

Associations between hope and trajectories of critical consciousness among U.S. youth of color

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Abstract

We examined associations between hope as an internal asset that supports positive youth development, and growth trajectories of three critical consciousness components. Using five waves of data collected over the course of high school ($N=618$), we modeled growth trajectories of awareness of inequity (*critical reflection*), a sense of agency about taking sociopolitical action (*critical agency*), and behaviors targeting systems of oppression (*critical action*). Hope was highest among those with high trajectories of critical agency and critical action. Clear associations with hope emerged at the last time point for critical reflection, suggesting that sustained growth in critical reflection is associated with hope. When supporting the critical consciousness development of youth of color, concurrent support for hope may be instrumental.

KEYWORDS

critical consciousness, growth mixture modeling, hope

INTRODUCTION

Critical consciousness (CC) encompasses the interrogation of, and challenges to, systems of oppression (Diemer et al., 2016; Watts et al., 2011). As such, it is an important framework for understanding the experiences of youth of color who are impacted by multiple intersecting systems of oppression, including systems of oppression that discriminate against and marginalize racialized communities. A substantive body of work has linked CC development to collective and individual transformations toward social justice and liberation (Heberle et al., 2020). Through CC, young people of color have catalyzed community-level policy change to address persistent racial gaps in educational opportunities (Fernández et al., 2016). Additionally, engagement in CC by youth of color has been linked to a number of positive developmental outcomes, including educational achievement, career development, and civic engagement (Heberle et al., 2020). Given the various macro- and micro-level benefits of CC, research has attempted to better understand the factors that support the development of CC, particularly among youth of color. Within this literature, schools (Rapa et al., 2020b), out-of-school

programs (Carey et al., 2021), family (Bañales et al., 2020), and peers (Pinedo et al., 2021) emerge as central socializing forces that help shape young people's awareness of systemic inequity and their commitment to action challenging this inequity. Yet comparatively less research has examined the role of youths' own strengths in fostering the CC process. Given that racial justice efforts can sometimes be fraught for people of color (Gorski, 2019), it is important to consider how youth may be able to draw on internal assets to sustain their engagement in powerful CC processes.

Youth possess various internal assets that can support positive developmental trajectories; these assets range from positive commitments and values (e.g., integrity, valuing diversity) to skills and competencies (Benson, 2007). Hope—defined as optimistic expectations for the future—has been identified as one key internal asset associated with positive youth development (Schmid, Phelps, Kiely, et al., 2011; Schmid, Phelps, & Lerner, 2011). There are also important theoretical connections that have been drawn between feelings of hope and CC development. In considering Black youth specifically, Ginwright (2011) has positioned feelings of hope as a crucial component of youths' engagement in action challenging racism and racial injustice. Consequently,

investigating the relationship between hope and CC development is important for understanding how youth may be sustaining their involvement in CC, and may also help to explain how CC supports youth achievement and resilience in various domains, including educational and vocational development.

To date, surprisingly few studies have examined hope and its relationship to CC development. Accordingly, the present study investigated associations between hope and CC for youth of color across four years of high school. We assessed whether different trajectories of critical reflection, critical agency, and critical action could be identified among a sample of adolescents of color, and further examined whether these trajectories were differentially related to youths' levels of hope.

LITERATURE REVIEW

A tripartite model of CC

CC as a concept took hold through the writings of Brazilian philosopher-educator Paulo Freire (1970/2016) and refers to the process by which individuals from oppressed groups come to analyze and act against systems of inequity that impact their lives. According to Freire (1970/2016), this pairing of reflection and action (i.e., "praxis") is crucial for resisting and dismantling oppression.

Building on Freire's work, a third element of CC has been posited as a bridging factor between the cognitive and behavioral CC elements of critical reflection and critical action (Diemer et al., 2020; Watts et al., 2011). This bridging factor accounts for the translation of analysis and critique into action and is considered key for avoiding a passive state of "armchair activism" (Watts & Guessous, 2006). Although there is growing agreement that the bridging factor is related to socioemotional constructs that can prompt action, there is disagreement about the exact scope of this third element. The bridging factor between critical reflection and critical action has been referred to as critical agency (Bañales et al., 2021; Cadenas et al., 2020; Hope et al., 2020; McWhirter & McWhirter, 2015; Patterson et al., 2021), sociopolitical control (Diemer et al., 2006; Diemer & Blustein, 2006; Diemer & Li, 2011), (socio)political (self-)efficacy (Diemer & Rapa, 2016; Godfrey et al., 2019; Godfrey & Grayman, 2014; Kennedy et al., 2019), and critical motivation (Rapa et al., 2020a). In our study, we refer to the bridging factor as critical agency to underscore connections to the notion of agency within social cognitive theory (Bandura, 2018). In social cognitive theory, agency includes forethought (making plans in order to guide actions), self-reactiveness (managing and regulating behaviors by evaluating them against goals), and self-reflectiveness (monitoring and deciding between various courses of action using a self-assessment of values, capabilities, and assessments). Within social cognitive theory frameworks, self-efficacy is described as contributing to a sense of agency, and agency is thought to be a key process

underlying motivation (Schunk & DiBenedetto, 2020). We propose that agency in the sociopolitical domain—critical agency—is a key element of critical consciousness. In our view, critical agency includes feelings of self-efficacy and is crucial for individuals to be motivated to take part in critical actions.

Within CC research and scholarship, there is substantial variability with regard to how CC is measured and assessed. Whereas some researchers and scholars conceptualize CC as a single, overarching component comprised of averages along the reflection, agency, and action subcomponents (Thomas et al., 2014), several others argue that CC development can, and perhaps should, be considered in terms of each of the individual, but related, subcomponents (Diemer et al., 2015). Cross-sectional research on CC utilizing mixture modeling suggests that critical reflection, critical agency, and critical action may not always manifest in tandem (e.g., Christens et al., 2018; Godfrey et al., 2019). Mixture modeling is a powerful suite of statistical techniques that allows researchers to model unobserved subgroups in their data based on participants' responses to various indicators (e.g., survey questions). For instance, Christens et al. (2018) conducted a mixture model with indicators of cognitive and emotional empowerment, constructs that largely map onto critical reflection and critical agency, and identified a group ("critical but alienated") that was characterized by heightened levels of critical reflection but weak critical agency. This typology suggests that critical reflection about systemic inequity does not necessarily engender in youth a feeling that they can carry out the actions needed to challenge inequity. Similarly, Godfrey et al. (2019) identified four CC subgroups among adolescents of color—two of which were defined by heightened critical reflection and two of which were defined by weak critical reflection. Notably, the "critical" groups and the "acritical" groups were both characterized by similar levels of critical action, suggesting that youth may be engaging in critical action irrespective of levels of critical reflection. This cross-sectional work by Christens et al. (2018) and Godfrey et al. (2019) suggests that there is substantive variation along each CC component that warrants further examination from a longitudinal perspective.

Variation in the development of CC

In addition to investigating the structure of CC at a particular time point, it is important to examine how CC develops. Examining these changes during adolescence is key as individuals undergo development in their cognitive capacities during adolescence that may support changes in critical consciousness. For example, the ability to reason abstractly emerges in adolescence (Dumontheil, 2014), and adolescents also experience growth in capacities for perspective-taking (Kilford et al., 2016).

In the past, scholars have proposed stage models of CC in which "less critical" stages preceded "more critical" stages (Watts et al., 1999). However, as evidenced by the

cross-sectional mixture modeling work described above, it is possible that CC development follows independent patterns of change for different individuals instead of each person neatly transitioning from “earlier” to “later” stages of CC. For instance, whereas some youth may have stable levels of CC over the course of their adolescence, others may experience growth in CC. Still, others may experience decreases in their CC over time.

In this study, we examined growth in critical reflection, critical agency, and critical action separately. Furthermore, we considered the possibility that subgroups of youth in our sample may differ in their trajectories of development along these CC components. In trying to explicate the connections between hope and CC, we first modeled within-group differences in development for each CC component and then assessed relationships between the modeled trajectories and hope.

Hope as an internal asset

Hope can be defined as positive cognitions about the direction of one's life; youth who have hope have enthusiasm about their future and are able to imagine a later self that has succeeded in various outcomes that are important to them (Schmid & Lopez, 2011; Snyder, Rand, et al., 2002). We measured hope using a scale that includes questions about how favorable young people's cognitions about the future are, as well as whether their emotions about the future have a positive valence (Park & Peterson, 2006).

Hope in young people has been linked to a multitude of positive life outcomes. In studies with college students, hope has been linked to academic success (Feldman & Kubota, 2015; Snyder, Shorey, et al., 2002) as well as lower depression and anxiety (Arnau et al., 2007; Gallagher & Lopez, 2009). Links between hope and school achievement (Bryce et al., 2020; Gilman et al., 2006) and between hope and psychological well-being (Dixson et al., 2017; Schmid, Phelps, Kiely, et al., 2011) have also been replicated with middle and high school youth. Notably, Valle et al. (2006) found that hope attenuated the relationship between stressful life events and poor mental health outcomes, demonstrating hope's potential as a buffer against negative developmental outcomes.

Taken together, these findings suggest that hope can act as an *internal asset*—a strength within youth that can promote or sustain young people's positive developmental trajectories (Schmid & Lopez, 2011). Youth who anticipate a desirable future may hold beliefs and act in ways that will eventually help them to attain the very outcomes they are hoping to achieve (Schmid & Lopez, 2011). Thus, hope has a motivational power critical for achieving goals throughout one's development (Snyder, Rand, et al., 2002). In fact, a longitudinal investigation by Schmid, Phelps, Kiely, et al. (2011) provides evidence for hope's role in long-term goal pursuit among adolescents. More specifically, adolescents' hopeful expectations about the future predicted their later scores in goal-directed self-regulation (e.g., “I keep trying as many different possibilities as are necessary to succeed at my

goal”), which in turn predicted positive youth outcomes like school engagement and self-esteem (Schmid, Phelps, Kiely, et al., 2011). Given the links between hope and positive youth development, the current study sought to examine hope in relation to another important process (particularly among youth of color)—critical consciousness development. In the present study, we examined ways in which hope as an internal asset may be associated with youths' engagement in CC.

Authors writing from an empowerment perspective (Christens et al., 2015) also consider hope to play an important role in individuals' experiences analyzing and dismantling oppression (Christens et al., 2013). For example, the psychological empowerment that young people feel when they feel emotionally and intrapersonally able to make changes in social and political systems has been considered the antidote to “learned helplessness”—that is, “learned hopefulness.” When young people feel this hopefulness in tandem with a critical analysis of structures of oppression, it may be considered “critical hopefulness” (Christens et al., 2018). Critical hopefulness is thus considered key to a sustained and resilient empowerment process.

Links between hope and CC

Scholars writing about the development of youth who experience oppression underscore the important role of hope in supporting these youth to challenge injustice and inequity in our society (Ginwright, 2011). It is likely that hope and CC are related in complex ways. Processes of critical consciousness may engender hope: for example, engaging in critical action as part of a collective struggle for liberation may foster feelings of belonging which may lead to hope; further, critical reflection, by revealing systems of oppression that work to reproduce inequalities over generations as the true cause of vast disparities, may support hopefulness by removing experiences of isolation and self-blame. Those who are more hopeful may also be better equipped to engage in CC. For instance, it may require a strong sense of hope to support sustained engagement in critical action: fighting against oppression is a generations-long battle that is arduous and not without consequences for one's well-being (Gorski, 2019).

Despite the theoretical links between hope and CC, only a handful of studies have empirically examined the relationships between hope and CC among marginalized youth. In one study conducted in Israel, Zlotnick et al. (2019) found that youth who were Ethiopian immigrants, a group that comprise just 1% of the total population in Israel, had higher hope if they also had high awareness of discrimination and racism. This finding suggests that hope is related to an awareness of the ways one's group experiences disadvantages within society, and this relationship is examined in-depth in the present study by considering longitudinal associations between hope and critical reflection. Another study found that gender and sexual minority youth experienced a growth in hope when participating in Gender-Sexuality Alliances (GSA; Poteat et al., 2020). In addition to the social-emotional

support provided by the GSA, accessing information and resources through the GSA as well as having opportunities to engage in advocacy with the GSA, predicted hope. These findings suggest that youth became more hopeful as they learned about their sociopolitical standing and how to advocate for more rights and power for themselves.

Current study

In the current study, we investigated whether and how hope is related to CC, conceptualized as critical reflection, critical agency, and critical action. We modeled trajectories of youths' development along each of these components and then examined associations with hope at all five study time points. Based on the literature, we hypothesized that trajectories of sustained high levels or growing levels of each CC dimension would be related to the highest levels of hope.

METHOD

Data included in the present study were collected as part of a larger, mixed-methods study examining adolescents' critical consciousness development over four years of high school (Seider et al., 2017).

Participants

The present study's participants included youth ($n=618$; 56.47% girls; 43.53% boys) from six public charter high schools located in a large city or a midsize industrial city in the northeast of the United States. Students at the six schools were predominantly students of color: the percentage of students of color ranged between 91% and 100%. The percentage of students on free or reduced-price lunch ranged between 73% of students to 81% of students.

Students were in ninth grade at the time of recruitment (age information was not collected). Within this sample, the majority of adolescents identified with race and ethnicity labels that the research team grouped as Black/African-American (60.36%). Roughly one-fifth of the adolescents identified with descriptors that researchers classified as Hispanic/Latinx (21.20%). Those who selected more than one distinct racial group (including those who identified partially as white) were categorized as multi-racial (18.45%). Detailed information about how adolescents identified in terms of their race and ethnicity can be found in Table S1 of the online supplemental materials.

Data collection

Participating adolescents were asked to complete surveys at five time points beginning with September 2013 or at the start of their ninth-grade year. Youth completed follow-up

surveys in May 2014 at the conclusion of ninth grade, in May 2015 at the conclusion of tenth grade, in May 2016 at the conclusion of eleventh grade, and in May 2017 at the conclusion of twelfth grade. The total study sample of 618 participants includes all youth who participated in at least one wave of the five-wave study. At every wave, new youth were added to the sample, and some youth who had previously participated did not take the survey. In total, 439 youth participated in wave 1, 447 youth participated in wave 2, 384 youth participated in wave 3, 365 youth participated in wave 4, and 347 youth participated in wave 5. Table S2 delineated which of the 618 youth participated in one or more waves of the study.

Measures

Critical reflection

To measure critical reflection, we used items from scales developed to measure young people's capacities for reflecting on the systemic causes of racial inequality. Three items were drawn from Gurin et al.'s (1980) Structural Causes for Racial or Ethnic Inequality Scale (e.g., "Racism in the educational system limits the success of people of color"), which was developed to capture the extent to which individuals recognize the "systemic obstacles and institutional arrangements" (p. 32) underlying racial inequality. The scale was validated within a nationally representative sample of adults (Gurin et al., 1980) as well as used in college settings to assess the effects of intergroup dialogue among white students and students of color (post-test $\alpha = 0.80$; Gurin et al., 2013). Two additional items were drawn from Oyserman et al.'s (2001) Awareness of Racism Scale (e.g., "Things in the _____ community are not as good as they could be because of lack of opportunity"), which was originally developed to measure how an awareness of belonging to a "negatively valued group ... may protect self-esteem by providing a nonself-denigrating framework for understanding others' negative responses" (Oyserman et al., 2001, p. 380). In Oyserman and colleagues' study (Oyserman et al., 2001) the measure was administered to a sample of Black 8th-grade students ($\alpha = 0.62$); the sample attended a school where 92% received free or reduced-price lunch. The resulting five items used to assess critical reflection in the current study were preceded by a header instructing participants to fill in the blank spaces in the items with their racial/ethnic group. Students responded to all items using a Likert-type response scale ranging from 1 (*No way!*) to 5 (*Definitely!*). In our sample, the reliability of this scale was adequate (Cronbach's alphas for time 1 to time 5 were 0.69, 0.68, 0.64, 0.69, and 0.72).

Critical agency

We assessed critical agency using five items from Peterson et al.'s (2011) Sociopolitical Control Scale for Youth—Policy Control subscale. Items include statements such as, "Youth

like me have the ability to participate effectively in community or school activities and decision making” and “My opinion is important because it could someday make a difference in my community or school.” The scale was validated among a sample of 865 high school students, 96% of whom were students of color ($\alpha=0.85$; Peterson et al., 2011). Students responded to all five items using a response scale ranging from 1 (*No way!*) to 5 (*Definitely!*). Cronbach's alphas for critical agency was 0.61 at time 1, 0.70 at time 2, 0.71 at time 3, 0.72 at time 4, and 0.75 at time 5, confirming adequate internal consistency.

Critical action

We assessed critical action using six items from Corning and Myers' (2002) Activism Orientation Scale that asked about current or future involvement in (1) a protest, march, or demonstration; (2) signing a petition about a social or political issue; (3) sending a letter or email expressing a political opinion to a newspaper, website, or television show; (4) campaign door-to-door for a political candidate or cause; (5) wearing a T-shirt that endorses a political cause; and (6) changing a relative's mind about a social or political issue. Students responded to all six items using a Likert-type response scale ranging from 1 (*No way!*) to 5 (*Definitely!*), and the items were preceded by the following prompt: “Please tell us honestly how likely it is that as either a teenager or an adult you will ...” The scale was originally validated with a sample of 296 undergraduate students, the majority of whom were white ($\alpha=0.96$), and has been used in studies with more diverse samples as well (e.g., Cadenas et al., 2018; Daughtry et al., 2020). The critical action measure had adequate internal consistency within our sample: Cronbach's alphas were 0.59, 0.60, 0.66, 0.69, and 0.72 (time 1 to time 5). Internal consistency was likely lower for critical action due to the skew present in the items (Greer et al., 2006), especially at time 1 and time 2. Consistent with the findings when the scale was administered in other studies (e.g., Corning & Myers, 2002), there was a strong positive skew to the items, which was more prevalent among younger participants. However, confirmatory factor analyses (see Measurement Properties section in Results) demonstrated that the six-item measurement model for critical action was valid and fit the data well.

Hope

We assessed hope using five items from Park and Peterson's (2006) Values in Action Inventory of Strengths for Youth. Items include statements such as, “I think good things are going to happen to me” and “I believe that things will always work out no matter how difficult they seem now.” Students responded to all five items using a response scale ranging from 1 (*Not true at all for me*) to 5 (*Very true for me*). This measure has been validated with a diverse sample of fifth and eighth-grade students ($N=250$; $\alpha=0.83$;

53% female; 57% white; 28% African American; 15% other race/ethnicity; Park & Peterson, 2006). The reliability of this measure was good. Cronbach's alphas for time 1 to time 5 were 0.80, 0.83, 0.84, 0.87, and 0.85, respectively.

Analysis plan

Analyses were conducted in five stages using *Mplus* 8.4 (Muthén & Muthén, 1998–2017). First, the measurement properties of all constructs of interest were examined using a factor analytic approach. Second, scale scores were constructed, and the descriptive statistics were examined. Next, the overall shape of growth for each CC component (critical reflection, critical agency, critical action) was determined using latent growth modeling. Fourth, latent subgroups of growth trajectories were explored for the three CC components using growth mixture modeling. Fifth, each identified growth trajectory was associated with hope.

Measurement properties

Measurement properties were assessed by confirmatory factor analyses (CFAs) at each time point, followed by an investigation of longitudinal measurement invariance across all time points. In all models, a multifactor approach was used wherein all constructs were specified as individual factors in a single model. We evaluated the CFA models using the following global model fit statistics and the benchmarks for them provided in Little (2013): RMSEA, where values below 0.05 indicate good fit and values between 0.05 and 0.08 indicate acceptable fit; CFI, where values above 0.95 indicate good fit and values between 0.90 and 0.95 indicate acceptable fit. We also consulted SRMR, for which values below 0.08 are recommended (Hu & Bentler, 1999).

After completing the CFAs, we investigated longitudinal measurement invariance by comparing a null model to increasingly more constrained models in order to test configural, loading, and intercept invariance (van de Schoot et al., 2012). First, following Widaman and Thompson (2003), we calculated a null model that has the means and variances constrained to be equal across time. This alternative null model is different from the default null model in *Mplus* 8.4 (and many other software packages), which leaves the means and variances to be freely estimated (i.e., unconstrained) over time. A null model that assumes means and variances are not related over time is an improper comparison model for longitudinal invariance testing because it is not nested within the more constrained models, such as the intercept invariance model. We investigated configural, loading, and intercept invariance by comparing the CFI of each successively more constrained model to the CFI of the previous model. We considered CFI changes of ≤ 0.01 as passing that aspect of invariance (Cheung & Rensvold, 2002). For all models assessing measurement properties, missing data were handled using full information maximum likelihood (FIML).

Descriptive statistics

Scale scores were calculated for constructs with acceptable measurement properties at each time point by taking the mean score of each participant's answered items. If a participant answered less than a quarter of the items, their data were treated as missing. Descriptive statistics for scale scores as well as correlations between scale scores were calculated using IBM SPSS 27.0.

Latent growth models

The overall shape of growth of each CC component was examined using latent growth modeling. An intercept-only model, a linear growth model, and a quadratic growth model were fit successively in order to find the best-fitting growth model. The growth parameters were set at 0, 0.67, 1.67, 2.67, and 3.67 to correspond to the five measurement time points (see Data Collection, above). For example, wave 2 was in May 2014, which was approximately 8 months after data collection started in September 2013 (or 0.67 years later). Missing data were handled using FIML. The adequacy of each model was judged by comparing CFI, RMSEA, and SRMR values against recommended cutoffs. Specifically, we checked whether CFI was higher than 0.95, RMSEA was lower than 0.05, and SRMR was lower than 0.05 (Berlin et al., 2014). Nested models were compared using the χ^2 difference test and by examining changes in CFI. The Akaike Information Criterion (AIC) was also examined—smaller AIC values indicate better fit.

Growth mixture modeling

Growth mixture modeling was conducted for each of the three CC components. For all analyses, the TYPE=COMPLEX setting in *Mplus* was enabled to account for the clustering of data within schools, and missing data were handled using FIML. Using the overall latent growth model identified in the prior stage of analysis as the basis for the mixtures, iterations of the models with different variance–covariance structures for the growth parameters were explored. Within each variance–covariance structure, an increasing number of trajectories were fit to the data until models no longer converged. The variance–covariance structures explored were: (1) a latent trajectory growth analysis (LCGA) model with the variances and covariances of the intercept and slope fixed to 0; (2) diagonal and trajectory invariant; (3) non-diagonal and trajectory invariant; (4) diagonal and trajectory varying; and (5) non-diagonal and trajectory varying. A diagonal variance–covariance matrix fixes the covariances of indicators to 0, whereas non-diagonal models have freely estimated covariances. Trajectory invariant structures have variance and/or covariance parameters constrained to be the same within each trajectory, whereas trajectory-varying

structures have parameters that are estimated separately for each trajectory.

Models were compared on several metrics. Key points of comparison were the approximate correct model probabilities (CMPs): the models with the highest CMP within each variance–covariance structure were selected as candidates for the final model, then new CMPs were calculated among the candidate models to identify a best-fitting model. Other model fit indices consulted were the AIC, the consistent AIC, the unadjusted and sample size adjusted Bayesian information criterion (BIC), the approximate weight of evidence criterion, and the approximate Bayes factor (BF). We also conducted adjusted Lo–Mendell–Rubin likelihood ratio tests (LMRTs) between models with k versus $k-1$ trajectories. The size of the trajectory was also considered, as very small subgroups may be an indication of over-extraction. Once a final growth mixture model was selected, model interpretability was considered by plotting the mean values of the indicator variables within each trajectory.

Associations with hope

Within each CC component, differences between identified trajectories in the average level of hope were examined using the Bolck-Croon-Hagenaars (BCH) procedure in *Mplus* (Asparouhov & Muthén, 2021). The BCH method ensures that the growth mixture model configured in the prior analysis stage does not shift when estimating the mean levels of the outcome across different trajectories. Wald χ^2 tests were conducted with the Holm–Bonferroni correction for multiple comparisons.

RESULTS

Measurement properties

The multifactor CFAs had adequate fit to the data at all five time points (see Table S3). The RMSEA values were no >0.06 for all time points, which is below the 0.08 benchmark for acceptable fit (Hu & Bentler, 1999). The CFI was at or over the 0.90 benchmark for acceptable fit (Little, 2013), and the SRMR was no >0.06, indicating acceptable-to-good fit (Hu & Bentler, 1999; Keith, 2019). Additionally, longitudinal measurement invariance was established for all constructs (see Table S4) according to the criteria in Cheung and Rensvold (2002).

Descriptive statistics

Table 1 contains descriptive statistics for study variables, and Table 2 contains the correlations between the study variables. The means of critical reflection, critical agency, critical action, and hope increased from time 1 to time 5. Mean levels of hope were quite high at all time points (above 4.00). There

TABLE 1 Descriptive statistics for study variables.

	Mean	SE of mean	SD	Skewness	SE of skewness	Kurtosis	SE of kurtosis
cr ₁	3.62	0.03	0.72	0.07	0.12	-0.66	0.24
cr ₂	3.74	0.04	0.74	-0.25	0.12	-0.47	0.23
cr ₃	3.90	0.03	0.68	-0.30	0.13	-0.47	0.25
cr ₄	4.02	0.04	0.68	-0.52	0.13	-0.27	0.26
cr ₅	4.20	0.04	0.67	-0.68	0.13	-0.49	0.26
ag ₁	3.80	0.03	0.54	-0.08	0.12	0.38	0.23
ag ₂	3.84	0.03	0.70	-0.62	0.12	0.58	0.23
ag ₃	3.91	0.03	0.67	-0.62	0.13	0.37	0.25
ag ₄	3.83	0.04	0.70	-0.38	0.13	-0.34	0.26
ag ₅	3.99	0.04	0.68	-0.45	0.13	-0.36	0.26
ca ₁	3.18	0.04	0.83	-0.20	0.12	-0.12	0.23
ca ₂	3.31	0.04	0.87	-0.21	0.12	-0.15	0.23
ca ₃	3.29	0.04	0.76	-0.30	0.13	0.22	0.25
ca ₄	3.37	0.04	0.79	-0.16	0.13	-0.05	0.26
ca ₅	3.45	0.04	0.82	-0.18	0.13	-0.31	0.26
hp ₁	4.08	0.04	0.72	-0.86	0.12	0.27	0.25
hp ₂	4.00	0.04	0.79	-0.83	0.12	0.43	0.23
hp ₃	4.03	0.04	0.78	-0.72	0.13	-0.03	0.25
hp ₄	4.05	0.04	0.83	-0.83	0.13	0.19	0.26
hp ₅	4.16	0.04	0.75	-0.88	0.13	0.44	0.26

Note: Subscript numbers indicate time point.

Abbreviations: cr, critical reflection; ag, critical agency; ca, critical action; hp, hope.

were moderate correlations between time points within the same variables. Critical reflection was weakly correlated with critical action across time points. Furthermore, at time 5, both hope and critical agency were weakly associated with critical reflection. Critical agency has small correlations with hope and critical action. Critical action was positively correlated with hope at times 2 to 5.

Latent growth models

An intercept only, linear growth, and quadratic growth model were fit for each component of CC (see Table S5). For all three CC components, a linear growth model provided the best fit to the data according to RMSEA, SRMR, CFI, and AIC values.

Growth mixture models: Model selection and characteristics

Growth mixture models were fit to the data for critical reflection, critical agency, and critical action using a linear growth model as the basis, as this was the best overall latent growth model for all three CC components. Table S6 in the online supplemental materials shows fit information for all

models that were estimated, while fit information for candidate models is summarized in Table 3.

Critical reflection

For critical reflection, seven models were chosen as candidate models based on high CMPs. When CMPs were recalculated within these seven models, the four-trajectory model with a variance-covariance matrix that is diagonal and trajectory invariant (with the variance of the slopes fixed to 0) was found to have the highest CMP of 0.81. This model also had the lowest cAIC and BIC of all seven candidate models and was therefore chosen as the best-fitting growth mixture model for critical reflection.

The chosen four-trajectory model is depicted in Figure 1. Trajectories 1 (16.67%) and 3 (32.20%) started with an average level of critical reflection around the scale midpoint of 3 (on a five-point scale from 1 to 5; see Table S7). While trajectory 1 steadily increased over the study time period—at an average rate of 0.41 scale points every 12 months—trajectory 3 increased at a much slower pace on average (0.10 scale points per year on average). As a result, adolescents in trajectory 1 concluded high school at a very high average level of critical reflection (mean = 4.56)—significantly higher than trajectories 3 and 4 but not trajectory 2.

TABLE 2 Bivariate correlations between study variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. female	–																						
2. rblack	–0.04	–																					
3. rhislat	–0.05	–0.64**	–																				
4. rmulti	0.10*	–0.59**	–0.25**	–																			
5. cr1	0.06	0.13**	–0.21**	0.05	–																		
6. cr2	0.07	0.12**	–0.15**	0.01	0.59**	–																	
7. cr3	0.12*	0.16**	–0.14**	–0.06	0.46**	0.52**	–																
8. cr4	0.17**	0.10*	–0.09	–0.04	0.35**	0.53**	0.51**	–															
9. cr5	0.19**	0.05	–0.05	–0.01	0.35**	0.40**	0.52**	0.57**	–														
10. ag1	0.14**	–0.06	0.01	0.06	0.18**	0.17**	0.16**	0.19**	0.20**	–													
11. ag2	0.09	0.05	–0.01	–0.05	0.06	0.16**	0.05	0.13*	0.13*	0.35**	–												
12. ag3	0.14**	<0.01	<0.01	0.01	0.08	0.02	0.15**	0.12*	0.15*	0.26**	0.46**	–											
13. ag4	0.14**	–0.01	–0.02	0.04	0.08	0.08	0.05	0.18**	0.25**	0.27**	0.53**	0.57**	–										
14. ag5	0.20**	0.01	<0.01	–0.01	0.08	0.13*	0.15*	0.16**	0.30**	0.30**	0.57**	0.53**	0.61**	–									
15. ca1	0.14**	0.03	–0.09	0.05	0.14**	0.12*	0.14*	0.19**	0.15*	0.38**	0.10*	0.21**	0.15*	0.06	–								
16. ca2	0.11*	–0.04	–0.01	0.07	0.16**	0.23**	0.21**	0.21**	0.28**	0.22**	0.38**	0.24**	0.26**	0.24**	0.41**	–							
17. ca3	0.15**	0.03	–0.07	0.04	0.16**	0.16**	0.28**	0.25**	0.25**	0.22**	0.21**	0.34**	0.35**	0.21**	0.36**	0.42**	–						
18. ca4	0.13*	–0.02	–0.06	0.09	0.13*	0.16**	0.27**	0.33**	0.29**	0.24**	0.17**	0.27**	0.44**	0.23**	0.35**	0.44**	0.62**	–					
19. ca5	0.17**	–0.06	0.01	0.06	0.23**	0.23**	0.28**	.26**	0.35**	0.19**	0.22**	0.22**	0.33**	0.42**	0.32**	0.43**	0.38**	0.55**	–				
20. hp1	–0.09	0.10	–0.10	–0.02	0.02	0.04	0.08	0.16*	0.12	0.31**	0.31**	0.32**	0.27**	0.32**	0.12*	0.13*	0.25**	0.19**	0.22**	–			
21. hp2	–0.08	0.10*	–0.06	–0.07	0.04	0.11*	0.04	0.07	0.08	0.25**	0.47**	0.26**	0.28**	0.30**	0.10	0.22**	0.16**	0.06	0.12	0.56**	–		
22. hp3	0.05	0.06	–0.10*	0.03	0.09	–0.01	0.07	0.04	0.11	0.20**	0.48**	0.39**	0.43**	0.38**	0.12*	0.16**	0.22**	0.18**	0.15*	0.48**	0.59**	–	
23. hp4	0.06	0.09	–0.17**	0.06	0.08	0.09	0.07	0.16**	0.13*	0.15*	0.35**	0.36**	0.52**	0.44**	0.09	0.16**	0.23**	0.26**	0.21**	0.44**	0.47**	0.62**	–
24. hp5	0.01	0.13*	–0.13*	–0.03	0.11	0.13*	0.22**	0.17**	0.28**	0.14*	0.34**	0.29**	0.40**	0.53**	0.08	0.16**	0.14*	0.18**	0.24**	0.36**	0.45**	0.54**	0.62**

Note: Numbers after variable names indicate time points.

Abbreviations: ag, critical agency; ca, critical action; cr, critical reflection; female, binary variable with 1 for female, 0 for male; hp, hope; rblack, binary variable with 1 for Black/African-American, 0 otherwise; rhislat, binary variable with 1 for Hispanic or Latino/a/x, 0 otherwise; rmulti, binary variable with 1 for multiple races/ethnicities, 0 otherwise.

*Significant at the .05 level; **Significant at the .01 level.

TABLE 3 Model fit statistics for growth mixture modeling of critical reflection, critical agency, and critical action: Candidates for the final model from each variance–covariance structure specification.

Variable	Model	K (d)	Smallest trajectory n	Log-likelihood	AIC	cAIC	BIC	sBIC	AWE	CMP
Critical reflection	LCGA	4 (16)	27	−1779.69	3591.39	3678.21	3662.21	3611.41	3813.03	<.01
Critical reflection	LCGA	5 (19)	22	−1770.27	3578.54	3681.64	3662.64	3602.32	3841.74	<.01
Critical reflection	Diagonal and trajectory invariant	2 (12)	257	−1803.39	3630.79	3695.91	3683.91	3645.81	3797.02	<.01
Critical reflection	Non-diagonal and trajectory invariant	2 (13)	178	−1780.25	3586.51	3657.05	3644.05	3602.78	3766.59	.06
Critical reflection	Non-diagonal and trajectory invariant	3 (16)	34	−1769.85	3571.70	3658.52	3642.52	3591.72	3793.35	.13
Critical reflection	Diagonal and trajectory invariant^a	4 (17)	29	−1764.78	3563.56	3655.81	3638.81	3584.84	3799.06	.81
Critical reflection	Diagonal and trajectory varying ^a	4 (20)	40	−1759.54	3559.08	3667.61	3647.61	3584.12	3836.14	.01
Critical agency	LCGA	4 (16)	11	−1724.29	3480.59	3567.41	3551.41	3500.61	3702.24	<.01
Critical agency	Diagonal and trajectory invariant	2 (12)	6	−1733.77	3491.54	3556.66	3544.66	3506.56	3657.78	.01
Critical agency	Diagonal and trajectory invariant	3 (15)	6	−1723.20	3476.39	3557.79	3542.79	3495.17	3684.18	.04
Critical agency	Non-diagonal and trajectory invariant	2 (13)	6	−1729.76	3485.51	3556.05	3543.06	3501.78	3665.60	.03
Critical agency	Diagonal and trajectory invariant ^a	3 (14)	13	−1725.05	3478.10	3554.07	3540.07	3495.63	3672.04	.15
Critical agency	Diagonal and trajectory invariant ^a	4 (17)	6	−1715.86	3465.73	3557.98	3540.98	3487.01	3701.23	.09
Critical agency	Diagonal and trajectory varying^a	2 (12)	300	−1729.95	3483.91	3549.02	3537.03	3498.93	3650.14	.67
Critical action	LCGA	4 (16)	16	−2201.51	4435.01	4521.84	4505.84	4455.04	4656.66	–

Note: For critical reflection and critical agency, the CMP was calculated within each variable. The models chosen as the final model for each variable are bolded.

Abbreviations: AIC, Akaike's information criterion; AWE, approximate weight of evidence criterion; BIC, Bayesian information criterion; cAIC, consistent Akaike's information criterion; CMP, approximate correct model probability; d, number of parameters in model; K, number of trajectories; sBIC, sample size adjusted Bayesian information criterion.

^aFor these models, the variances of the slope parameters were fixed to 0.

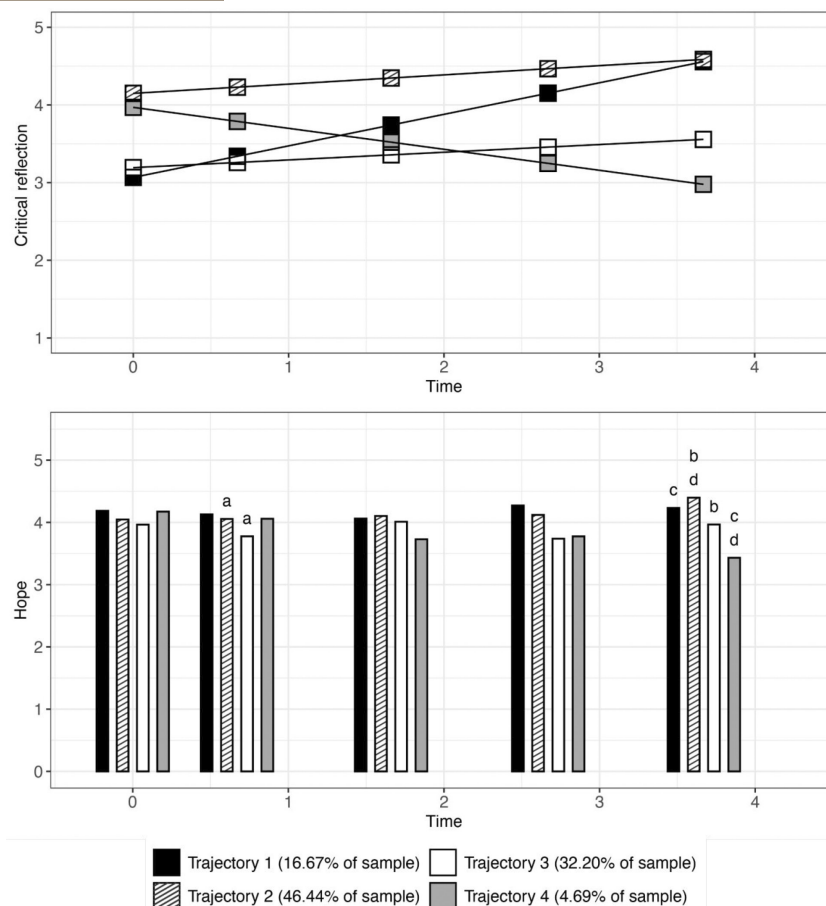


FIGURE 1 Trajectories of critical reflection (top) and mean levels of hope for each trajectory (bottom). Pairs of lowercase letters indicate statistically significant differences in levels of hope associated with the pair of trajectories ($p < .05$, after Holm–Bonferroni correction).

The starting points for trajectory 2 (the largest trajectory; 46.44%) and trajectory 4 (the smallest trajectory; 4.69%) were each significantly higher than both the starting points for trajectories 1 and 3 ($p < .001$; see Table S7). Of these two trajectories that started with heightened levels of critical reflection, trajectory 2 continued to increase (0.12 scale points per year on average) while trajectory 4 steadily decreased over time (–0.27 scale points per year on average). In fact, trajectory 4 ended with the lowest average levels of critical reflection (mean = 2.98)—significantly lower than all other trajectories ($p < .001$).

Critical agency

For critical agency, a total of seven models were identified as candidate models based on high CMPs. Comparing these seven candidate models, the two-trajectory model with a diagonal and trajectory varying structure was identified as having the highest CMP, lowest cAIC, lowest BIC, and lowest AWE. This model was therefore chosen as the final growth mixture model for the critical agency variable.

The chosen model with two trajectories is displayed in Figure 2. The average score at each time point was

significantly different between the two trajectories at all time points ($p < .001$; see Table S7). Trajectory 1 started at a high average level of critical agency (mean = 3.95) and increased at an average rate of about 0.14 scale points per year to reach an average level of critical agency that was very high (mean = 4.48). Trajectory 2 started at a slightly lower level (mean = 3.67) and decreased slightly every year (–0.06 scale points per year on average), ending with an average level of critical agency of 3.47. The increase over five time points for trajectory 1 and the decrease for trajectory 2 were both statistically significant ($p < .001$ and $p < .01$, respectively). The two trajectories each represented about half of the sample, with trajectory 1 making up 51.46% of the sample and trajectory 2 constituting 48.54% of the sample.

Critical action

Within critical action, only models with an LCGA variance-covariance specification converged. Within these models, the four-trajectory model had the highest CMP of 0.90. This model also had the lowest cAIC and BIC and was chosen as the best-fitting model (see Figure 3).

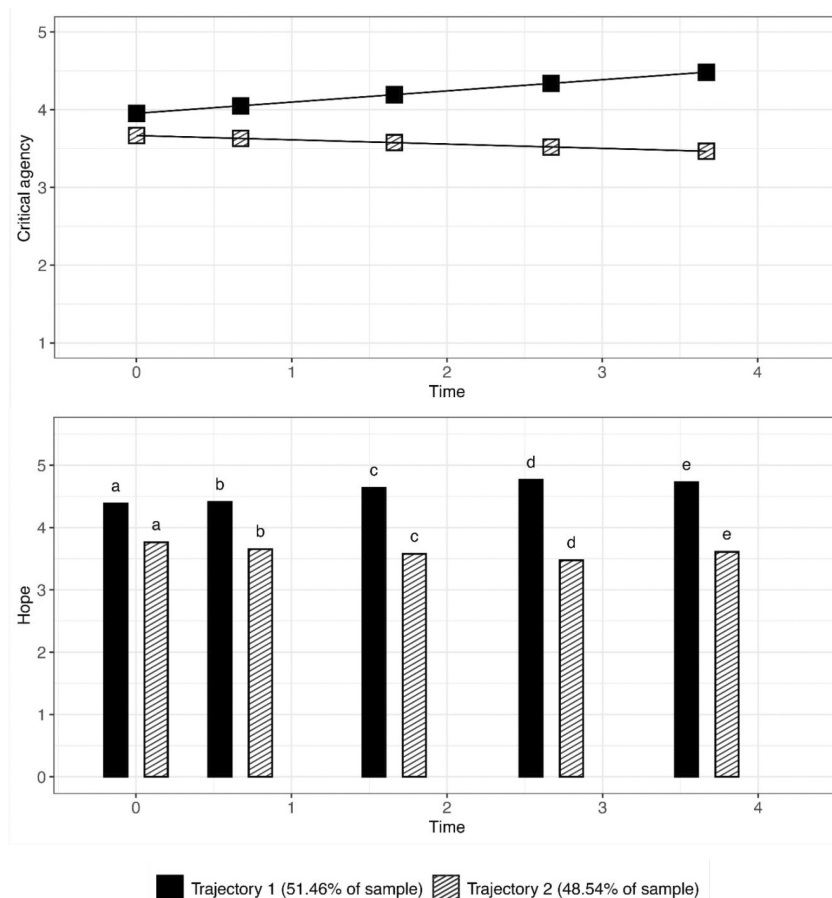


FIGURE 2 Trajectories of critical agency (top) and mean levels of hope for each trajectory (bottom). Pairs of lowercase letters indicate statistically significant differences in levels of hope associated with the pair of trajectories ($p < .05$, after Holm–Bonferroni correction).

Trajectory 1, the largest trajectory with 45.96% of the sample, started close to the scale midpoint of 3 (mean = 3.28) and rose at a pace of 0.09 scale points per year to an average level of 3.59 (difference between time 1 and time 5: $p < .001$). Trajectory 2 (17.48%) started at the highest average level of critical action (mean = 3.98). This starting point was significantly higher than the starting points of all other trajectories ($p < .001$). Trajectory 2 continued to rise at 0.10 scale points per year to an average critical action score of 4.33 at time 5; this was higher than all other trajectories' average critical action scores at time 5 ($p < .001$). The difference between the beginning and end of trajectory 2 was statistically significant ($p = .001$). Trajectory 3, the second largest trajectory with 33.98% of the sample, started at 2.79 and stayed almost constant over time (average slope = 0.01, mean score at time 5 = 2.81, difference between beginning and end not significant). Finally, trajectory 4 started at the lowest levels of critical action (mean = 1.98; significantly lower than all other trajectories' starting points, $p < .001$) and decreased at a rate of 0.08 scale points per year until the average critical action score at time 5 reached 1.68. This low level of critical action for trajectory 4 at time 5 was significantly lower than all other trajectories' scores at time 5 ($p < .001$). Trajectory 4 was a very small trajectory, with just 2.59% of the sample.

Associations with hope

Critical reflection

The levels of hope associated with each trajectory of critical reflection are depicted in the bottom portion of Figure 1 and listed in Table 4. At times 1, 3, and 4, after Holm–Bonferroni corrections, none of the levels of hope were different between trajectories and hovered around scale point 4 (on a five-point scale from 1 to 5). At time 2, the level of hope in trajectory 2, which began at a high point and increased even more, was significantly higher than in trajectory 3, where critical reflection stayed close to the scale midpoint ($p < .001$). At time 5, hope was highest among trajectories 1 and 2, both of which began with moderate-to-high levels of critical reflection and then grew over time. In contrast, hope was lowest among trajectories 3 and 4, both of which ended with levels of critical reflection below 4. Although there were no statistically significant differences in hope between the two higher trajectories (trajectory 1 and 2) or between the two lower trajectories (trajectory 3 and 4), there were significant differences between trajectory 1 and trajectory 4 and between trajectory 2 and both of the lower trajectories.

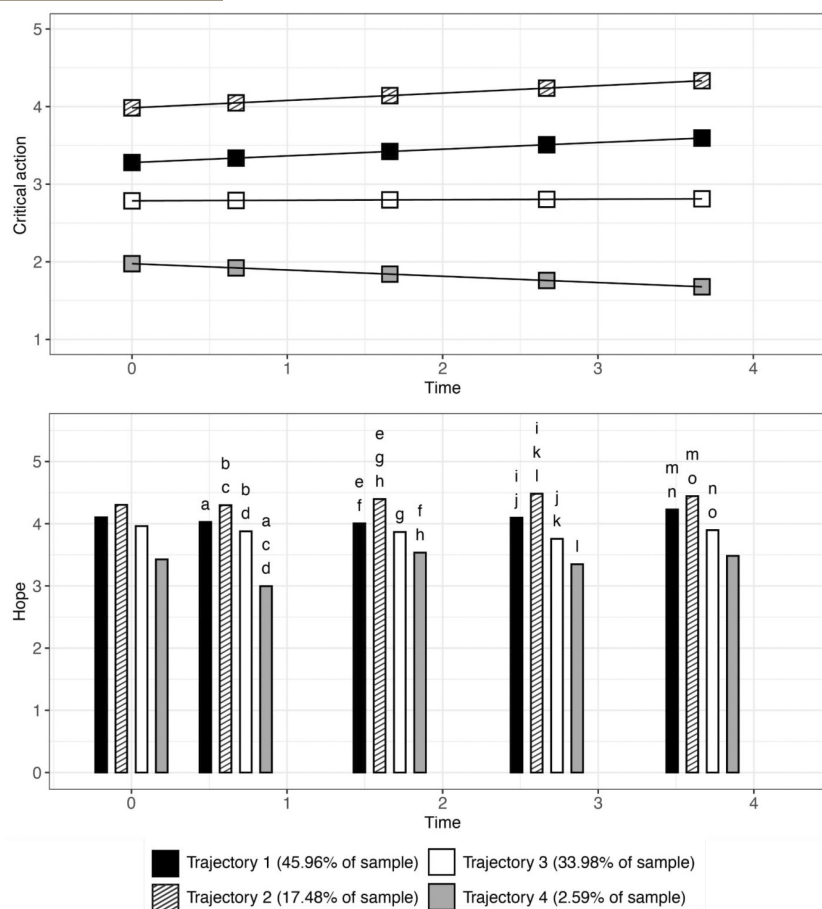


FIGURE 3 Trajectories of critical action (top) and mean levels of hope for each trajectory (bottom). Pairs of lowercase letters indicate statistically significant differences in levels of hope associated with the pair of trajectories ($p < .05$, after Holm–Bonferroni correction).

Critical agency

The levels of hope associated with trajectory 1 versus trajectory 2 (see Figure 2 and Table 4) were significantly different from each other at all time points ($p < .001$). That is, trajectory 1, which had average critical agency scores that increased from 3.95 to 4.48, consistently had higher hope on average—above the scale point of 4. In comparison, trajectory 2, which had average critical agency scores that decreased from 3.67 to 3.47, consistently had lower hope on average—below the scale point of 4.

Critical action

The levels of hope associated with each of the four trajectories of critical action are depicted in Figure 3 and listed in Table 4. At time 1, none of the average levels of hope were significantly different between trajectories. Across all subsequent time points, the level of hope was highest in trajectory 2 (high and increasing critical action): it was significantly higher than all other trajectories at times 3 and 4 and significantly higher than two other trajectories at times 2 and 5. Furthermore, across times 2 to 4, the level of hope in

trajectory 2 (low and decreasing) was lowest: it was significantly lower than all other trajectories at time 2, significantly lower than two other trajectories at time 3, and significantly lower than trajectory 2 (high and increasing) at time 4. At times 3, 4, and 5, there were also significant differences in hope between trajectory 1 (moderately high) and trajectory 2 (high and increasing).

DISCUSSION

Critical consciousness represents a powerful process that youth of color can engage in to interrogate and dismantle racism and related systems of oppression. In this study, we investigated links between trajectories of three components of CC (critical reflection, critical agency, and critical action) and levels of hope. We hypothesized that trajectories of critical reflection, critical agency, and critical action that are reflective of sustained high levels over time, or growth over time, would be related to the highest levels of hope.

In line with our hypotheses, we found that hope was consistently associated with the most positive trajectories of critical agency and critical action, such that the

TABLE 4 Results of BCH procedure.

<i>Critical reflection</i>			
Hope—time 1 (Overall test: $\chi^2 = 47.19, p \leq .001$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M = 4.19, SE = 0.13$)	—		
2. Trajectory 2 ($M = 4.05, SE = 0.07$)	$\chi^2 = 0.62, p = .433$	—	
3. Trajectory 3 ($M = 3.97, SE = 0.09$)	$\chi^2 = 1.18, p = .277$	$\chi^2 = 0.96, p = .329$	—
4. Trajectory 4 ($M = 4.17, SE = 0.19$)	$\chi^2 < 0.01, p = .959$	$\chi^2 = 0.40, p = .526$	$\chi^2 = 2.97, p = .085$
Hope—time 2 (Overall test: $\chi^2 = 18.74, p \leq .001$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M = 4.13, SE = 0.13$)	—		
2. Trajectory 2 ($M = 4.06, SE = 0.05$)	$\chi^2 = 0.27, p = .603$	—	
3. Trajectory 3 ($M = 3.78, SE = 0.08$)	$\chi^2 = 6.50, p = .011$	$\chi^2 = 15.15, p < .001, H-B$	—
4. Trajectory 4 ($M = 4.06, SE = 0.18$)	$\chi^2 = 0.09, p = .759$	$\chi^2 < 0.01, p = .987$	$\chi^2 = 2.27, p = .132$
Hope—time 3 (Overall test: $\chi^2 = 2.26, p = .521$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M = 4.06, SE = 0.08$)	—		
2. Trajectory 2 ($M = 4.10, SE = 0.05$)	$\chi^2 = 0.14, p = .710$	—	
3. Trajectory 3 ($M = 4.01, SE = 0.14$)	$\chi^2 = 0.06, p = .810$	$\chi^2 = 0.68, p = .410$	—
4. Trajectory 4 ($M = 3.73, SE = 0.32$)	$\chi^2 = 1.05, p = .307$	$\chi^2 = 1.46, p = .227$	$\chi^2 = 1.14, p = .285$
Hope—time 4 (Overall test: $\chi^2 = 8.01, p = .046$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M = 4.27, SE = 0.16$)	—		
2. Trajectory 2 ($M = 4.12, SE = 0.10$)	$\chi^2 = 0.37, p = .544$	—	
3. Trajectory 3 ($M = 3.74, SE = 0.22$)	$\chi^2 = 6.72, p = .010$	$\chi^2 = 2.60, p = .107$	—
4. Trajectory 4 ($M = 3.78, SE = 0.27$)	$\chi^2 = 3.06, p = .080$	$\chi^2 = 1.69, p = .193$	$\chi^2 = 0.06, p = .805$
Hope—time 5 (Overall test: $\chi^2 = 80.93, p < .001$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M = 4.23, SE = 0.09$)	—		
2. Trajectory 2 ($M = 4.40, SE = 0.08$)	$\chi^2 = 1.57, p = .210$	—	
3. Trajectory 3 ($M = 3.97, SE = 0.17$)	$\chi^2 = 1.44, p = .230$	$\chi^2 = 7.10, p = .008, H-B$	—
4. Trajectory 4 ($M = 3.43, SE = 0.21$)	$\chi^2 = 17.09, p < .001, H-B$	$\chi^2 = 34.62, p < .001, H-B$	$\chi^2 = 3.52, p = .060$
<i>Critical agency</i>			
Hope—time 1	1 versus		
1. Trajectory 1 ($M = 4.38, SE = 0.06$)	—		
2. Trajectory 2 ($M = 3.76, SE = 0.10$)	$\chi^2 = 23.09, p < .001$		
Hope—time 2	1 versus		
1. Trajectory 1 ($M = 4.41, SE = 0.11$)	—		
2. Trajectory 2 ($M = 3.65, SE = 0.14$)	$\chi^2 = 19.89, p < .001$		
Hope—time 3	1 versus		
1. Trajectory 1 ($M = 4.64, SE = 0.17$)	—		
2. Trajectory 2 ($M = 3.58, SE = 0.11$)	$\chi^2 = 21.30, p < .001$		
Hope—time 4	1 versus		
1. Trajectory 1 ($M = 4.77, SE = 0.14$)	—		
2. Trajectory 2 ($M = 3.47, SE = 0.08$)	$\chi^2 = 50.03, p < .001$		
Hope—time 5	1 versus		
1. Trajectory 1 ($M = 4.73, SE = 0.14$)	—		
2. Trajectory 2 ($M = 3.61, SE = 0.11$)	$\chi^2 = 39.38, p < .001$		
<i>Critical action</i>			
Hope—time 1 (Overall test: $\chi^2 = 7.26, p = .064$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M = 4.10, SE = 0.06$)	—		
2. Trajectory 2 ($M = 4.30, SE = 0.12$)	$\chi^2 = 2.45, p = .118$	—	
3. Trajectory 3 ($M = 3.96, SE = 0.07$)	$\chi^2 = 2.62, p = .106$	$\chi^2 = 4.72, p = .030$	—

(Continues)

TABLE 4 (Continued)

4. Trajectory 4 ($M=3.43$, $SE=0.32$)	$\chi^2=4.12$, $p=.043$	$\chi^2=6.05$, $p=.014$	$\chi^2=3.01$, $p=.083$
Hope—time 2 (Overall test: $\chi^2=66.62$, $p<.001$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M=4.03$, $SE=0.06$)	—		
2. Trajectory 2 ($M=4.30$, $SE=0.12$)	$\chi^2=3.65$, $p=.056$		
3. Trajectory 3 ($M=3.88$, $SE=0.14$)	$\chi^2=0.87$, $p=.350$	$\chi^2=10.42$, $p=.001$	—
4. Trajectory 4 ($M=3.00$, $SE=0.19$)	$\chi^2=18.59$, $p<.001$	$\chi^2=39.64$, $p<.001$	$\chi^2=10.39$, $p=.001$, H-B
Hope—time 3 (Overall test: $\chi^2=19.92$, $p<.001$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M=4.01$, $SE=0.06$)	—		
2. Trajectory 2 ($M=4.40$, $SE=0.09$)	$\chi^2=10.81$, $p=.001$	—	
3. Trajectory 3 ($M=3.87$, $SE=0.14$)	$\chi^2=0.97$, $p=.325$	$\chi^2=13.48$, $p<.001$	—
4. Trajectory 4 ($M=3.54$, $SE=0.23$)	$\chi^2=6.52$, $p=.011$	$\chi^2=10.94$, $p=.001$	$\chi^2=1.54$, $p=.214$
Hope—time 4 (Overall test: $\chi^2=92.74$, $p<.001$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M=4.10$, $SE=0.11$)	—		
2. Trajectory 2 ($M=4.48$, $SE=0.06$)	$\chi^2=9.72$, $p=.002$	—	
3. Trajectory 3 ($M=3.76$, $SE=0.17$)	$\chi^2=10.97$, $p=.001$	$\chi^2=20.38$, $p<.001$	—
4. Trajectory 4 ($M=3.35$, $SE=0.31$)	$\chi^2=3.62$, $p=.057$	$\chi^2=13.91$, $p<.001$	$\chi^2=0.94$, $p=.332$
Hope—time 5 (Overall test: $\chi^2=64.65$, $p<.001$)	1 versus	2 versus	3 versus
1. Trajectory 1 ($M=4.23$, $SE=0.07$)	—		
2. Trajectory 2 ($M=4.44$, $SE=0.11$)	$\chi^2=7.35$, $p=.007$	—	
3. Trajectory 3 ($M=3.90$, $SE=0.10$)	$\chi^2=30.48$, $p=.001$	$\chi^2=33.90$, $p<.001$	—
4. Trajectory 4 ($M=3.48$, $SE=1.26$)	$\chi^2=0.38$, $p=.538$	$\chi^2=0.68$, $p=.410$	$\chi^2=0.11$, $p=.735$

Note: For critical reflection and critical action, H-B indicates pairwise comparisons that were significant at the .05 level after Holm–Bonferroni adjustments.

trajectories that were highest across all time points or steadily increasing over time were related to the highest levels of hope. Furthermore, we found that hope at the last time point was highest among those who had followed a trajectory of critical reflection that reflects the most growth and among those whose critical reflection had been consistently high over the course of the study. Concurrently, hope was lowest among those whose critical reflection had decreased over time.

Trajectories of critical reflection

Prior to examining longitudinal associations between each CC component and hope, we modeled the trajectories of each component. We found that each component of CC had different quantities and types of trajectories, which may reflect distinct developmental processes underlying the longitudinal paths of each component. Critical reflection had the most complex spread of trajectories: although the majority of participants were either in a consistently high or consistently low trajectory, several participants were in trajectories that were characterized by steady growth or steady decline. This suggests that while many youth of color start and end high school with a similar level of critical reflection, a few may have experienced factors that prompted increases or decreases in critical reflection. It will be important for future research to examine what factors sustain high levels of critical reflection

or catalyze increases in critical reflection. These may be classroom inputs such as an open classroom climate (Rapa et al., 2020b), parental socialization (Bañales et al., 2021), or peer contexts (Pinedo et al., 2021). At the same time, learning more about the factors that lead to declines in critical reflection is vital, as well as learning about the factors that are related to sustained low levels of critical reflection. Much of the literature has focused on ways to increase critical reflection, and our research shows that youth of color also experience significant declines in critical reflection, which must be addressed.

Trajectories of critical agency

The two trajectories for critical agency began at similar points, and either rose moderately or decreased slightly. This suggests that youth may have similar levels of critical agency at the beginning of high school and that their subsequent experiences had the potential to support growth in this early level of critical agency. Prior literature suggests that sociopolitical control is supported by important ecological supports, including family cohesion and social support from teachers, parents, peers, and neighborhood individuals (Christens & Peterson, 2012). Support for critical agency may also come from youth organizations that practice active participation (opportunities for youth decision-making and leadership), and that offer youth affective and instrumental support (Martínez et al., 2017).

Participants' trajectories of critical agency may have differed due to the levels of support they had; a lack of support may have led to critical agency falling over time. However, any declines in critical agency were not as stark as declines seen in critical reflection. As multiple youth settings have the potential to build critical agency, it seems it was less likely for youth in this sample to have a total lack of support for critical agency across all aspects of their developmental context. Nevertheless, it will be important to find ways to provide all youth with the resources needed to grow their critical agency.

Trajectories of critical action

Critical action trajectories, of which there were four, were relatively steady over the course of high school. The critical action rank order did not change over time: for example, youth who had the second-highest levels of critical action continued to have the second-highest levels throughout the study. One reason for this longitudinal pattern may be that even if youths' interest in taking part in critical action increases, the scope of what is perceived as possible critical actions is limited by external constraints. For instance, if a young person perceives it is dangerous for them to engage in some critical actions due to limitations such as being undocumented or having family members who are undocumented, there will be an upper limit to the potential for growth in their critical action scores. Likewise, a young person may be in a context where critical action will be punished or where they lack exposure to possibilities for engagement in critical action. Such external factors may be particularly salient for high school students, who typically still lack some autonomy in their lives due to their age. It will be important for future work to explore critical action in context and especially to consider what barriers youth may perceive to participating in critical action (Suzuki et al., 2022).

Critical reflection and hope

Our findings revealed that critical reflection and hope may be related over time. Although hope and critical reflection were not related at earlier time points, at the last time point of the study, hope was higher in the trajectory where critical reflection had remained at high levels over time and lowest in the trajectory where critical reflection fell over time. One interpretation of this finding is that a decrease in critical reflection over time is linked to decreases in hope.

It is notable that critical reflection, even when sustained at high levels over the course of high school among youth of color, was not related to decreases in hope. Instead, we found that sustained high levels of critical reflection were related to sustained high levels of hope. This finding diverges from several social psychological studies suggesting that

awareness of structurally embedded barriers is associated with negative consequences like decreased expectations for social mobility (Browman et al., 2019). Instead, our findings demonstrate that youth of color can have positive aspirations for their future while also reporting high levels of critical reflection over time.

These findings are important as a body of research has begun to suggest that a lack of awareness of injustice in systems supports youth. For example, based on largely experimental work, researchers suggested that belief in a just system serves important protective functions for those with marginalized identities (Bahamondes et al., 2019; Laurin et al., 2011). Scholars such as Claude Steele have even gone so far as to suggest that marginalized individuals should perhaps be shielded from "the mistrust and disengagement" engendered by learning about prejudice and the devaluation of the groups they identify with (Steele, 2010, p. 164). In contrast, the present results show that critical reflection about systemic inequity can manifest alongside an important internal asset like hope.

For youth in the present study, becoming less critical over time was associated with low hope at the end of the study period. This pattern of results suggests that factors contributing to falling critical reflection over time may also be a factor that negatively affects hope. For example, youth may be receiving messages that attempt to legitimize injustice in society in various contexts (e.g., school, parents, media). One such message is about the inherent inferiority of some groups, while a parallel message is about the deservedness of the status of some groups. These messages may be harming the development of CC and hope by further cementing internalized oppression within young people (Nadal et al., 2021).

Critical agency and hope

For critical agency, we found two main trajectories among the sample: an increasing trajectory and a decreasing trajectory. The average levels of hope between these two trajectories were statistically significantly different across the study time period and in the expected directions. These findings are the first we know of to demonstrate consistent associations between hope and trajectories of critical agency over time.

It may be that youth with higher levels of critical agency are better able to move through social systems despite institutional racism and other oppressive elements by advocating for both themselves and others. This ability to navigate the world may engender a sense of hopefulness about their future. The reverse may also be true: hopefulness may support in youth the confidence to feel they are able to tackle sociopolitical issues in their environment.

The importance of the opportunity structure within which youth engage in critical reflection has been emphasized by Widaman and Thompson (2003) in their articulation of a theory of sociopolitical development.

As it is considered to be a bridging factor akin to critical agency, we predict synergistic relationships between hope, critical agency, and opportunity structures. This synergy can support translations of critical reflection to critical action.

Critical action and hope

The average growth in critical action for the entire sample was able to be delineated into four distinct trajectories, which ranged from low to high. Hope was generally higher in the trajectories of critical action that were also higher, however, differences in levels of hope between trajectories were not statistically significant at time 1. Nevertheless, across tenth to twelfth grade (time points 3, 4, and 5), the two trajectories that significantly rose over time had significantly higher hope than the trajectory that remained stable over time at a level near the scale midpoint. The lowest trajectory typically had high variation around its associated average level of hope across all five time points and therefore had few statistically significant differences with levels of hope associated with other trajectories.

The present findings suggest that elevated levels of critical action, especially when youth are engaging in more critical action over time, are related to hope. It is possible that youth who are engaging in higher levels of critical action have connections to meaningful peer groups that provide them with important psychological benefits, including a positive regard of their future. Work by Pinedo et al. (2021) for example, found that for college students of color who experienced a high level of racial discrimination, engagement in an ethnic-racial club buffered the decline in critical action that was experienced by the entire sample on average, such that this subgroup did not have significant decreases in critical action. Critical action, especially the kind of critical action that tears down pieces of the web of oppression in society, is a collective act. As such, links to hope may emerge with this component of CC as youth find solidarity and belonging in movements for social justice (Watts & Hipolito-Delgado, 2015).

Limitations and future directions

The current study's longitudinal design and mixture modeling approach are significant strengths that provide insights advancing our understanding of CC. However, our study is also limited in several ways. Our measure of critical action included both current engagement as well as future intent to engage in activist behaviors. Therefore, it is possible that hope may only be associated with a higher and sustained commitment to critical action instead of actual behaviors. As it is inevitable that some acts of critical action will result in dissatisfactory outcomes due to barriers to participation, possible retaliation from status quo figures, difficulties with

organizing action, and so on, it is important in the future to distinguish between actual participation and commitments to critical action.

Moreover, although we measured critical reflection about race and racism, our measure of critical action was more general. It is possible that adolescents responded to items about their commitment to engaging in activism with other social issues in mind (e.g., gender-based violence, climate issues). Considering these measurement limitations, future research assessing adolescents' critical action might consider utilizing measures specific to certain forms of oppression (e.g., Aldana et al., 2019).

Our research is also limited to quantitatively indicating how hope and CC components are associated over time. An important future direction is to engage in qualitative or mixed methods research to focus on how adolescents are experiencing these complex CC processes in order to understand *why* associations with hope emerge. In these lines of research, it may be useful to take an emic/insider perspective to CC components rather than constraining their responses to etic/outsider examples.

Implications

Findings from the present study offer important implications for supporting the positive development of minoritized youth. Although this study cannot make causal inferences, it does suggest a positive association between hope, an internal asset, and CC. Accordingly, when parents, educators, and other youth-serving professionals are investing in supporting the CC development of young people, they should also be mindful of actions they are taking to support these young people's feelings of hopefulness and optimism. An important question for future research is whether there are particular types of hope that are more or less supportive of CC development. For example, Duncan-Andrade (2009) has theorized that there are a number of forms of "false hope"—which he labels "hokey hope," "mythical hope," and "hope deferred"—that can deepen young people's feelings of optimism and possibility *without* acknowledging the presence of oppressive forces in their lives. It seems very possible that these forms of false hope may demonstrate a different relationship with CC development than the forms of hope (e.g., audacious, material, Socratic) that Duncan-Andrade characterizes as constituting "critical hope."

Findings from the present study also point to the importance of considering the role of hope in conceptual models of CC development. As noted in the Introduction, despite a substantial increase in the extant research on CC in recent years, there is not yet a widely accepted conceptual model of youth (or adult) CC development. We believe results from the present study point to the importance of such future conceptual work, considering carefully the role of hope in the development of youth CC.

CONCLUSION

In this work, we were driven to investigate potential associations between CC and hope for two main reasons. First, we wanted to understand whether hope is related to longitudinal patterns of CC that reflect an ongoing or growing engagement in the arduous work of dismantling systems of oppression through praxis. Are youth of color able to draw on an internal asset like hope in order to engage in transforming conditions for themselves and their communities? Our findings suggest that youth who are able to engage in high levels of CC over an important developmental period (high school years) are youth who have access to funds of hope at the same time. This has important implications for those working with youth as supporting youth's hopefulness can be one way to support their efforts to address inequities and injustice in their lives.

Our second motivation for wanting to understand whether hope may be manifested in tandem with CC was to illuminate a potential pathway through which youth of color who engage in CC achieve important positive outcomes such as educational achievement and vocational success. We found that sustained or high CC cooccurs with sustained or rising hope, meaning that youth of color engaged in CC have access to an important internal asset that can support them to stay focused on positive goals. These goals may be related to addressing oppression but may also be goals related to achieving their full potential and experiencing joy and fulfillment in ways that matter to them.

It will be important for future work to examine the directionality of the relationships between the CC components and hope. However, we believe it is likely that there is bidirectionality such that youths' experiences with CC lead to hopefulness, and hope supports development in CC. The associations we found between each component of CC and hope suggest that young people of color who are aware of the implications of systems of oppression, who feel empowered to take action to address oppression, and who make commitments to challenge oppression, are hopeful about their future. At an individual and collective level, this hopefulness is important to attend to as it can provide sustenance to our movements for a more just world while also paving pathways to a more liberatory future released from oppression, for those who take part.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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