $p = .013$), Select Social Stigma ($\eta_{22} = .41$, $p = .017$), and Multiform Racism ($\eta_{22} = .44$, $p = .011$) all had, on average, slower rates of decline than Compound Stigma.

Having more unmet financial needs was associated with higher initial levels of anxious ($\eta = .08$, $p < .001$) and depressive symptoms ($\eta = .09$, $p < .001$) but not with linear rate of change over time. Black participants exhibited a faster decline in depressive symptoms over time ($\eta = -.06$, $p = .043$) than Latinx participants. There were no other differences between racial or ethnic groups.

Sensitivity analysis

To further confirm the existence of a quadratic slope for anxious symptoms and not for depressive symptoms, unconditional means models were replicated for anxious symptoms and depressive symptoms independently. Included in Supplemental Table 6, results of these models

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confirmed a significant quadratic effect in the same direction and magnitude for anxious symptoms and no evidence of a quadratic slope for depressive symptoms.

With Minimal Stigma as the referent, observed differences from Compound Stigma persisted and additional differences among subgroups in anxious symptoms intercept were detected. Compared to Minimal Stigma, the initial level of anxious symptoms, on average, were higher for Select Social Stigma ($\eta = .10$, $p = .015$) and lower for Multiform Heterosexism ($\eta = -.10$, $p = .020$). There were no other differences in intercept, linear slope, or quadratic slope when comparing other subgroups to Minimal Stigma.

Discussion

Applying a developmental lens to intersectional stigma and its harms on mental health revealed variation in mental health trajectories among Black, Latinx, and Afro-Latinx sexual minority young men across the transition to adulthood, with anxious and depressive symptoms exhibiting complementary but distinct growth patterns. Both anxious and depressive symptoms were generally higher earlier in development and peaked highest and earliest among those young men experiencing compounding racism and heterosexism—though both anxious and depressive symptoms generally improved over time. By integrating previously established subgroups characterized by intersecting experiences of racism and heterosexism, results of the current study reveal that young men's complex patterns of intersectional stigma experiences differentiate for whom and when anxious and depressive symptoms are highest. Results of the current study make important contributions by identifying points in development when mental health symptoms are most severely elevated, uncovering variation within a disparity, and highlighting the weakening link between intersectional stigma and mental health across development.

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Building from single-axis approaches (e.g., racial differences *or* sexual orientation differences) and utilizing an intracategorical intersectional approach, findings from the current study provide some of the first longitudinal evidence of mental health trajectories among Black, Latinx, and Afro-Latinx sexual minority young men. Similar to prior literature that demonstrates co-occurrence of anxiety and depression (Olino et al., 2010), correlation of observed measures of anxious and depressive symptoms in the current study suggests a general pattern of anxious and depressive symptoms hanging together within each timepoint. Further, in the unadjusted model, cross-process covariance between intercepts and between linear slopes suggests that anxious and depressive symptoms tend to be at the same level and move in the same direction over time in general populations (McLaughlin & King, 2015). Taken together these results suggest that singular focus on depression or anxiety alone could ignore the reality that these processes are co-occurring and linked, to some degree, across development.

Although both mental health processes demonstrated an overall linear decline in symptoms from age 18 to 29, only anxious symptoms exhibited evidence of a quadratic slope with minimal increasing growth in symptoms early in adulthood and then continued decline over time. Recent research has highlighted depression as a particular burdensome concern for sexual minority men in the US (Bromberg et al., 2021) and findings from the current study add that the transition to adulthood may be a particular developmental period when the relevance of anxiety is also important. For Black, Latinx, and Afro-Latinx sexual minority young men, anticipation of stigma and prejudice may contribute to increasing levels of anxious symptoms as they transition into adulthood. Racial and stress trauma literature suggest that prior exposure to racism-related threats contributes to later hypervigilance, wherein individuals maintain an elevated awareness and attention paid to events that may be related to racism (Woody et al., 2022). In sexual

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minority literature, this has been described as anticipated stigma wherein sexual minority individuals face added stressors by being conditioned to anticipate future anti-LGBTQ stigma (Herek et al., 2009). Hypervigilance following ubiquitous and frequent experiences of both racist and heterosexist stigma could also explain why young men experiencing a pattern of compound stigma experienced an earlier and higher peak in anxious symptoms. For Black, Latinx, and Afro-Latinx sexual minority men stress from anticipated stigma may be further exacerbated by attributional ambiguity of anticipated stigma (Major & Crocker, 1993) wherein motivations for prejudicial mistreatment may be due to race or ethnicity, sexuality identity, both, or another unknown factor.

Importantly, the higher level of depressive symptoms at the youngest ages in our sample may reflect experiences of loneliness that often manifests in adolescence and young adulthood (von Soest et al., 2020), particularly among those who lack access to affirming and uplifting social support (Liu et al., 2022; McConnell et al., 2015). For example, Black and Latinx sexual minority men are often affronted with difficulties navigating social and cultural norms and expectations ascribed to them due to their race, ethnicity, and sexual identity (Bauermeister et al., 2018; Eaton & Rios, 2017; Rhodes et al., 2011; Schmitz et al., 2020), that may cause feelings of alienation. This social isolation may be especially severe for Black, Latinx, and Afro-Latinx sexual minority men who may experience interpersonal rejection from racial or ethnic communities and white sexual minority communities (Balsam et al., 2011; Morales, 1989) together with internal challenges to integrating racial or ethnic identities with sexual identity (Espín, 1993; Sarno et al., 2015). Moreover, young Black, Latinx, and Afro-Latinx sexual minority men face structural inequities linked to increased anxiety and depression, including housing instability and food insecurity (Layland, Maggs, et al., 2022; LoSchiavo et al., 2020).

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Programs or interventions that assist Black, Latinx, and Afro-Latinx sexual minority men in finding strong social connectedness may increase self-acceptance and other forms of resistance, thereby reducing their mental health burden (Garcia et al., 2020).

By demonstrating subgroup differences in mental health trajectories among Black, Latinx, and Afro-Latinx sexual minority men, we build upon evidence that young sexual minority men are more likely to experience depression and anxiety symptoms than their heterosexual peers (Waller et al., 2023) to demonstrate differences within this population. These findings highlight the importance of intersectional approaches that center on multiple layers (e.g., experienced, internalized), forms (i.e., racism, heterosexism) and sources (e.g., family, intimate partners) of stigma, rather than using social identities (e.g., race, ethnicity, sexual identity) as a proxy for stigma (Bauer & Scheim, 2019). We found that young Black, Latinx, and Afro-Latinx sexual minority men with pervasive, ubiquitous exposure to racism and heterosexism (Compound Stigma) experienced the earliest and highest peaks in anxious symptoms—during a developmental period many young people are already vulnerable to mental health concerns (Schulenberg et al., 2004). These findings indicate that the interlocking effect of racism and heterosexism may function as a key driver of inequities in anxious symptomology among Black, Latinx, and Afro-Latinx sexual minority men prior to and during the transition to adulthood. Importantly, the source or perpetuator of stigma may play a key, understudied role. We found that those in the Select Social Stigma group, whose stigmatizing experiences were rarer but emanated from close networks (e.g., family, intimate partners, experienced the second highest peak in anxious symptoms. These findings emphasize the need for stigma reduction interventions that are both multi-level (e.g., community and family) and intersectional in nature, in efforts to reduce the combined influence of racism and heterosexism against this population.

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Multi-level, multi-component interventions rooted in empowerment (e.g., self-efficacy, self-advocacy) can build community-level resistance to social and structural manifestations of intersectional stigma (e.g., Frye et al., 2019). To achieve healthy equity, there must be resistance to systems of structural racism, structural heterosexism, and their intersection in order to disrupt the maintenance of power and control of social norms that pushes Black, Latinx, and Afro-Latinx sexual minority men to the margins and away from resources. Anti-stigma work should occur alongside strengths- and empowerment-based interventions among Black and Latinx sexual minority men, in efforts to foster contemporary resistance to the longstanding harms of stigma.

Like in the current study, other lifespan studies of stigma and mental health often point to the first few years of early adulthood (e.g., 18-25) as developmental period when the impacts of stigma on mental health are most severe (Fish et al., 2019; Layland, Exten, et al., 2020). The explanation for this developmental effect remains speculative. For example, early adulthood is a time of numerous possible transitions, which may shift exposure to new people, ideas, and contexts (Arnett, 2014) alongside changing experiences of stigma, all which may coincide with shifting social support available during this period. Although Black, Latinx, and Afro-Latinx sexual minority young men have grown up in a broader culture that endorses the devaluation of their identities and personhood (Feagin, 2013; Hatzenbuehler, 2014), novel exposures to discrimination and stigma could increase stress during this period. As young men move into new social environments opportunities for new stressors may be expanded and may include new intersectional stressors as well as more ambiguous stress (Major & Crocker, 1993). Based on evidence in this study, early intervention prior to and during the earliest parts of the transition to adulthood are needed to support young men most impacted by compounding experiences of racism and heterosexism, rather than targeting solely one form of stigma in isolation. Based on

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review of existing interventions addressing stigma among sexual minority populations, very few have been designed to address the lived realities of intersectional stigma and its harms on health (Layland, Carter, et al., 2020). Further still, relative to the Minimal Stigma subgroup, young men in all other groups experienced earlier peaks in anxious symptoms; thereby highlighting the need for preventative intervention that is responsive to stigma-related stress and addresses the growth in mental health symptoms before age 22. These results emphasize that intersecting sources of stigma are not only harmful as single points in time but that intersectional stigma occurring early in the transition to adulthood differentiates levels and trajectories of mental health over time within the study sample.

Importantly, despite evidence in the current and prior studies of mental health disparities and harms of stigma, trajectories of anxious and depressive symptoms in the current sample improved over time. In all subgroups, anxious and depressive symptoms were lowest in the late twenties, with all subgroups exhibiting around the same level of mental health symptoms by ages 24 to 25. These results add to the on-going discussion about how experiences of discrimination and psychological distress change over time and across development (Birkett et al., 2015). For example, growth in both social (e.g., support, community connectedness) and intrapersonal phenomena (e.g., sexual and racial identity development, positive coping) that may be more readily employed in adulthood, relative to adolescence, may plausibly help reduce some of the deleterious influence of discrimination on psychological distress (Russell & Fish, 2019). More research is needed to understand what factors counteract the negative impacts of stigma and allow the mental health of Black, Latinx, and Afro-Latinx sexual minority young men to improve across development.

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The lived experiences of study participants together with the results of this study emphasize the need for interventions that support Black, Latinx, and Afro-Latinx sexual minority men with skills for responding the intersectional prejudices that are perpetrated against them. Generally interventions that adequately address mental health (Huang et al., 2020) and stigma (Layland, Carter, et al., 2020) with an intersectional perspective are lacking. However, emerging research demonstrates the acceptability and initial efficacy of interventions designed with an intersectional framework to specifically support the mental health of sexual minority people of color (Jackson et al., 2022; Lozano et al., 2022). These interventions provide opportunities for participants to learn skills to respond to and reframe their experiences of stigma (Jackson et al., 2022) as well as develop social support among similar others (Jackson et al., 2022) or family members (Lozano et al., 2022). Young men experiencing a pattern of compounding racist and heterosexist stigma may be most in need of intervention to establish social connection and support due to the pervasive rejection and stigma experienced across an array of relationships and contexts.

Limitations

Our focus on Black, Latinx, and Afro-Latinx sexual minority young men serves as a strength that allows us to explore the intertwining impacts of racism and heterosexism on their collective mental health. Still, this grouping may not fully capture the heterogeneity in lived experiences and exposure to, and impact of, stigma that exists within and between Black, Latinx, and Afro-Latinx sexual minority men (Cuevas, 2022). Indeed, although the person-centered method employed allowed identifying of subgroups and patterns characterized by co-occurring racism and heterosexism experiences, stigma measures did not reflect an intracategorical intersectional measure of Black, Latinx, and Afro-Latinx sexual minority men’s experiences

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(McCall, 2005). Person-centered methods that approximate holistic patterns of intersecting stigma from single-identity measures (e.g., enacted racist stigma, internalized heterosexist stigma) may neglect the intersectional reality of stigma that uniquely targets people the intersection of race and sexual identity. Additionally, studies focused on individual and interpersonal stigma may not capture the full breadth of the mental health impact of systemic forms of racism and heterosexism, which may lead to an under-representation of the examined effects. Lastly, the generalizability of these results may be limited to Black, Latinx, and Afro-Latinx sexual minority men in the Los Angeles area who are engaged with venues, events, or clinics that serve sexual minority populations.

Analytically, the current study is constructed with major strengths that allow examination of growth and change over time during a period of developmental change, however, limitations to the model that come with secondary data analysis must be acknowledged. This data was collected every six months thereby reducing our ability to detect change that occurs at more granular time scales. By altering models for individually-varying age of observation we were able to use data across persons to estimate growth trajectories that reflected a longer and more continuous period of development from age 18 to 28. Due to the complexity of this analytical approach intersectional stigma classes were modeled as baseline predictors which allowed an estimation of how intersectional stigma patterns earlier in adulthood predict change across the transition; however, future analysis should consider the changing patterns of stigma and co-occurring change in mental health over time. Second, because data used in the current study started at age 18, we are unable to model anxious and depressive trajectories from adolescence into adulthood. This is a challenge that has been observed in other developmental research in similar populations (Layland et al., 2020) leaving it less clear how mental health trajectories may

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change from adolescence to early adulthood. In the current study this appears particularly salient for uncovering a potential earlier peak in anxious symptoms for the Compound Stigma subgroup during adolescence. A prospective cohort from adolescence into adulthood would provide insight into change across this key developmental transition and better data to explain what factors earlier in development might explain which young men are more likely to experience different patterns of intersecting stigma. Identifying psychosocial drivers of subgroup membership (e.g., financial instability; Layland, Bray, et al., 2022) could uncover further opportunities for early intervention.

Conclusion

For Black, Latinx, and Afro-Latinx sexual minority young men, the transition to adulthood was marked by trajectories of increasing then declining anxious symptoms and a general overall decline in depressive symptoms. Integration of intersectional stigma subgroups revealed that young men with experiences of compounding racism and heterosexism had the highest levels and earliest peaks in anxious symptoms relative to all other subgroups. By age 24 anxious and depressive symptoms were gradually declining to similar levels for all subgroups. Interventions to prevent escalation in mental health symptoms and to reduce incidents of racism and heterosexism are needed in adolescence and very early in the transition to adulthood.

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