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Ethnic identity and mental health stigma among Black adults in the United States

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Abstract

Objectives. —Mental illness stigma is a barrier to engagement in mental health services. This study assesses our hypothesis that specific ethnic identity dimensions influences mental health behavior including stigma.

Methods. —We performed an online cross sectional observational study among Black adults (n = 248, ages 18–65). We examined the relationship between an individual's approach to their racial identity in the community and stigma behavior towards mental health; generalized linear models were performed. We assessed demographic characteristics as moderators of the primary association.

Results. —Black adults with higher centrality reported lower past stigma behavior (RR=1.57, CI: 1.11–2.21, $P = 0.01$), but higher future intended stigma behavior (RR=0.93, CI: 0.88–0.99, $P = 0.02$). Majority of respondents reported high centrality and high assimilation; however, assimilation did not appear to correlate with mental health stigma behavior. Age, education and ethnicity appeared to have a limited moderating effect on the association between centrality and stigma behavior.

Conclusions. —Centrality was associated with mental health stigma behavior. By understanding the intersecting characteristics that may increase the likelihood for mental illness stigma, we will be better able to reduce mental illness stigma and optimize engagement in mental health services.

Keywords

African American; Black immigrant; Ethnicity; Mental illness; Stigma

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Introduction

Black people continue to experience mental health disparities in the United States [1, 2]. Disparities among Black people result in poor engagement in mental health services, more chronic disease, higher levels of disability, higher rates of inpatient hospitalizations and lower rates of outpatient mental health service use compared to their White people [1, 3–5). Several factors contribute to health disparities including stigma related to mental illness, which is a leading cause of health inequities [6]. Black people hold stigmatizing views towards mental illness and utilization of mental health services [1, 3–5]. Mental illness stigma results in barriers to mental health service delivery among Black people. Stigma refers to the negative attitudes and beliefs one may hold towards mental illness and is based on a desire for social distance or separation from people who are part of the stigmatized group [7, 8]. Stigma reduces the likelihood that an individual will access mental health services [9].

Acculturation refers to the degree to which an individual, a family or an ethnic group engages in their cultural values and beliefs versus adopting the mainstream cultural values or beliefs [10]. Acculturation as a psychological process may play a key role in the experience of African Americans, African immigrants and Afro-Caribbean immigrants as ethnic minorities in the United States [10, 11]. Acculturative discordance or demands around integrating into a separate ethnic or cultural identity that defers from one's individual culture may contribute to psychological distress [11, 12]. Several studies address the association between acculturative stress (stress related to one's ethnic identity) and mental health, few studies focus on African Americans and Black immigrants and even fewer studies assess how acculturation may influence stigmatizing views around mental health within the Black community [13, 14]. Acculturation and its association with stigma related to mental health may affect engagement in mental health services for ethnic minorities including Black adults living in the United States [13, 14].

While acculturation is a well-studied, though complex concept, there is no clear consensus on how acculturation components specifically impacts mental health outcomes for Black adults. We focus on ethnic identity among African Americans and Black immigrants as an essential component of acculturation and how one's interaction with their ethnic identity and community influences behavior including mental health behavior [15]. Some studies show greater connection to the mainstream culture improves mental health while other studies show greater connection to mainstream culture and lower ethnic identity contributes to low self-esteem and greater psychological distress [11, 16].

Therefore, it is important to understand how one's subjective interaction with their ethnic identity and community may influence mental health behaviors such as stigma related behaviors, given its known influence on mental health outcomes. This association is understudied among Black adults including Black immigrants and African Americans. In order to delineate more clearly the relationship between different dimensions of ethnic identity and social distance related to mental illness, we focus on specific components related to centrality and assimilation dimensions of Black identity in the United States. We assessed social distance, which is an indicator of past, current or future discriminatory

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manifestations of stigma related to mental illness [17, 18]. We assessed centrality, which refers to the extent to which being Black is core to one's self concept; we also assessed assimilation, which refers to the extent to which Black people should strive to be integrated into the mainstream culture [19]. In the United States, racial and ethnic identity refers to the value and significance once ascribes to being part of a particular racial or ethnic group. Racial identity is distinct from racism or racial discrimination which refers to the behaviors by a dominant group that result in negative effects on a non-dominant group [20]. In this study, we examined the relationship between one's interaction with their racial and ethnic identity (using centrality and assimilation measures of Black identity) and social distance from persons with mental health problems as well as the relationship between racial and ethnic identity and future intended mental illness stigma among Black adults. We adjusted for ethnicity between those who identified as African Americans and those who identified as Black immigrants (African and Afro-Caribbean immigrants), given the salience of differences in ethnicity related to migration.

Methods

Study design

We performed a cross-sectional study to assess characteristics of acculturation and stigma among Black adults who identify as African-American, African immigrants and Afro-Caribbean immigrants from September 2020 to October 2020.

Participants and study setting

The study participants were recruited from community based organizations and represent a sample of Black adults (n = 248) residing in the United States. In partnership with community based organizations (United African Organization, World Relief Chicago, and Refugee One) serving Black adults, the online survey was shared by community leaders with their members. Eligibility criteria included: 1) between ages 18–65; 2) identifying as Black, African-American, African or Afro-Caribbean; 3) currently living in the United States; and 4) English speaking.

Procedure

The study received funding through the National Center for Advancing Translational Sciences (NCATS). Data was collected using self-report survey instruments over a 2-month period in 2020. The surveys were distributed online using Qualtrics software. This study reports on the data collected regarding the association between the interaction with one's ethnic identity and mental illness stigmatizing behavior.

Ethical Review

The Northwestern University Institutional Review Board approved this study prior to data collection.

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Measures

We collected data using validated and standardized instruments to measure Black racial and ethnic identity using a measure of racial and ethnic identity in Black adults. We also measured social distance and stigma related to mental health. Participants self-report on how they interact with their ethnic and racial identity was based on two subscales in the Multidimensional Inventory of Black Identity (MIBI). The subscales included measures on centrality and assimilation. We also included a measure of Reported and Intended Behavior Scale (RIBS) to assess current or past and future behavior related to mental health problems. Below we review each scale and its psychometric properties.

1. The demographic questionnaire: The demographic questionnaire included self-report questions on age, education, ethnicity, marital status, income, insurance status and several other demographic items. We also assessed the characteristics of our sample based on U.S. citizenship, years lived in the United States and place of birth.

2. The MIBI (Multidimensional Inventory of Black Identity): a 56-item racial and ethnic identity survey [21]: The MIBI has been validated among Black people across age groups living in the United States as well as among Black people in other countries. We focused on two subscales within this measure, an 8-item centrality subscale and a 9-item assimilation subscale. The centrality dimension assesses the extent to which individuals believe being Black is central to their self-definition or identity, for example, "in general, being Black is an important part of my self-image." The assimilation subscale assesses the extent to which Black people should strive to be integrated into the mainstream culture and political system and focuses on the commonalities between Black people and other Americans. The scales have moderate to high internal consistency and the Cronbach's alphas for each subscale ranged from 0.60 to 0.80 [21, 22].

3. The RIBS (Reported and Intended Behavior Scale) [18]: The RIBS is an 8-item scale divided into two sections (reported past and current behavior related to mental health problems and reported future intended behavior). There are 4-items in each section. Each of the first four items are examined as individual outcomes with responses yes or no or don't know, representing the prevalence of a particular behavior in the past or current time. The second four items are assessed as a total score [4–20] based on responses on an ordinal scale [1–5], a higher score indicates greater willingness to engage in a particular behavior and hence less future intended stigmatizing behavior. Each question begins with "in the future I would be willing to…" "live," "work," "be a neighbor to" or "have a close friendship with someone with a mental health problem". The scale showed good validity (Cronbach's alpha 0.72 to 0.81 for the 4-item individual measures and 0.85 for the subscale on future intended behavior) and good reliability (test-retest reliability was 0.75) [18].

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Data analysis

The frequency and percentage of participants according to age group, gender, education, income, ethnicity, place of birth, and citizenship status were calculated. In order to examine the relationship between acculturation and RIBS generalized linear models in SAS Version (9.3) were used. For the relationship between the centrality and assimilation dimensions of Black racial and ethnic identity and the first four items of the RIBS scale, Poisson regression with a log link was used to calculate rate ratios (RR) in order to assess the changes in the probability of responding 'yes' to the RIBS items per unit change in mean score for each of the racial and ethnic identity dimension. When the total RIBS score (future intended stigmatizing behavior based on the second four items) was treated as an outcome, gamma regression using generalized linear models in SAS Version (9.3) was used. The RRs from these models represent the average change in the RIBS score per unit change in the centrality and assimilation dimensions.

To examine whether these findings were potentially confounded, models were constructed that controlled for age, education and ethnicity. Finally, to explore whether there was effect modification according to these variables, these same regression models were run while stratified according to age, education and ethnicity.

Results

The demographic composition of participants is shown in Table I. Among the 248 participants, 59.27 % of participants were aged 18–34 and 40.73 % of the participants were aged 35–65. Over half of the sample identified as male (56.85%) and 43.15% identified as female, no other genders were reported by participants. Majority of participants reported being married (63.71%). Among the participants, 30.24% reported having no college education, the majority of the sample endorsed some college or more education. Participants reported a personal income less than $30, 000 (43.15%) while 43.55% reported a personal income between $30,000 and $49,999. Over half of the participants reported having public health insurance (55.23%) and 23.79% reported having no insurance. Participants identified as African American (76.61%), African (18.95%) and Afro-Caribbean (4.44%). More than half of the participants (58.06%) reported living in the United States for more than 10 years and 62.10% reported being born in the United States with 37.90% reporting being born outside the United States. The majority (75.81%) of participants identified as having United States citizenship.

Characteristics of racial and ethnic identity among participants

In response to questions on centrality, three-fifth (59.7%) of respondents endorsed that being Black was an important part of their self-image. The majority of respondents (57%) endorsed that their destiny was tied to the destiny of other Black people. Respondents (60.7%) endorsed that being Black was an important reflection of who they were. In response to questions on assimilation, 67% of respondents endorsed Black people should strive to be part of the American political system. The majority of respondents (66.5%) endorsed Black people should work within the system to achieve their economic and political goals and a majority (60.3%) of respondents also endorsed Black people should

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strive to integrate all institutions which are segregated. Over half of respondents (59.7%) endorsed that Black people should feel free to socially interact with White people, 23.1% of respondents disagreed with this and 17.2% were neutral. The majority of respondents (63.1%) endorsed Black people should view themselves as American first and foremost. 62.9% of respondents endorsed the plight of Black people in America will improve when Black people are in important positions within the system, 26.2 disagreed with this notion and 11.4% were neutral in their response.

Main analysis and adjusted analysis: centrality and assimilation and its association with reported social distance and future intended stigma behavior

Association between centrality, assimilation and social distance from people with a mental health problem (Table II).—Respondents who reported higher centrality were more likely to report living with or having ever lived with someone with a mental health problem. The probability of reporting living with or having ever lived with someone with a mental health problem increased by 39% per unit increase in the centrality score (RR = 1.39, CI: 1.06 – 1.82, $P = 0.019$). After adjusting for age, education and ethnicity, there was a 37% change per unit increase in the centrality score (RR = 1.37, CI: 1.03 – 1.82, $P = 0.028$). In our main analysis, assessing unadjusted and adjusted analysis, we did not find any other statistically significant association between centrality and social distance or assimilation and social distance. We also did not find statistically significant association between centrality or assimilation and future intended stigmatizing behavior among respondents.

Association between centrality, assimilation and social distance from people with a mental health problem, findings on effect modification of age, education and ethnicity (Table III)—We assessed age, education and ethnicity as moderators of the relationship between Black identity dimensions (centrality and assimilation) and social distance from persons with mental illness in the past, current and future time. We found statistically significant association between centrality and social distance and stigma related behavior. However, in our analysis of effect modification, we did not find a statistically significant correlation between assimilation and social distance or stigmatizing behavior.

In our assessment of age as a moderator, we found that for respondents who are less than 35 years old, the probability of reporting living with or having ever lived with someone with a mental health problem increased by 57% (RR = 1.57, CI: 1.11 – 2.21, $P = 0.01$) per unit increase in the centrality score. Despite higher likelihood to report living with someone with a mental health problem, this group of respondents who are less than 35 years old, the probability of reporting living with or having ever lived with someone with a mental health problem decreased by 8% (RR = 0.92, CI: 0.86 – 0.98, $P = 0.008$) per unit increase in the centrality score, hence there was greater future intended stigmatizing behavior as centrality increased.

In our assessment of education as a moderator, we found that for respondents who report having no college education, the probability of reporting living with or having ever lived

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with someone with a mental health problem decreased by 67% (RR = 1.67, CI: 1.09 – 2.55, $P = 0.019$) per unit increase in the centrality score. Again despite the likelihood to report living with someone with a mental health problem, respondents who report having no college education, the probability of reporting living with or having ever lived with someone with a mental health problem decreased by 9% (RR = 0.91, CI: 0.83 – 0.99, $P = 0.038$) per unit increase in the centrality score, hence there was greater future intended stigmatizing behavior as centrality increased.

Finally in our moderation analysis, for respondents who reported identifying as African American, the probability of reporting living with report living with or having ever lived with someone with a mental health problem decreased by 7% (RR = 0.93, CI: 0.88 – 0.99, $P = 0.022$) per unit increase in the centrality score, hence there was greater future intended stigmatizing behavior as centrality increased. Among African Americans, higher centrality was correlated with greater future intended stigmatizing behavior towards people with mental illness.

Discussion

We found an association between centrality and social distance from people with a mental health problem; those who endorsed high centrality were less likely to endorse social distance in reference to living with or having ever lived with someone with a mental health problem. Having high centrality (strong identity and self-concept in being a part of the Black community) was associated with social proximity in the past or current time with someone with a mental health problem. Several studies have shown one's interaction with their racial and ethnic identity (as a component of acculturation) is related to mental health and well-being, however few studies assess how this interaction may be associated with social distance and stigmatizing behaviors from people with a mental illness [23–25]. Previous studies have shown high centrality was associated with less depressive symptoms and improved psychological health [22]. However, the mechanistic process by which racial or ethnic identity is associated with mental health is complex [22, 26]. One hypothesis, the insulation hypothesis, proposes that Black people determine their worth and behavior, including mental health behavior, based on comparing themselves to other Black people [19, 22, 27]. Our study supports the current literature that indicates there is an association between centrality and mental health behavior, but offers additional specificity to the growing body of knowledge around racial and ethnic identity and mental health behaviors. We found that respondents with higher centrality reported greater social proximity (or less social distance) to people with a mental health problem, even after controlling for demographic variables including ethnicity.

We found an association between centrality and social distance as well as stigmatizing behavior for respondents who were younger (less than 35 years old). Those who were less than 35 years old and reported higher centrality were more likely to report living with or having ever lived with someone with a mental health problem but they were also more likely to report greater future intended stigmatizing behavior. Hence, past or current experience living with someone with a mental health problem did not confer lower future intended stigmatizing behavior for young Black adults (ages 18 – 34). From our study it appears

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that high centrality was associated with higher future intended stigma behavior for this age group. Previous studies show that racial and ethnic identity and age are associated in mental health behavior, one study found an association between acculturation and suicidal ideation among young Black adults, they found a 7% increase in suicidal ideation was associated with increase in acculturation [28]. Our study contributes additional knowledge around the interaction of racial and ethnic identity and mental health behavior among younger Black adults, our study suggests that one possible reason greater centrality may lead to negative mental health behavior among young Black adults is because of the positive correlation of centrality and future intended stigmatizing behavior towards mental health.

The relationship seen with younger Black adults was similar to the relationship seen with educational status. Black adults without a college degree who reported high centrality were more likely to report living with or having ever lived with someone with a mental health problem, however this same group were also more likely to endorse future intended stigmatizing behavior towards people with mental health problems. Previous studies have shown that education reduces mental illness stigma, however one study suggests the opposite, that greater educational attainment may predispose one to greater stigma towards mental illness due to the intersection of racial or ethnic identity and mental health [29, 30]. Greater stigma among those with lower educational attainment with high centrality may be a result of intersecting stigmas such as the stigma that may be associated with lower educational attainment, the stigma that may be associated with having a mental illness and the discrimination associated with being Black [31, 32]. Therefore, these interesting stigmas may lead to a desire to minimize additional stigmatization by avoiding future contact with people with mental illness as seen in our study.

Those who identified as African Americans and reported higher centrality were more likely to endorse future intended stigmatizing behavior. Previous studies show that stronger ethnic identity is associated with lower likelihood of using mental health services among Black people [26]. A previous study also showed that Black people with higher centrality (ethnic identity) who reported discriminatory experiences were less likely to use mental health services [26, 33]. We found a correlation among African Americans with high centrality and mental health stigma but we did not see a similar relationship among those who identified as Black immigrants, this difference could be related to differing experiences of discrimination and the role of intersectionality specific to immigrant experiences among Black immigrants compared to African Americans [31]. Our findings offer a framework for other ethnicities such as the Asian and Latino community in the United States. Previous studies show associations between acculturation among people of Asian or Latino descent in the United States and mental health behavior, however few studies assess how acculturation may influence stigmatizing behavior [13].

Study Limitations

To understand the relationship between one's interaction with their racial and ethnic identity and stigma, a longitudinal analysis would have provided additional information on causality, we were limited by a cross-sectional design for this study. In future studies, a longitudinal analysis would provide better mechanistic understanding of how acculturation influences

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(including how one connects with their racial and ethnic identity as a member of the Black community) mental health behaviors related to stigma towards mental illness. We report on a sample size of 248 Black participants, future studies would benefit from a larger sample size to reduce the risk of random error, though we are able to identify statistically significant and clinically relevant data in our report as well as lay a foundation for future studies in this understudied area. We did not report on specific geographical location, future studies should assess variability related to geographical location. We also did not have a method to verify racial or ethnic identity of respondents in an online survey; however, we shared our survey specifically with community organizations that serve Black individuals. Future longitudinal studies are needed in order to better delineate targets for optimization of engagement in mental health services related to acculturation.

Conclusion

Our study provides critical data that improves our understanding of the association between racial and ethnic identity within the Black community and mental health outcomes, beyond the direct effect of centrality and assimilation on mental health behaviors or outcomes, consideration of mental illness stigma is essential to further describe mental health behavior related to race and ethnicity. There was a consistent discrepancy between past or current proximity to people with a mental health problem and future intended stigmatizing behavior for people with higher centrality. In addition, age, education and ethnicity were found to influence the relationship between centrality and social distance from people with a mental health problem both in the past, current and future time. We highlight important concepts and lay a foundation towards future studies focused on the mechanistic relationships between centrality, assimilation and stigma. This has implications for the implementation of programs to address health disparities, by understanding the intersecting characteristics that may increase the likelihood for mental illness stigma, we will be better able to reduce mental illness stigma and optimize engagement in mental health services.

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Table I.

Descriptive demographics and general percentages for the sample

	n	%
Age		
18–34	147	59.27
35–65	101	40.73
Gender		
Male	141	56.85
Female	107	43.15
Marital status		
Married	158	63.71
Unmarried, living with a romantic partner	41	16.53
Never married	26	10.48
Separated	7	2.82
Divorced	15	6.05
Widowed	1	0.40
Education		
Less than high school	4	1.61
High school diploma / GED	38	15.32
Trade school/vocational school	33	13.31
Some college, no degree	85	34.27
2 year college	42	16.94
4-year college degree	40	16.13
Master's degree	4	1.61
Doctoral degree	2	0.81
Income		
$9,999 or less	14	5.65
$10,000 to $29,999	93	37.50
$30,000 to $49,999	108	43.55
Greater than $50,000	33	13.30
Health Insurance		
None	59	23.79
Public Insurance	132	53.23
Private	57	22.98
Ethnicity		
African	47	18.95
African American	190	76.61
Afro-Caribbean	11	4.44
How long in U.S.?		
Less than 2 years	5	2.02

	n	%
2 to 5 years	28	11.29
6 to 10 years	71	28.63
More than 10 years	144	58.06
Citizenship status		
Citizen	188	75.81
Non-citizen	60	24.19

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Table II.

Association between Black identity (centrality and assimilation dimensions) and social distance (past and current) and stigmatizing behavior (future)

	Social Distance (Reported and Intended)																			
	Living with someone with mental health problems				Working with someone with mental health problems				Neighbor to someone with mental health problems				Close friend with someone with mental health problems				Future intended social distance (RIBS average)			
	Unadjusted		Adjusted		Unadjusted		Adjusted		Unadjusted		Adjusted		Unadjusted		Adjusted		Unadjusted		Adjusted	
	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value	RR (95% CI)	*P*-value
Centrality	**1.39 (1.06, 1.82)**	**0.019** *	**1.37 (1.03, 1.81)**	**0.028** *	1.05 (0.81, 1.37)	0.720	1.12 (0.85, 1.49)	0.415	1.20 (0.90, 1.60)	0.209	1.17 (0.88, 1.57)	0.271	1.20 (0.89, 1.60)	0.229	1.23 (0.91, 1.66)	0.178	0.96 (0.91, 1.01)	0.095	0.96 (0.91, 1.01)	0.104
Assimilation	1.21 (0.95, 1.56)	0.122	1.20 (0.94, 1.54)	0.149	1.04 (0.83, 1.30)	0.758	1.07 (0.84, 1.36)	0.566	1.24 (0.96, 1.60)	0.106	1.24 (0.95, 1.60)	0.109	1.08 (0.84, 1.40)	0.533	1.09 (0.84, 1.41)	0.530	0.98 (0.94, 1.02)	0.309	0.98 (0.94, 1.02)	0.392

Poisson regression with a log link was used to calculate rate ratios (RR) in order to assess the changes in the probability of social distance and stigma per unit change in mean score for each of the centrality and assimilation components of Black identity. For future intended stigmatizing behavior, gamma regression using generalized linear models in SAS Version (9.3) was used. These models represent the average change in the RIBS score per unit change in the centrality and assimilation dimensions. Model 1 – Only acculturation; Model 2 – adjustment for age, education, and ethnicity;

* statistically significant outcomes $P < 0.05$.

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Table III(a).

Association between Black identity (centrality and assimilation dimensions) and social distance by stratification with age, education, and ethnicity

	Living with someone with mental health problems				**Working with someone with mental health problems**				**Neighbor to someone with mental health problems**				**Close friend with someone with mental health problems**			
Age	**Age 18–34**		**35–65**		**Age 18–34**		**35–65**		**Age 18–34**		**35–65**		**Age 18–34**		**35–65**	
	RR (95% CI)	***P*-value**	**RR (95% CI)**	***P*-value**	**RR (95% CI)**	***P*-value**	**RR (95% CI)**	***P*-value**	**RR (95% CI)**	***P*-value**	**RR (95% CI)**	***P*-value**	**RR (95% CI)**	***P*-value**	**RR (95% CI)**	***P*-value**
Centrality	***1.57 (1.11, 2.21)***	***0.010*** *	1.04 (0.62, 1.73)	0.809	0.94 (0.66, 1.32)	0.710	1.57 (0.96, 2.56)	0.070	1.25 (0.89, 1.74)	0.200	1.11 (0.63, 1.96)	0.720	1.15 (0.79, 1.66)	0.470	1.35 (0.79, 2.30)	0.280
Assimilation	1.28 (0.93, 1.76)	0.140	1.11 (0.74, 1.67)	0.600	0.96 (0.71, 1.30)	0.810	1.23 (0.84, 1.81)	0.290	1.27 (0.92, 1.75)	0.140	1.31 (0.81, 2.12)	0.270	1.00 (0.72, 1.40)	0.980	1.16 (0.76, 1.78)	0.480
Education	**High school or less**		**Some college or more**		**High school or less**		**Some college or more**		**High school or less**		**Some college or more**		**High school or less**		**Some college or more**	
Centrality	***1.67 (1.09, 2.55)***	***0.019*** *	1.13 (0.77, 1.68)	0.532	0.80 (0.49, 1.30)	0.360	1.30 (0.92, 1.84)	0.130	1.43 (0.92, 2.23)	0.110	0.99 (0.67, 1.48)	0.970	1.31 (0.81, 2.12)	0.270	1.20 (0.81, 1.78)	0.370
Assimilation	1.43 (0.94, 2.16)	0.090	1.07 (0.77, 1.47)	0.690	0.92 (0.60, 1.43)	0.720	1.12 (0.84, 1.48)	0.440	1.21 (0.80, 1.83)	0.350	1.28 (0.91, 1.80)	0.160	1.21 (0.77, 1.90)	0.410	1.03 (0.74, 1.42)	0.860
Ethnicity	**Black immigrant**		**African American**		**Black immigrant**		**African American**		**Black immigrant**		**African American**		**Black immigrant**		**African American**	
Centrality	1.50 (0.88, 2.55)	0.130	1.31 (0.94, 1.83)	0.110	1.05 (0.61, 1.82)	0.850	1.14 (0.82, 1.59)	0.430	1.23 (0.75, 2.03)	0.420	1.15 (0.81, 1.64)	0.430	1.19 (0.70, 2.04)	0.520	1.23 (0.85, 1.79)	0.280
Assimilation	1.22 (0.75, 1.98)	0.420	1.20 (0.90, 1.61)	0.220	1.00 (0.62, 1.62)	0.990	1.09 (0.83, 1.44)	0.540	1.20 (0.75, 1.91)	0.450	1.29 (0.94, 1.76)	0.120	0.99 (0.64, 1.55)	0.970	1.10 (0.80, 1.52)	0.550

We report on whether there was effect modification according to demographic variables (age, education and ethnicity), Poisson regression with a log link was used to calculate rate ratios (RR) in order to assess the changes in the probability of social distance and stigma per unit change in mean score for each of the centrality and assimilation dimensions based on stratified models..

* statistically significant outcomes $P < 0.05$.

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Table III(b).

Association between Black identity (centrality and assimilation dimensions) and stigma behavior by stratification with age, education, and ethnicity

	Future intended social distance (RIBS average)			
Age	**Age 18–34**		**35–65**	
	RR (95% CI)	***P*-value**	**RR (95% CI)**	***P*-value**
Centrality	***0.92 (0.86, 0.98)***	***0.008*** *	1.05 (0.97, 1.13)	0.220
Assimilation	0.96 (0.91, 1.02)	0.210	1.01 (0.95, 1.08)	0.640
Education	**High school or less**		**Some college or more**	
Centrality	***0.91 (0.83, 0.99)***	***0.038*** *	1.00 (0.94, 1.06)	0.910
Assimilation	0.94 (0.86, 1.02)	0.130	1.01 (0.96, 1.06)	0.730
Ethnicity	**Black immigrant**		**African American**	
Centrality	1.04 (0.95, 1.13)	0.420	***0.93 (0.88, 0.99)***	***0.022*** *
Assimilation	1.06 (0.99, 1.14)	0.090	0.95 (0.90, 1.00)	0.060

We report on whether there was effect modification according to demographic variables (age, education and ethnicity), for future intended stigmatizing behavior, gamma regression using generalized linear models was analyzed.

* statistically significant outcomes $P < 0.05$.