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Religiosity and Family Functioning as Predictors of Hope and Resilience during the COVID-19 Pandemic among African American and Latinx College Students with Asthma

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Abstract: Being resilient and hopeful in the face of adversity can promote health and academic outcomes. We sought to determine whether religiosity and family functioning pre-pandemic predicted resilience and hope during the pandemic in a sample of 105 African American and Latinx college students with asthma (M_{age} = 19.09 years, SD = 1.01). Participants completed an online survey prior to the pandemic and one during the pandemic. In simple regressions, controlling for age, race/ethnicity, gender, and asthma control, greater religious commitment, better family functioning, and less COVID-19 impact were associated with higher resilience scores. Only greater religious commitment was associated with higher hope scores. In a hierarchical regression predicting resilience from all variables, religiosity and family functioning were associated with resilience above and beyond COVID-19 impact and covariates. Findings highlight the importance of family functioning and religiosity—two cultural factors that are salient in African American and Latinx communities—in resiliency and hope.
Keywords: college student, pandemic, resilience, hope, religiosity, family functioning.

The COVID-19 pandemic has profoundly impacted college students. College students experienced significant disruptions, such as food and housing insecurities, a rapid transition to virtual learning, financial loss, and social isolation (Lederer et al., 2020). Thus, it is no surprise that some college students experienced mental health problems (Copeland et al., 2020) and academic issues, such as delayed graduation and decreased academic motivation, during the pandemic (Aucejo et al., 2020). College students also expressed high levels of worry about the impact of the pandemic on their family and friends (Cohen et al., 2020). Clearly, college students' psychosocial adjustment and academic outcomes were impacted by the pandemic. However, not all college students were affected similarly. The pandemic amplified the mental health inequities experienced by students with chronic illnesses and those from minoritized backgrounds.

Managing a chronic illness while a student is generally not easy; doing so during a pandemic may be even more difficult. Unlike their peers, students with asthma must manage their illness in addition to academic, vocational, and other new demands (Miadich et al., 2020). Prior to the pandemic, college students with asthma had poorer academic and health (e.g., sleep, mental health) outcomes than their peers without asthma (Fedele et al., 2009; M. A. W. Hawkins et al., 2020). Recently, scholars explored how the pandemic influenced asthma-specific (e.g., asthma management; Ramos et al., 2023; Taquechel et al., 2020) and asthma-related (e.g., mental health;

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Ramos et al., 2023) outcomes. Interestingly, during the pandemic, students with asthma reported better asthma control (Ramos et al., 2023; Taquechel et al., 2020) and decreased substance use (Ramos et al., 2023). Indeed, Papadopoulos and colleagues (2021) found that only 9.8% of a global pediatric sample (4-18 years of age) reported worse asthma control during the pandemic. These findings are important given that poor asthma control is associated with mental health problems both prior to (Bedolla-Barajas et al., 2021; Licari et al., 2019) and during the pandemic (Higbee et al., 2021; Ramos et al., 2023).

Resilience and Hope During the COVID-19 Pandemic

To date, much of the literature on the impact of the pandemic on college students has focused on its' adverse effects on health outcomes (e.g., Copeland et al., 2020; Ramos et al., 2023). Fewer studies have examined the impact of the pandemic on resilience and hope–two strength-based constructs. Resilience is defined as an individual's ability to adapt to negative events (Smith et al., 2008). While similar, hope is defined as a motivational state and describes an individual's capacity to achieve a goal (Snyder, 2000). Scholars have emphasized the need to move from only studying illness- and deficit-related outcomes to a focus on positive psychology and strength-based constructs (Davis et al., 2021; Volpe et al., 2022). Pre-pandemic studies have demonstrated that resilience and hope are associated with improved mental health and academic outcomes among college students (Haktanir et al., 2021; Hartley, 2011). As such, identifying modifiable predictors of resilience and hope can help prevention planners develop interventions to promote these positive outcomes as the impacts of the pandemic continue to be felt.

This type of work is particularly important for African American and Latinx college students who face unique stressors compared to non-minoritized students and whose development is often interpreted within a deficit lens. For instance, African American and Latinx college students experience discrimination and microaggressions that negatively affect their health (e.g., increased mental health problems and substance use; Corona et al., 2017; Hagiwara et al., 2021; Jones & Neblett, 2019). In the U.S., African American and Latinx college students also navigate school within the context of the larger socio-political climate. The murder of Black individuals by the police and the anti-immigrant rhetoric have brought increased attention to the injustices faced by the African American and Latinx communities (Garcini et al., 2022; D. S. Hawkins, 2022). Further, African American and Latinx communities have experienced the most deleterious effects of the pandemic (Centers for Disease Control [CDC], 2021; Rodriguez-Diaz et al., 2020). They are disproportionately more likely than non-Latinx whites to be diagnosed with COVID-19, hospitalized, and die from COVID-19 (CDC, 2021). They are also likely to experience financial hardships (e.g., unemployment) and to know someone who has been hospitalized or died from COVID-19 (Andrasfay & Goldman, 2021; Rodriguez-Diaz et al., 2020). Together, these stressors have created a significant burden on the African American and Latinx communities highlighting the importance of identifying factors that promote resiliency and hope during times of increased stress.

While some individuals experienced negative outcomes associated with the pandemic, others demonstrated resilience and hope. Among U.S. adults, resilience was positively associated with more social support, days spent outside, daily exercise, and prayer during the COVID-19 pandemic (Kilgore et al., 2020). Further, resilience was associated with needing less help from family and friends, fewer days in lockdown, and lower stress (Ferreira et al., 2020). It should be noted, few studies have focused on hope as an outcome measure among adults during the pandemic. In a cross-sectional study of 220 adults living in Turkey during the early phase of the pandemic,

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adults with high hope were more likely to experience better psychological health (Yıldırım & Arslan, 2020). In a sample of college students in China, more hope among students was associated with fewer depressive symptoms during the onset of the pandemic (Yu et al., 2021).

We identified only two longitudinal studies focused on resilience during the pandemic with individuals living in the U.S. Bono et al. (2020) found that college students with more pre-pandemic grit (i.e., persistence toward goals in the face of adversity) experienced greater resilience during the pandemic. Riehm et al. (2020) found that individuals with low and normal levels of resiliency, assessed between March 10 and March 31, 2020, experienced worse mental health (assessed in nine follow-up waves from April to August 2020) compared to those with high levels of resiliency and that Black adults reported higher resiliency scores. With these two exceptions, much of the research on resilience during the pandemic is cross-sectional, includes adults across the lifespan, and has not focused on individuals living with a chronic illness who likely experienced more burden and worry about their health during the pandemic.

Accordingly, the current study fills a gap by identifying pre-pandemic cultural factors that predicted resilience and hope during the pandemic among African American and Latinx college students with asthma. We focused on religiosity and family functioning given the established importance of these culturally salient factors in promoting positive outcomes among African American and Latinx college students. Religiosity includes a person's commitment to their religious values, beliefs, and practices and is a powerful coping mechanism when faced with stress (Worthington, 2003). Indeed, religiosity is associated with better mental health functioning and decreased risk behaviors (e.g., substance use, HIV risk behaviors) for African American and Latinx college students (Escobar & Vaughan, 2014; Hernandez et al., 2022). Religiosity also buffers the effect of stressors such as discrimination on mental health outcomes (Corona et al., 2017). In a systematic review and meta-analysis, Schwalm and colleagues (2021) found a moderate association between religiosity/spirituality and resilience.

Family is also important for healthy outcomes among Latinx and African Americans. For instance, *familismo* is a Latinx cultural value that emphasizes an orientation and connection to one's family (Cauce & Domenech-Rodriguez, 2002). Family also plays an important role in health outcomes among African Americans (Belgrave et al., 2021). Prior work has emphasized the importance of family relationships for African American and Latinx college students. Healthy family functioning, defined by high family cohesion, low family conflict, and positive communication practices, is associated with better mental health and decreased engagement in risk behaviors (Cano et al., 2020; Thomas & Brausch, 2020). Like religiosity, healthy family functioning buffers the relationship between stressors and poor mental health outcomes (Corona et al., 2017).

The Current Study

Based on the prior literature, our hypotheses were: (1) Healthier family functioning and greater religiosity (Time 1) would predict resilience and hope during the pandemic (Time 2) above and beyond the variance explained by individual factors (i.e., age, gender, race/ethnicity, asthma control) and COVID-19 impact (e.g., job loss, social isolation, infection); and, (2) greater COVID-19 impact (Time 2) would be associated with less resilience and hope during the pandemic (Time 2).

Methods

Participants

Prior to the pandemic, 205 African American and Latinx college students with asthma completed an online survey between May 31, 2019, and March 14, 2020 (Time 1; Everhart et al., 2023). Students were invited to complete a follow-up survey after the start of the pandemic between August 6, 2020, and October 29, 2020 (Time 2). This manuscript focuses on 105 participants (ages 18-23) who completed both waves of data collection.

Students' mean age was 19.09 years (SD=1.01), 85.7% identified as a woman and 14.3% man, and 68.6% as African American, 21.9% as Latinx, and 9.5% as multi-racial. About half were in their first year in college (45.7%). Student characteristics and measure descriptives, including Cronbach's alpha, are presented in Table 1.

Table 1

Sample Characteristics and Measure Descriptives (n = 105 unless noted)

	n (%)	***M (SD)*; Range**	
Age, years		19.09 (1.10); 18-23	
Gender			
Man	15 (14.3)		
Woman	90 (85.7)		
Transgender	0 (0)		
Intersex	0(0)		
Other	0(0)		
Race/Ethnicity			
African American	72 (68.6)		
Latinx	23 (21.9)		
Multi-racial*	10 (9.5)		
Academic Year			
Freshman	48 (45.7)		
Sophomore	30 (28.6)		
Junior	22 (21.0)		
Senior	5 (4.8)		
Controller Medication			
Yes	44 (41.9)		
No	61 (58.1)		
Quick Relief Medication			
Yes	73 (69.5)		
No	32 (30.5)		
Measures			**Cronbach's Alpha**
Time 1 ACT		20.48 (3.32); 11-25	.74
Time 1 RCI		25.59 (12.20); 10-50	.96
Time 1 FAD (*n*=104)		2.26 (.58); 1-3.58	.88
Time 2 EPII (*n*=98)		24.20 (12.72); 0-78	.94
Time 2 BRS (n=95)		3.10 (.78); 1.17-4.83	.82
Time 2 AHS (n=89)		48.64 (7.85); 29-64	.91

Note. *Multi-racial included African American or Latinx; ACT = Asthma Control Test, RCI = Religious Commitment Index, FAD = Family Assessment Device, EPII = Epidemic-Pandemic Impacts Inventory (i.e., COVID-19 impact), BRS = Brief Resilience Scale, AHS = Adult Hope Scale

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Procedures

Students were recruited from universities and colleges and in the community in a southeastern state. Recruitment procedures included placing flyers on university and college campuses and in the community, sending emails to African American and Latinx student groups, email or in-person invitations by course instructors, and word of mouth. Students who were interested in participating were asked to complete an online screening form in REDCap. After completing the screening form, eligible students were directed to the confidential survey in REDCap, which included an online information sheet about the study. After completing the Time 1 survey, participants provided their email addresses in order to receive an electronic gift card. After the onset of the pandemic (and with IRB approval), all participants were emailed information about the Time 2 assessment and a link to the new information sheet and survey.

Time 1 data from 205 college students were collected prior to the pandemic (between June 2019 and March 2020). The modal date for completion at Time 1 was in September 2019 (n=5); 95% of participants completed the questionnaire before March 2020. One hundred and five students who completed the Time 1 survey also completed the Time 2 (August 2020 and October 2020) online survey that was administered during the pandemic. The Time 2 survey was available to participants for the first time on August 6, 2020, which was the modal date for Time 2 surveys; 36% of participants completed the survey on this date.

Students were eligible to participate if they self-identified as African American or Latinx (or "Mixed" or "Multiple Responses" included African American or Latinx), were 18 to 20 years of age (this age range was a condition of the funding source), were a college student, had been diagnosed with asthma by a physician, or endorsed at least two breathing symptoms indicative of asthma (Redline et al., 2004). Students were excluded if they self-reported additional pulmonary disease (e.g., cystic fibrosis), severe medical illness, an intellectual disability that prevented them from understanding project forms, or if they were older than 23 years. Students who consented to participate then completed the confidential survey that took about 45 minutes to complete. Students were again asked their age and nine participants indicated that they were older than 20 years of age on the survey. We decided to include the data from eight of these participants in the analyses since they are still considered young adults (i.e., not older than 23 years of age). Data from a 35-year-old was excluded from analyses. Students received a $25 electronic gift card for completing the Time 1 survey and $15 for the Time 2 survey.

Time 1 Measures

Demographics. Students reported their age, gender identity (i.e., man, woman, transgender, intersex, other), race/ethnicity, academic year, and their asthma medication status (daily controller and/or quick relief; yes/no).

Asthma control. Students completed the 5-item Asthma Control Test (ACT; Nathan et al., 2004) to measure the frequency of daily symptoms, activity limitations, and their perception of disease control over the past four weeks. For instance, students were asked how often in the past four weeks their asthma has kept them up at night and kept them from getting as much done at home, school, or work. Students rated each item as *all of the time* (1), *most of the time* (2), *some of the time* (3), *a little of the time* (4), *and none of the time* (5). Item scores were summed, with higher scores indicating better asthma control. Scores above 19 are indicative of well-controlled asthma. Cronbach's alpha was .74.

Religiosity. Students completed the 10-item Religious Commitment Index (RCI-10; Worthington et al., 2003). Students were asked to indicate on a scale from *not at all true of me* (0) to *totally true of me* (5) how true each item is for their religious commitment (e.g., "I enjoy spending time with others of my religious affiliation"). Items were summed to create an overall religious commitment score, with higher scores indicating greater religious commitment. Cronbach's alpha was .96.

Family functioning. Students completed the 12-item General Functioning Scale of the Family Assessment Device (FAD; Epstein et al., 1983). Students were asked their level of agreement on a scale from *strongly* agree (1) to *strongly disagree* (4) on items such as "We are able to make decisions about how to solve problems." Items were averaged (with 6 items reverse-scored first) and higher scores indicate unhealthy family functioning. Cronbach's alpha was .88.

Time 2 Measures

Resilience. Students completed the 6-item Brief Resilience Scale (BRS; Smith et al., 2008) using a 5-point scale ranging from *strongly disagree* (1) to *strongly agree* (5). Example items include "I tend to bounce back quickly after hard times" and "It is hard for me to snap back when something bad happens." Responses were summed to create an overall resilience score with higher scores representing greater resilience. Cronbach's alpha was .82.

Hope. Students completed the 12-item Adult Hope Scale (Snyder et al., 1991). Eight items were summed (4-items are filler items) to create an overall hope score with higher numbers representing more hope. An example item is "I energetically pursue my goals." Students responded to each item using an 8-point scale that ranged from *definitely false* (1) to *definitely true* (8). Cronbach's alpha was .91

COVID-19 impact. Students completed the 54-item Epidemic Impacts Inventory (EPII; Grasso et al., 2020). Participants rated each item (*yes, no, not applicable*) as having impacted their self, a person in the home, or not applicable. For example, students were asked if they had "Provided care to people who died as a result of the disease" and "Were separated from family or close friends." Items were summed with higher scores indicating a greater COVID-19 impact on the student and their family. Cronbach's alpha was .94.

Data Analysis Plan

Study variables were checked for normality using a Shapiro-Wilk analysis and the number of missing values was calculated. Little's Missing at Random (MCAR) test was run to assess for systematic differences. ANOVA analyses were used to assess for differences in religiosity, family functioning, COVID-19 impact, resilience, and hope across academic year (e.g., freshman, sophomore). Simple regression analyses were conducted with resilience and hope as outcome variables in separate models. Age, race/ethnicity, gender, and asthma control were included as covariates based on prior literature that shows an association between these demographic variables and study variables (Li et al., 2021; Pearman et al., 2021; Staneva et al., 2022). Religiosity, family functioning, and COVID-19 impact were included as independent variables. For any significant regressions that involved non-normally distributed variables as predictors, Shapiro-Wilk was used to test the normality of standardized and unstandardized residuals. To determine whether religiosity and family functioning at Time 1 predicted outcome variables at Time 2 over and beyond COVID-19 impact, hierarchical regression analyses were conducted. Covariates were entered in the first step (Model 1), COVID-19 impact in Step 2 (Model 2), and religiosity and family functioning in

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Step 3 (Model 3). Based on a power analysis using G*Power (Faul et. al., 2009), the minimum sample size needed for hierarchical regression analyses with three predictor steps powered at .80 was 77 participants.

Results

Preliminary Analyses

The religiosity, COVID-19 impact, and asthma control measures were not normally distributed with $p < .05$ on the Shapiro-Wilk test. In analyses, we used a Shapiro-Wilk test to determine whether the residuals of regression models including these variables were normally distributed. The hope scale (measured at Time 2) had the most missing data with 15.2% missing. The resiliency scale had 9.5% missing data, and the COVID-19 impact measure had 6.7%. Little's MCAR test resulted in a non-significant p-value ($p = .288$), indicating that data were missing at random. The resilience and hope measures were correlated at $r = .33$ ($p = .002$). Our main variables of interest (e.g., hope, resilience, family functioning, religious commitment, COVID-19 impact) did not differ by academic year.

Regression Analyses

Results of simple regressions can be found in Table 2. All analyses controlled for age, race/ethnicity, gender, and asthma control. Greater religious commitment was associated with higher resilience scores ($\beta = .229$, $p = .020$). Healthier family functioning was also associated with higher resilience scores ($\beta = -.322$, $p = .001$). Finally, less COVID-19 impact was associated with higher resilience scores ($\beta = -.243$, $p = .022$). In the same series of regression analyses with hope as the outcome variable, greater religious commitment was associated with more hope ($\beta = .253$, $p = .016$). Family functioning and COVID-19 impact were not significantly associated with hope. Residuals of regression models were normally distributed (see Table 2).

Table 2
Simple Regression Results of Time 1 Factors and COVID-19 Impact on Time 2 Resilience and Hope

	B	*S.E.*	*df1, df2*	*t-statistic*	*p*	*Shapiro-Wilk test*
Resilience Predictor						
RCI	.015	.006	5, 89	2.376	.020*	.682
FAD	-.432	.131	5, 88	-3.309	.001**	.302
EPII	-.015	.006	5, 89	-2.329	.022*	.065
Hope Predictor						
RCI	.171	.070	5, 83	2.454	.016*	.822
FAD	-2.625	1.484	5, 82	-1.768	.081	--
EPII	.020	.073	5, 83	.270	.788	--

Hierarchical Regression Results Predicting Time 2 Resilience

	Model 1			***Model 2***			***Model 3***		
Resilience Predictor									
	B	*S.E.*	*ß*	*B*	*S.E.*	*ß*	*B*	*S.E.*	*ß*
Age	.109	.068	.159	.110	.067	.160	.099	.063	.144
Race/ ethnicity	-.207	.119	-.177	-.124	.123	-.105	-.146	.115	-.124
Gender	-.560	.224	-.250*	-.447	-.226	-.199	-.396	.211	-.177
ACT	.038	.025	.159	.031	.031	.024	.021	.023	.085
EPII				-.014	.007	-.229*	-.008	.006	-.130
RCI							.016	.006	.239*
FAD							-.407	.130	-.303**
R^2		.144			.188			.312	
F for change in R^2 *(df1, df2)*		3.746** (4, 89)			4.751* (1, 88)			7.738** (2, 86)	

*p<.05, **p<.01; Model 1 = covariates entered in Step 1; Model 2 = COVID-19 impact added in Step 2; Model 3 = religiosity and family factors added in Step 3; ACT = Asthma Control Test, EPII = Epidemic-Pandemic Impacts Inventory (i.e., COVID-19 impact), RCI = Religious Commitment Index, FAD = Family Assessment Device.

Hierarchical regression results predicting resilience from all variables can be found in Table 2. Greater religiosity was associated with higher resilience scores above and beyond COVID-19 impact and covariates (Model 3) ($ß$ = .239, *S.E.* = .006, p = .010). Healthier family functioning was also associated with higher resilience scores above and beyond COVID-19 impact and covariates ($ß$ = -.303, p = .002). Shapiro-Wilk values for standardized and unstandardized regression residuals were both nonsignificant (p = .227). Given that COVID-19 impact was not related to hope, we did not proceed with a hierarchical regression to test whether family functioning and religiosity could predict hope above and beyond other variables in the model.

Discussion

Much of the literature on resiliency and hope in the COVID-19 pandemic has utilized cross-sectional data, not included individuals managing a chronic illness, and focused primarily on adults. Fewer studies have focused on college students living in the U.S. In this longitudinal study, we found that greater religiosity and healthier family functioning pre-pandemic predicted greater resilience during the pandemic above and beyond the impact of COVID-19. Greater religiosity measured pre-pandemic, not family functioning, was associated with more hope during the pandemic. These findings highlight the importance of family functioning and religiosity—two culturally-relevant factors—in promoting resiliency and hope.

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Our findings contribute to the emerging literature on factors that are associated with resiliency and hope during the pandemic among adults living in the U.S. (Ferreira et al., 2020; Kilgore et al., 2020) and extend this literature to college students living with a chronic illness. Managing a chronic illness while being a student can negatively affect psychosocial outcomes. For instance, pre-pandemic, college students with asthma experienced greater psychosocial problems compared to their peers without asthma (M. A. W. Hawkins et al., 2020). Thus, identifying factors that promote resiliency and hope is important and has implications for the long-term health of individuals with asthma.

A strength of the current study is the longitudinal design – i.e., the use of constructs that were collected pre-pandemic to predict resilience and hope during the pandemic. At the time these data were collected, most pandemic-related studies focused on resilience and hope were cross-sectional and not focused on college students living in the U.S. (see Bono et al., 2020 and Riehm et al., 2020 as exceptions). Although studies conducted outside the U.S. provide useful information, each country had different responses to managing the pandemic, which could result in different outcomes. As the pandemic has continued, future studies should continue to explore how positive constructs, such as resilience and hope, change and what factors promote them longer term.

Interestingly, while we found religiosity and family functioning predicted resilience above and beyond COVID-19 impact, contrary to our hypothesis, we did not find that COVID-19 impact was associated with hope. Hope and resilience, although related constructs, are separate indicators of psychological well-being. Hope tends to be defined as more of a motivational state (i.e., capacity to achieve a goal) (Snyder, 2000), whereas resilience is one's ability to adapt to negative events (Smith et al., 2008). Thus, it might be that stress related to the pandemic did not spur hope or a desire to achieve goals during a major health crisis. However, students likely experienced resilience or the need to bounce back as a result of the COVID-19-specific impact they endured. Future research examining the impact of the pandemic on college students should consider whether an association exists between general stress and hope.

The results of this study also contribute to the emerging literature examining the distinctiveness of these strength-based constructs. At times, these constructs are used interchangeably in the literature and at other times, hope is considered to lead toward resilience. Findings from the current study lend support to the idea that these are related (Snyder 2020), yet unique, constructs with their own set of predictors. Munoz et al. (2020) also demonstrated the "empirical distinctiveness" of these constructs by finding that while both variables predicted psychological flourishing, hope was the stronger predictor.

Although the inclusion of African American and Latinx college students with asthma is a strength of the current study, it is important to note that the sample consisted primarily of students who identified as a woman (85.7%) and African American (68.6%). Future studies are needed to better understand whether gender identity may moderate the associations found. For instance, in a sample of college students living in China, Zhang et al. (2018) found that resilience was more strongly related to psychological distress than social support for male students whereas social support (not resilience) predicted psychological distress for female students. Further, while African American and Latinx college students may face some similar stressors (e.g., discrimination), the interpretation, intensity, and experience may differ for each cultural group. There may be cultural factors (e.g., colorism) that intersect with racial/ethnic identities and other outcomes differently for each group. Accordingly, increasing the sample size for both groups would increase the power needed to identify unique cultural predictors of resilience and hope among African American and Latinx college students with asthma. Given the increasing number of multi-racial college students in the U.S., more research is also needed that allows for a specific focus on their well-being and

factors that may promote resiliency and hope.

This study is not without limitations including missing data and the small sample size. This study was supported by funding from a foundation, which originally included incentives for 194 survey participants and focus group participants. When the pandemic began and mitigation measures were in place, the focus groups were not conducted and instead, participants were invited to complete a second online survey. Thus, analyses in this study are restricted to the students who completed the Time 1 (pre-pandemic) and Time 2 (during pandemic) surveys. Although data were missing at random, students completing the hope and resilience measures may have differed from those who did not complete the measures.

It is also important to highlight the timing of when the measures were collected. In this study, participants completed the Time 1 survey between May 31, 2019, and March 14, 2020. It is possible that family functioning and religiosity changed during the pandemic. Unfortunately, the measures administered were not consistent across the two timepoints – e.g., resilience and hope were not measured pre-pandemic given the original focus of the study to identify predictors of tobacco use for African American and Latinx college students with asthma. Similarly, because some items were added at Time 2 to focus on the impact of the pandemic, some pre-pandemic measures were removed to not overly burden participants during this stressful time. Our sample is also limited in the small number of students completing certain measures at Time 2, the gender distribution (women and men, with no other gender identities represented), and ethnic distribution (primarily African American). Moreover, although data were missing at random and our analyses were adequately powered, it is possible that the internal validity of our study was affected. We suggest that future research use a larger sample of college students, inclusive of other gender identities, to evaluate COVID-19 impacts.

Conclusion and Implications

As the impact of the pandemic continues to be experienced by African American and Latinx college students with asthma, mental health interventions and academic outreach programs are priorities. Being resilient and hopeful in the face of adversity can promote health and academic outcomes (Paredes et al., 2021; Riehm et al., 2021). Indeed, resilience-based intervention programs are associated with better mental health and academic outcomes (Akeman et al., 2020). For instance, Akeman et al. (2020) evaluated (in a non-randomized trial) the impact of a 4-session resiliency program on college students' depressive symptoms and stress. While they did not find improvements in depressive symptoms at post-test, they did find improvements at the end of a semester. Students' stress improved at both post-test and the end of the semester. Interestingly, cognitive-behavioral skills mediated the outcomes. Resiliency-based programs could be implemented through university counseling centers, classes, and other health-related school programming. Resilience promoting interventions can also be implemented as mobile health interventions (see Herrero et al., 2019), which may be especially relevant in terms of reach for college students.

Recently, experts in the field of resiliency have recommended a more comprehensive definition of resiliency that includes multiple systems (e.g., individual, family, cultural, societal) that can impact (negatively and positively) resilience (Denckla et al., 2020; Masten et al., 2021; Ungar & Theron, 2020). Ungar and Theron (2020), for example, suggest that instead of solely implementing resiliency-based programs to decrease mental health symptoms, we should focus our efforts on increasing individuals' access to resources that promote resilience. Verdolini and colleagues (2021) similarly note that given the uncertainty and long-term impacts of the pandemic,

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enhancing coping and resilience should be a priority. For African American and Latinx college students with asthma, this could include finding ways to integrate family and religiosity into outreach efforts as they navigate school while coping with the ongoing impacts of the pandemic.

Given that multiple systems influence resilience, researchers and prevention programmers should also go beyond individual and family level factors and consider the role of school/university (e.g., school connectedness) and community (e.g., neighborhood cohesion, community cultural capital) factors that promote resilience. Universities that have a trusting and strong relationship with the surrounding community may be able to implement multi-level interventions that promote resiliency within the university and surrounding community. In addition, other cultural factors, such as cultural values and racial/ethnic identity, may play important roles in the promotion of resiliency among African American and Latinx college students.

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