Testing Vicarious Experiences as Antecedents of Medical Mistrust: A Survey of Black and White Americans

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Abstract

In response to recent calls to examine medical mistrust antecedents, the present study investigated the influence of negative healthcare (personal, vicarious interpersonal, vicarious media) and racial discrimination (personal, vicarious interpersonal, vicarious media) experiences on medical mistrust, and whether these relationships were mediated by perceived racism and perceived financial corruption in healthcare. Multigroup structural equation modeling was utilized to test the model using a cross-sectional survey of Black and White adults. Personal negative healthcare experiences and vicarious media racial discrimination experiences were directly related to medical mistrust for Black and White participants. Additionally, personal negative healthcare experiences exerted indirect effects through both perceived racism in healthcare and perceived financial corruption in healthcare. Vicarious media racial discrimination experiences exerted indirect effects through perceived financial corruption for both Black and White participants and through perceived racism for Black participants. Finally, both types of vicarious interpersonal experiences and racial discrimination experiences exerted indirect effects through perceived racism for White participants. The findings have implications for medical mistrust scholarship going forward. It is necessary to acknowledge the role vicarious experiences plays in medical mistrust antecedents, which may include recognizing the impact of news depictions of racial discrimination on patients' behaviors. Additionally, there is a need to further investigate the role of perceived financial corruption in healthcare in medical mistrust.

Keywords: medical mistrust, racial discrimination, healthcare experiences, vicarious experiences, communication

Introduction

Medical mistrust, concerns about the motives of medical institutions and its actors, is a barrier to a wide range of health behaviors from keeping doctor appointments to treatment adherence.[1] Recently, discussions of mistrust have been renewed in light of the recent COVID-19 pandemic.[2] As health scholars seek to encourage uptake of new health behaviors and improve health outcomes, addressing medical mistrust becomes a critical step in this endeavor. As recently noted, one step in this venture is to have a deeper understanding of medical mistrust antecedents (e.g., negative healthcare encounters); the lack of work on antecedents has resulted in a dearth of knowledge about what influences medical mistrust.[3] By taking a closer look at medical mistrust antecedents, scholars may be able to take a more directed and nuanced approach to addressing medical mistrust.

Despite evidence that conversations with family and friends about healthcare-related topics, as well as mediated depictions of healthcare interactions, shape individuals' perceptions of the healthcare system, [4,5] there has been little examination into the role of communication in medical mistrust. The field of communication explicitly considers what information individuals are exposed to, how they encounter these messages, and ultimately, the messages' impact on beliefs, attitudes, and behaviors. In the context of medical mistrust, this would involve considering where and how messages are encountered that might impact perceptions of the medical system and its actors, and, in turn, influence beliefs, attitudes, and behaviors. Recent work has begun to delve into this work and suggested that communication does, in fact, influence medical mistrust.[6,7] Thus, the absence of communication-related variables may be integral to our understanding of medical mistrust.

As noted by Jaiswal and Halkitis[8] there has been a great deal of attention on the influence of the Tuskegee Syphilis Study (Tuskegee) perhaps obfuscating the other factors influencing medical mistrust. Though often invoked, Tuskegee should not be thought of as the primary cause of medical mistrust and instead be considered a stand-in for larger phenomenon, such as negative healthcare experiences and racial discrimination experiences. There has been empirical evidence that both negative healthcare experiences and racial discrimination experiences influence medical mistrust; [9,10] thus far, these experiences have primarily been examined as individuals' own experiences. Knowledge of these types of interactions, however, may also come from others; [11] individuals vicariously learn about interactions with the medical system through the actions and experiences of others. From a communication perspective, this vicarious learning occurs through messages that are relayed interpersonally or through media. Recent studies have supported that knowledge of others' experiences either through interpersonal discussions (i.e., vicarious interpersonal experiences) or mediated depictions (i.e., vicarious mediated experiences) can influence medical mistrust.[6,7] As a result, antecedents such as negative healthcare experiences and racial discrimination experiences should not just be examined as personal experiences, but also vicarious interpersonal experiences and vicarious mediated experiences of negative healthcare encounters and instances of racial discrimination.

In considering medical mistrust antecedents, it is advantageous to not only examine antecedents, but to also investigate the potential mediators that help explain their relationship to medical mistrust. Hammond's[9] examination of medical mistrust proposed that healthcare system outcomes, perceptions that result from repeated experiences or interactions that represent the desire to avoid uncertainty or harm,[9,11] mediated the relationship between antecedents (e.g., healthcare experiences and racial discrimination, conceptualized as personal experiences) and

medical mistrust. Perceived racism in healthcare was tested as one such outcome expectation and found to mediate the relationship between racial discrimination experiences and medical mistrust.[9] There may, however, be additional healthcare system outcome expectations that function as mediators of the relationships between antecedents and medical mistrust; perceived financial corruption in healthcare may be one of them. Previous scholarship has found that profit motives made individuals suspicious of why providers kept patients on medication and has been explicitly linked to medical mistrust.[12,13] Thus, it is possible that negative healthcare experiences contribute to the perception that there is financial corruption in healthcare. Additionally, experiences of discrimination may point to larger systemic issues which could include corruption. If an individual has experienced racial discrimination (either personally or vicariously) this may serve as a reminder of a broader set of unfair systems and practices, which could include corruption in the healthcare system.

The current study expands upon Hammond's[9] tested model by examining negative healthcare experiences and racial discrimination experiences, including those that are vicarious (i.e., non-direct) experiences, as antecedents of medical mistrust, mediated by perceived racism in healthcare and perceived financial corruption in healthcare. Scholars have called for techniques like structural equation modeling (SEM) to be utilized to examine medical mistrust antecedents.[3] Utilizing this method not only allows for an examination of these hypothesized relationship simultaneously but, by using multi-group analysis, also presents an opportunity to examine some of the nuances of racial differences in medical mistrust. Scholarship has repeatedly found that Black Americans report higher levels of medical mistrust than their White American counterparts.[14-15] By examining these relationships across racial groups, it provides an

opportunity to take a more specific look at where these differences lie and how these differences might contribute to medical mistrust.

Methods

Participants and recruitment

Following approval from the Institutional Review Board at the University of Illinois at Urbana-Champaign (Protocol #19234), Black (*n*=204) and White (*n*=232) participants were recruited via offline and online mechanisms between December 2018 and March 2019. Snowball sampling, a convenience sampling method in which participants help recruit other individuals who may be eligible to participate,[16] was utilized given its appropriateness for historically underserved populations.[16,17] A combination offline and online seeds (i.e., individuals directly targeted for recruitment as they may be able to recruit others) were used for recruitment.

Seeds, for both online and offline recruitment, were chosen based on individuals with large networks (e.g., embedded in community groups and sororities and fraternities). Given the success of recruiting through Black churches[18], seeds with prominent roles in their churches were also targeted. Furthermore, in order to obtain a large number of participants, flyers were placed in local barbershops, coffee shops, and commmunity spaces[19] and seeds were encouraged to do the same. Recruitment materials were also distributed within social media networks on Facebook, Twitter, Instagram, and LinkedIn.[20] In efforts to ensure enough participants, flyers were also shared on online alumni groups (both high school and university level, including a historically black university); posts asked individuals to not only participate but to distribute widely with their various networks both offline and online. To avoid priming medical mistrust, recruitment and consent information for the study was phrased as being about their health behaviors and health interests more generally.

Procedure

Participants completed an online survey via Qualtrics. After the consent screen, participants were shown items about health, including healthcare experiences. Next, to prevent steering participants toward a pattern of responses, participants were asked about racial discrimination experiences in the midst of other stressors that may impact health and well-being, like adequacy of financial resources. The next set of items were related to perceptions of the healthcare system. The constructs in this section, medical mistrust, perceived racism, perceived financial corruption in healthcare, were counterbalanced. Analyses revealed there were no order effects. Demographic questions (e.g., gender, income) were presented at the end. At the end of the survey, participants were asked to recruit others. In exchange for participation, irrespective of recruitment, participants were entered into a drawing to win one of six $50 gift cards.

Measures

Negative healthcare experiences

In line with previous work,[9] negative healthcare experiences were operationalized as low patient-centeredness and measured with a seven-item scale patient-centeredness scale.[21] Participants were asked how often a) their own healthcare providers (personal), b) family members' and friends' providers (vicarious interpersonal), and c) providers in media portrayals (vicarious media) engaged in patient-centered behaviors (e.g., gave attention to their feelings and emotions). Items were recoded such that higher values indicated more negative experiences. Personal negative healthcare experiences formed a reliable scale (full: α=.91, Black: α=.92, White: α=.91). A similar pattern was shown for vicarious interpersonal negative healthcare experiences (full: α=.93, Black: α=.94, White: α=.92) and vicarious media negative healthcare experiences (full: α=.95, Black: α=.96, White: α=.93).

Racial discrimination experiences

Racial discrimination experiences were measured utilizing a modified version of the racism experiences scale of the Racism and Life Experiences Scales (RaLES).[22] The racism experiences scale is a 16-item measure that asks participations how frequently they have an experience (e.g., a racially hostile atmosphere at your job…). This scale was selected as it already contained items related to both personal and vicarious experiences; thus, some items were modified to explicitly reference vicarious media experiences (e.g., seeing limited participation in decision-making… for people of your racial/ethnic group in the media). Participants were asked to indicate their frequency of exposure from 0 (never) to 4 (almost always). Personal (α=.89), vicarious interpersonal (α=.70), and vicarious media racial discrimination experiences (α=.92) formed reliable scales for the full sample, as well as for the Black sample (personal: α=.88, vicarious interpersonal: α=.76, vicarious media: α=.81). For the White sample, these items formed moderately reliable scales (personal: α=.82, vicarious interpersonal: α=.62, vicarious media: α=.80).

Perceived racism in healthcare

Perceived racism in healthcare was assessed using the Racism Index.[15] This four-item measure asks whether individuals believe that doctors and hospitals treat African Americans and Whites equally. Each item was rated on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The items formed reliable scales (full: α=.88, Black: α=.77, White: α=.92).

Perceived financial corruption in healthcare

Perceived financial corruption in healthcare was measured utilizing three items. Items were selected from reviews of corruption in the health sector, measures of medical skepticism, and distrust in corporations.[23-25] These items reflect the perception that physicians are paid by

pharmaceutical companies to prescribe medications, prescribe medications of profit, and are driven by greed. Participants were asked their level of agreement for each item from 1 (strongly disagree) to 5 (strongly agree). These items formed a reliable scale both for the entire sample (α=.82) and each racial group (Black: α=.82, White: α=.82).

Medical mistrust

Medical mistrust was measured using the Medical Mistrust Index (MMI).[26] It was modified to ask participants their agreement with statements about healthcare providers. For example, "Patients have sometimes been deceived or misled by healthcare providers." Participants were asked to respond from 1 (strongly disagree) to 5 (strongly agree). For the current sample, items formed a reliable measure (full: α=.82, Black: α=.79, White: α=.81).

Demographics

Previous work has found significant associations between demographic variables and medical mistrust; [9,27-29] thus, demographic variables were included as possible covariates. Participants reported their age via an open-ended item. They also reported their sex (1=*male*, 2=*female,* 3=*other sex*) and sexual orientation (1= *heterosexual*, 2=*homosexual*, 3=*other sexual orientation*, 4=*decline to answer*). Finally, participants were asked about both their income and education. Income was assessed using entire household income in the previous year and consisted of a single item with 12 categories in $10,000 increments (i.e., 1=*less than $10,000*, 2 = *$10,000-$19,999*, 3= *$20,000-$29,999*…12=*more than $150,000*). Education level was assessed on a 6-point scale ranging from 1 (less than high school) to 6 (advanced degree).

Analytic Procedures

Structural equation modeling multiple group analysis using maximum likelihood estimation was performed using Mplus Version 8.4 (Múthen & Múthen). Measurement

invariance was assessed by comparing successive models, followed by an assessment of structural invariance. Indirect effects were then evaluated by assessing 95% confidence intervals based on 5,000 bootstrap samples. If the confidence interval for the indirect effect did not contain zero, this was taken as evidence of an indirect effect through the proposed mediator.[30] Given known issues with the model chi-square statistic (χ^2),[31] the chi-square was reported alongside three other fit indices a) comparative fit index (CFI), b) the root-mean-squared error of approximation (RMSEA), and c) standardized root-mean-squared residual (SRMR). A CFI greater than 0.90, a SRMR at or below 0.09, and a RMSEA at or below 0.06 served as indicators of good fit.[32]

Results

Sample

Participants, who resided in 41 different states in the United States, were primarily women (Black: 74.5%, White: 82.3%) and heterosexual (Black: 82.8%; White: 78.9%). The two subsamples did not significantly vary for biological sex, $\chi^2(1)=3.60$, $p=.06$ or sexual orientation, $\chi^2(1)=1.10$, $p=.30$. Black participants ranged in age from 19 to 75, with a mean age of 36.24 ($SD=13.15$), while White participants ranged in age from 19 to 74, with a mean age of 36.27 ($SD=12.12$); there was no significant difference in age between the two subsamples, $t(430)=.25$, $p=.98$. A majority of both Black (76.0%) and White (83.6%) participants reported having obtained a bachelor's degree or higher. Additionally, more than half of participants reported making more than $50,000 a year (Black: 56.7%; White: 66.8%). For both education and income, the distributions revealed that White participants had higher reported education, $t(349.04)=2.77$, $p=.006$ and income, $t(430)=3.15$, $p=.002$. Bivariate associations for study variables are provided in Table 1.

[Table 1 Here]

Confirmatory factor analysis

The hypothesized model contained three latent variables: perceived racism in healthcare, perceived financial corruption in healthcare, and medical mistrust. All other variables were observed variables. The initial model did not provide adequate fit for the Black sample, χ^2(74, *n*=198) = 121.38, *p*<.001, *CFI*=0.94, *RMSEA*=0.06 (90% CI 0.04-0.08), *SRMR*= 0.06). After modifications to correlate error terms, well-fitting models were produced for both the Black, χ^2 (72, *n*=198) =92.23, *p*=.05, *CFI*=0.97, *RMSEA*=0.04 (90% CI 0.00-0.06), *SRMR*=0.05, and White, χ^2 (71, *n*=226) =80.01, *p*=.22, *CFI*=0.99, *RMSEA*=0.03 (90% CI 0.00-0.05), *SRMR*=.05 models.

Measurement invariance

Configural invariance was tested first by allowing all parameters to be freely estimated to assess whether the same items measure the same constructs across groups. The configural model demonstrated acceptable fit, χ^2 (143, *N*=424)=172.25, *p*=.05, *CFI* =0.99, *RMSEA*=0.03 (90% CI 0.00-0.05), *SRMR*=0.05. Next, metric invariance was assessed to determine whether the factor loadings for those items were equivalent across groups, which provides evidence that the constructs have the same meaning to participants across group. The model for metric invariance produced a non-significant change in chi-square, χ^2 (143, *N*=424) = 183.49, *p*=.05, *CFI*=0.99, *RMSEA*=0.03 (90% CI 0.00-0.05), *SRMR*=0.06, demonstrating metric invariance. Next, scalar invariance was tested by setting item intercepts to be equivalent across groups. The model for scalar invariance produced a significant difference in the chi-square statistic, χ^2 (165, *N*=424)=214.96, *p*<.01, *CFI*=0.98, *RMSEA*=0.04 (90% CI 0.02-0.05), *SRMR*=0.06. Thus, intercepts were freed and the model tested for partial invariance.[33,34] Doing so provided evidence

of partial scalar invariance, χ^2 (163, N=424)=198.84, p=.03, CFI=0.98, $RMSEA$=0.03 (90% CI 0.01-0.05), $SRMR$=0.06. Strict factorial invariance was not tested as scholars have deemed it unnecessary for testing structural parameters.[34]

Structural Invariance

The baseline model showed adequate fit (χ^2(336, N=420)=432.38, p<.001, CFI=0.96, $RMSEA$=0.04 (90% CI 0.03-0.05), $SRMR$=0.07) and that only one covariate, income, was related to medical mistrust. The test of the fully constrained model yielded a significant change in chi-square, χ^2(373, N=420) = 553.64. This indicated that there was at least one constrained pathway in the model that was non-invariant across the two groups. A series of invariance tests were conducted by sequentially constraining pathways, which revealed six non-invariant pathways that should be freed.

Main Analyses

The final structural model demonstrated good fit, χ^2(352, N=420) = 444.66, p<.001, CFI=0.96, $RMSEA$=0.04 (90% CI 0.02-0.05), $SRMR$=0.08. Figure 1 shows the standardized path coefficients of pathways and their significance among both Black and White samples. For visual simplicity, only significant pathways are shown. Parameter estimates and related information for all pathways appears in Table 2.

[Figure 1 Here]

[Table 2 Here]

Given that some pathways needed to be freed; there are differences in the model for Black and White participants. These differences will be addressed below in relation to specific pathways. For invariant pathways, due to differences between samples, the standardized path

coefficients may be different; thus, in these cases the path coefficients for both Black (β_B) and White (β_W) samples are reported.

Medical mistrust

It was posited that negative healthcare experiences would be positively associated with medical mistrust. Personal negative healthcare experiences were positively related to medical mistrust (β_B=0.28, β_W=0.23, $p < .001$); however, neither vicarious interpersonal negative healthcare experiences (β_B =-0.12, β_W=-0.08, p=.08) nor vicarious media negative healthcare experiences (β_B=-0.08, β_W=-0.07, p=.15) significantly related to medical mistrust. Similarly, it was posited that racial discrimination experiences would be positively related to medical mistrust. Personal racial discrimination experiences (β_B=0.09, β_W=0.05, p=.24) and vicarious interpersonal racial discrimination experiences (β_B=0.06, β_W=0.05 p=.41) were not significantly related to medical mistrust. Vicarious media racial discrimination experiences, however, were positively related to medical mistrust (β_B=0.18, β_W=0.15, p<.01).

It was also hypothesized that perceived racism in healthcare and perceived financial corruption in healthcare would both be positively associated with medical mistrust. For perceived racism in healthcare, there was a significant positive relationship (β_B=0.29, β_W=0.31, p<.001). Although the pathway was non-invariant, there was significant, positive relationship between perceived financial corruption in healthcare for both Black participants (β=0.25, p=.01) and White participants (β=0.47, p<.001). A Wald's chi-square test determined that these pathways were significantly different such that this pathway was stronger from White participants than Black participants, χ^2 (1, N=422)=6.34, p=.01.

Perceived racism in healthcare

It was hypothesized that both negative healthcare experiences (personal, vicarious interpersonal, and vicarious media) and racial discrimination experiences (personal, vicarious interpersonal, and vicarious media) would be positively related to perceived racism in healthcare. There was a significant, positive relationship between personal negative healthcare experiences and perceived racism in healthcare (β_B=0.18, β_W=0.14, p=.01). However, there was not a significant relationship between vicarious media negative healthcare experiences and perceived racism in healthcare (β_B=-0.02, β_W=-0.02, p=.71). The pathway between vicarious interpersonal negative healthcare experiences and perceived racism in healthcare was non-invariant. For Black participants, there was no significant relationship between vicarious interpersonal negative healthcare experiences and perceived racism in healthcare (β=0.01, p=.95). There was, however, a significant positive relationship between these constructs for White participants (β=0.20, p=.01).

The pathways from personal, vicarious interpersonal, and vicarious media racial discrimination experiences were all non-invariant. For Black participants, there was no significant relationship between personal racial discrimination experiences and perceived racism in healthcare (β=0.13, p=.06); for White participants, however, there was a significant negative association between these variables (β=-0.20, p=.01). Similarly, there was not a significant relationship between vicarious interpersonal racial discrimination for Black participants (β=0.10, p=.26), but a significant positive relationship for White participants (β=0.44, p<.001). Alternatively, for vicarious media racial discrimination experiences there was a significant relationship for Black participants (β=0.17, p=.01), but not for White participants (β=-0.11, p=.23).

Perceived financial corruption in healthcare

It was also posited that both negative healthcare experiences and racial discrimination experiences would be positively related to perceived financial corruption in healthcare. Personal negative healthcare experiences were positively associated with perceived financial corruption (β_B=0.21, β_W=0.19, p<.01). There was not a significant relationship between vicarious interpersonal negative healthcare experiences and perceived financial corruption (β_B=-0.002, β_W = -0.001, p=.98). Finally, vicarious media negative healthcare experiences were negatively related to perceived financial corruption (β_B=-0.17, β_W=-0.16 p<.01). The relationships between both personal racial discrimination experiences and perceived financial corruption (β_B=0.06, β_W=0.04, p=.34), as well as between vicarious interpersonal racial discrimination experiences and perceived financial corruption (β_B=0.04, β_W=0.04, p=.51) were non-significant. There was, however, a significant positive relationship between vicarious media racial discrimination experiences and perceived financial corruption (β_B=0.12, β_W=0.12, p=.04).

Perceived racism and perceived financial corruption

Finally, it was posited that there would be a positive relationship between perceived racism and perceived financial corruption in healthcare. There was no significant relationship between perceived racism in healthcare and perceived financial corruption in healthcare (β_B=0.04, β_W=0.04, p=.53).

Indirect effects

It was also hypothesized that perceived racism in healthcare and perceived financial corruption in healthcare were mediators in the model. Perceived racism in healthcare mediated the relationship between personal negative healthcare experiences and medical mistrust for both Black (95% CI .02 to .17) and White (95% CI .02 to.17) participants, as did perceived financial corruption in healthcare (Black participants: 95% CI .02 to .19; White participants: 95% CI .06

to .32). Additionally, vicarious interpersonal negative healthcare experiences exerted an indirect effect on medical mistrust through perceived racism in healthcare, but only for White participants (95% CI .04 to .26). Vicarious media negative healthcare experiences exerted an indirect effect on medical mistrust through perceived financial corruption in healthcare for both Black (95% CI -.14 to -.01) and White participants (95% CI -.23 to -.04). There were also indirect effects for racial discrimination experiences. For White participants, there was evidence of personal racial discrimination experiences exerting an indirect effect on medical mistrust through perceived racism in healthcare (95% CI -.35 to -.05). Additionally, an indirect effect of vicarious interpersonal racial discrimination experiences on medical mistrust through perceived racism in healthcare for White participants (95% CI .09 to .35). Finally, vicarious media racial discrimination experiences were mediated by perceived financial corruption in healthcare for White participants (95% CI .01 to .20), and by both perceived racism in healthcare (95% CI .02 to .16) and perceived financial corruption in healthcare (95% CI .01 to .12) for Black participants. The specific indirect effects, total indirect effects, and confidence intervals are shown in Tables 3 and 4.

[Table 3 Here]

[Table 4 Here]

Discussion

The current study tested the impact of both negative healthcare experiences and racial discrimination experiences on medical mistrust. It extends previous medical mistrust work by including vicarious experiences and introducing a new mediator, perceived financial corruption in healthcare, which resulted in a model that fit the data and accounted for approximately half of the variance in medical mistrust for both Black (46%) and White (55%) participants. Personal

negative healthcare experiences exerted a direct effect, which is congruent with previous work examining this relationship, [9,10] but also exerted an indirect effect through perceived financial corruption and perceived racism in healthcare. To my knowledge, perceived financial corruption in healthcare has not been previously utilized as a distinct construct in medical mistrust literature. In combination with the presence of one item related to this construct in the Health Care System Distrust Scale,[35] these findings indicate that this is a construct deserving of more attention. While the items used in the present study for this construct were internally reliable, it would be beneficial to have a validated measure of perceived financial corruption in healthcare moving forward; scale development work should be undertaken to produce a fully validated measure of perceived financial corruption.

Furthermore, perceived racism has previously been examined as a mediator of the relationship between racial discrimination experiences and medical mistrust,[9] but not negative healthcare experiences. This significant relationship might suggest that when participants were asked about negative healthcare encounters, they may have been thinking about encounters related to racism and discrimination. Participants were exposed to items about negative healthcare experiences prior to exposure to items related to perceived racism and medical mistrust and the informed consent did not explicitly talk about racism or mistrust. Thus, it is not the case that the design of the survey prompted individuals to answer these items through the lens of racism and mistrust. Open-ended data or the utilization of focus groups would be necessary to determine the specific details of experiences that participants have in mind when answering these items.

Personal racial discrimination experiences also exerted an indirect effect on medical mistrust via perceived racism in healthcare. This relationship was negative for White

participants, suggesting that instead of believing that if they were being discrimination against, things could be even worse for Black individuals, White participants believed that if they were being discriminated against, there must not be anti-Black racism occurring in healthcare. In other words, this was seen a zero-sum situation, [36] as opposed to a situation where both groups may be being discriminated against. For Black participants, there was a significant total indirect effect, but the indirect effect via perceived racism did not reach statistical significance as the confidence interval included zero; it is possible that the sample size was not large enough to uncover this effect.

In line with predictions based on social cognitive theory and previous experimental work,[6,7,11] vicarious elements of these antecedents indirectly and directly influenced medical mistrust. Vicarious interpersonal negative healthcare experiences and vicarious interpersonal racial discrimination experiences exerted indirect effects through perceived racism in healthcare for White participants. The more family and friends experienced negative healthcare encounters or racial discrimination, the more they perceived there to be racism in healthcare. Like the pattern of results for personal negative healthcare experiences, the significant relationship with vicarious interpersonal negative healthcare experiences would suggest that participants were thinking of negative healthcare encounters that involved racism or discrimination. The significant positive relationship for vicarious interpersonal racial discrimination experiences pathway, however, is in contrast to the pathway for personal racial discrimination experiences, which was negative. This might suggest that when individuals thought of others' experiences, these included the experiences of Black people or members of other historically marginalized racial/ethnic groups. Future work should include items that ask participants demographic information about who they thought of when answering the questions.

There have been previous discussions about the relationship between media exposure and perceptions of providers and the healthcare system,[5] including the role of media depictions in medical mistrust beliefs.[37] The current study, however, suggests that negative healthcare experiences in media, broadly, do not contribute to medical mistrust as vicarious media negative healthcare experiences had an indirect negative effect on medical mistrust. The present study operationalized negative healthcare experiences as low patient centeredness; a different operationalization may have found a different pattern of results. Alternatively, individuals may perceive a media portrayal of healthcare provider who does not engage in patient-centered behaviors as simply a less competent healthcare provider.[38] This would suggest that these vicarious media negative health encounters might be associated with competence distrust (i.e., issues of technical skills) but not values distrust (i.e., issues related to moral and benevolence),[35] which is where perceptions of financial corruption in healthcare may fall. Future work should consider delineating the effects on values and competence mistrust, as well as a more nuanced look at the types of media (e.g., news versus entertainment media).

Vicarious media, but not personal or vicarious interpersonal racial discrimination experiences, had a direct effect on medical mistrust. This may due to differences in personal (or individual) racism and institutional racism.[39] A closer examination revealed the items measuring vicarious elements may have aligned with ideas of institutional racism, as opposed to individual racism. For instance, one item read “Seeing examples in the media of legislative processes or political activities (national, local) that negatively affect people of your race/ethnicity.” It is feasible that such items that already invoke and prime thoughts at an institutional level would be directly related to medical mistrust as institutional issues have been linked to organ donation-related mistrust of providers.[37] Subsequent work should systematically examine the effects of

different types of racial discrimination experiences on medical mistrust. Additionally, vicarious media racial discrimination experiences exerted effects through both perceived racism in healthcare and perceived financial corruption in healthcare for Black participants but only perceived financial corruption in healthcare for White participants. This may be due to differences in prior experiences; Black Americans are more likely to report having experienced racism,[40] including in healthcare contexts.[41]

The findings of this study must be considered in the context of its limitations. For example, a cross-sectional study cannot establish causality; however, this study produces initial support for the existence of these relationships. Additionally, subsequent work should consider creating more robust measures for these constructs. For instance, it is possible that changing the stem for differing aspects of negative healthcare experiences does not fully represent the communication-related constructs (e.g., vicarious interpersonal negative healthcare experiences). By doing so, a more thorough understanding of the relationship of these constructs can be ascertained.

Finally, the data collected for this study was a convenience sample via snowball sampling, which inhibits broad generalizations of the findings. Future work utilizing snowball sampling in this way should track a) whether participants came to the study via offline or online recruitment efforts and b) how many participants were recruited by other participants. Not only would this allow for a determination of differences between those recruited online or offline, but also account for the existence of networks and network characteristics within the sample. Additionally, replication of these relationships should be examined in more representative and diverse samples (e.g., with a wider range of education and income levels). In doing so, the heterogeneity within populations could be examined. While examinations of racial/ethnic groups

have been prominent in studies of medical mistrust, there are other historically marginalized or disadvantaged populations (e.g., lower income populations) for whom medical mistrust is a relevant construct. Scholars have argued that medical mistrust stems from marginalization and disadvantage,[42] suggesting that medical mistrust stems from oppressive systems and structures. These systems and structures do not operate in isolation, they are intersecting forces; thus, as work moves forward attention to the heterogeneity within populations should also be examined.

Conclusions

The current study tested the influence of communication-related variables (i.e., vicarious experiences that acknowledge communication process occur) on medical mistrust, as well as two potential mediators of these relationships. The results point toward the need to a) account for vicarious experiences and b) investigate the role of perceived financial corruption. By not considering and accounting for both these experiences and the role of perceived financial corruption we may be missing out on part of the broader picture of medical mistrust. As scholars answer the call to more thoroughly examine medical mistrust antecedents these may prove to be useful avenues of research.

The findings of the current study suggest it is not only personal experiences that contribute to the knowledge of about negative and racist or discriminatory practices; individuals learn of others' experiences with healthcare providers both through hearing stories of others' experiences (vicarious interpersonal experiences), as well as via media (vicarious media experiences). These vicarious aspects are part of how individuals make sense of the world and influence their expectations for interactions. There have been calls for healthcare providers to consider the broader context of their patients' lives, including the built environment, residential segregation, and other structural factors.[43] It may be necessary for healthcare providers, to be

cognizant of the impact of the media environment, and the ways in which it represents and reminds individuals of structural barriers and oppressive systems. Previous work has found exposure to news stories explicitly about racial discrimination influence medical mistrust among Black Americans when it is directly health-related.[7] During times like a pandemic, this brings to the forefront the impact stories like Black Americans having trouble accessing care for COVID-19 might have for health behaviors, particularly when Black Americans are more likely to be exposed to and share news stories about racial discrimination.[40,44]

The role of perceived financial corruption in healthcare and its presence as a mediating factor suggest that this is an additional healthcare system outcome expectation that should be considered. The evidence of its relevance focuses attention on the idea that the root of medical mistrust may be different and act through different pathways (e.g., racism versus financial corruption). Thus, it is not enough to know that a people are mistrustful. Instead, it is necessary to know whether perceived financial corruption in healthcare, perceived racism in healthcare, or both may be contributing to that mistrust. Additionally, the current findings, combined with known issues, highlight that rooting out systemic racism in medicine and healthcare is, and should be, a primary goal. There will come a time, however, when we must also attend to perceptions and instances of financial corruption. Medical mistrust could remain even when, eventually, issues of anti-Blackness and discriminatory practices are addressed in healthcare and medicine, as perceived racism in healthcare is not the sole mediator of these experiences.

Finally, the current study highlights the benefits of using statistical techniques like multi-group SEM which allow for the relationships between all the variables to be examined simultaneously, as well as among various groups. By doing so, it is possible to see which of these relationships operates similarly or differently across groups. While the current study only

examined these relationships among Black and White Americans, there are other groups for which medical mistrust is a salient construct, including Latino/a/x and Indigenous populations. The relationships examined here and future extensions might be worthwhile avenues of inquiry among these populations as well.

There still remains substantial variance left unexplained by the variables examined in this study. Future work will be necessary to elucidate other contributing factors and healthcare system outcome expectations influencing medical mistrust; perceived racism in healthcare and perceived financial corruption in healthcare may not be the only relevant healthcare system outcome expectations. Additionally, it may be fruitful to more fully consider the role of vicarious experiences. Communication scholarship, and its focus on messages, may be able to help shine light on medical mistrust processes. By examining medical mistrust in these ways, additional avenues for addressing this widespread barrier may be uncovered.

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Table 1. Means, Standard Deviations, and Zero-order Correlation Matrix

	Descriptives				Bivariate Correlations								
	Black Sample		White Sample										
Variables	M	SD	M	SD	1	2	3	4	5	6	7	8	9
1. Personal NHE	1.37	0.88	1.46	0.76	---	.54**	.31**	.20**	.22**	.17*	.27**	.18*	.26**
2. Vic. Interpersonal NHE	2.10	0.99	1.98	0.70	.56**	---	.23**	0.13	.17*	0.05	.14*	0.10	0.02
3. Vic. Media NHE	2.30	0.96	2.34	0.90	0.01	.14*	---	0.01	-0.02	0.05	0.11	-0.06	-0.09
4. Personal RDE	1.44	0.88	0.52	0.55	0.11	.21**	-0.10	---	.51**	.42**	.30**	.16*	.30**
5. Vic. Interpersonal RDE	2.42	1.08	2.09	1.00	.29**	.31**	-0.05	.30**	---	.58**	.32**	.25**	.29**
6. Vic. Media RDE	2.86	0.97	0.60	0.92	-0.12	-0.07	-0.06	.27**	0.03	---	.33**	.23**	.34**
7. Perceived Racism	4.13	0.77	3.64	1.04	.33**	.35**	-0.02	-0.03	.43**	-.15*	---	0.13	.38*
8. Perceived Corruption	3.88	0.85	3.57	1.01	.17*	0.07	-.17*	0.11	0.05	0.09	0.07	---	.31*
9. Medical Mistrust	3.80	0.62	3.35	0.80	.37**	.23**	-0.09	.18**	.29**	.18*	.33**	.42**	---

Vic. = Vicarious; NHE = negative healthcare experiences; RDE = racial discrimination experiences; Correlations for the Black sample lie above the diagonal; *p < .05, **p <.01.

Table 2. Parameter Estimates for Structural Model

	Black					White				
Pathway	b	B	SE	p	95% CI	b	B	SE	p	95% CI
Mistrust										
Personal NHE	0.44	0.28	0.12	<0.001	0.21 to 0.67	0.44	0.23	0.12	<0.001	0.21 to 0.67
Vic. Interpersonal NHE	-0.17	-0.12	0.10	0.08	-0.37 to 0.01	-0.17	-0.08	0.10	0.08	-0.37 to 0.01
Vic. Media NHE	-0.12	-0.08	0.08	0.15	-0.27 to 0.05	-0.12	-0.07	0.08	0.15	-0.27 to 0.05
Personal RDE	0.14	0.09	0.12	0.24	-0.10 to 0.36	0.14	0.05	0.12	0.24	-0.10 to 0.36
Vic. Interpersonal RDE	0.07	0.06	0.09	0.41	-0.11 to 0.24	0.07	0.05	0.09	0.41	-0.11 to 0.24
Vic. Media RDE	0.25	0.18	0.08	<.01	0.08 to 0.39	0.25	0.15	0.08	<.01	0.08 to 0.39
Racism	0.36	0.29	0.09	<0.001	0.20 to 0.54	0.36	0.31	0.09	<0.001	0.20 to 0.54
Corrupt	0.32	0.25	0.12	0.01	0.08 to 0.54	0.67	0.47	0.14	<0.001	0.41 to 0.95
Income	-0.003	-0.01	0.03	0.93	-0.06 to 0.05	0.08	0.18	0.03	<.01	0.02 to 0.15
Racism										
Personal NHE	0.22	0.18	0.08	0.01	0.06 to 0.37	0.22	0.14	0.08	0.01	0.06 to 0.37
Vic. Interpersonal NHE	0.01	0.01	0.08	0.95	-0.16 to 0.17	0.35	0.20	0.13	0.01	0.09 to 0.62
Vic. Media NHE	-0.02	-0.02	0.06	0.71	-0.14 to 0.09	-0.02	-0.02	0.06	0.71	-0.14 to 0.08
Personal RDE	0.16	0.13	0.09	0.06	-0.01 to 0.33	-0.47	-0.20	0.18	0.01	-0.81 to -0.11
Vic. Interpersonal RDE	0.10	0.10	0.09	0.26	-0.08 to 0.26	0.55	0.44	0.11	0.00	0.35 to 0.77
Vic. Media RDE	0.20	0.17	0.08	0.01	0.04 to 0.35	-0.15	-0.11	0.12	0.23	-0.39 to 0.09
Corrupt										
Personal NHE	0.25	0.21	0.09	<.01	0.09 to 0.43	0.25	0.19	0.09	<.01	0.09 to 0.43
Vic. Interpersonal NHE	-0.002	-0.002	0.08	0.98	-0.17 to 0.17	-0.002	-0.001	0.08	0.98	-0.17 to 0.17
Vic. Media NHE	-0.19	-0.17	0.06	<.01	-0.31 to -0.06	-0.19	-0.16	0.06	<.01	-0.31 to -0.06
Personal RDE	0.08	0.06	0.08	0.34	-0.08 to 0.23	0.08	0.04	0.08	0.34	-0.08 to 0.23
Vic. Interpersonal RDE	0.04	0.04	0.06	0.51	-0.08 to 0.15	0.04	0.04	0.06	0.51	-0.08 to 0.15
Vic. Media RDE	0.14	0.12	0.07	0.04	0.01 to 0.26	0.14	0.12	0.07	0.04	0.01 to 0.26
Racism and Corruption	0.04	0.04	0.06	0.53	-0.08 to 0.16	0.04	0.04	0.06	0.53	-0.08 to 0.16

NHE = negative healthcare experiences, RDE = racial discrimination experiences

Table 3. Direct and Indirect Effects for Negative Healthcare Experiences

	Black				White			
Association	b	SE	p	95% CI	b	SE	p	95% CI
Personal NHE								
Direct Effect on Mistrust	0.44	0.12	<0.001	0.21 to 0.67	0.44	0.12	<0.001	0.21 to 0.67
Indirect Effect via Racism	0.08	0.04	0.03	0.02 to 0.17	0.08	0.04	0.03	0.02 to 0.17
Indirect Effect via Corruption	0.08	0.04	0.06	0.02 to 0.19	0.17	0.07	0.01	0.06 to 0.32
Total Indirect Effect	0.16	0.05	<.01	0.07 to 0.28	0.25	0.07	<.01	0.12 to 0.41
Total	0.60	0.13	0.00	0.35 to 0.84	0.69	0.13	0.00	0.43 to 0.95
Vicarious Interpersonal NHE								
Direct Effect on Mistrust	-0.17	0.10	0.08	-0.37 to 0.01	-0.17	0.10	0.08	-0.37 to 0.01
Indirect Effect via Racism	0.002	0.03	0.95	-0.06 to 0.07	0.13	0.06	0.03	0.04 to 0.26
Indirect Effect via Corruption	-0.001	0.03	0.99	-0.06 to 0.06	-0.001	0.06	0.99	-0.11 to 0.13
Total Indirect Effect	0.002	0.05	0.98	-0.09 to 0.09	0.13	0.08	0.11	-0.01 to 0.31
Total	-0.17	0.10	0.09	-0.36 to 0.02	-.04	0.11	0.72	-0.26 to 0.18
Vicarious Media NHE								
Direct Effect on Mistrust	-0.12	0.08	0.15	-0.27 to 0.05	-0.12	0.08	0.15	-0.27 to 0.05
Indirect Effect via Racism	-0.01	0.02	0.72	-0.06 to 0.03	-0.01	0.02	0.72	-0.06 to 0.03
Indirect Effect via Corruption	-0.06	0.03	0.06	-0.14 to -0.01	-0.13	0.05	0.01	-0.23 to -0.04
Total Indirect Effect	-0.07	0.04	0.08	-0.16 to -0.003	-0.14	0.06	0.01	-0.25 to -0.04
Total	-0.18	0.08	0.02	-0.34 to -0.03	-0.25	0.09	<.01	-0.42 to -0.07

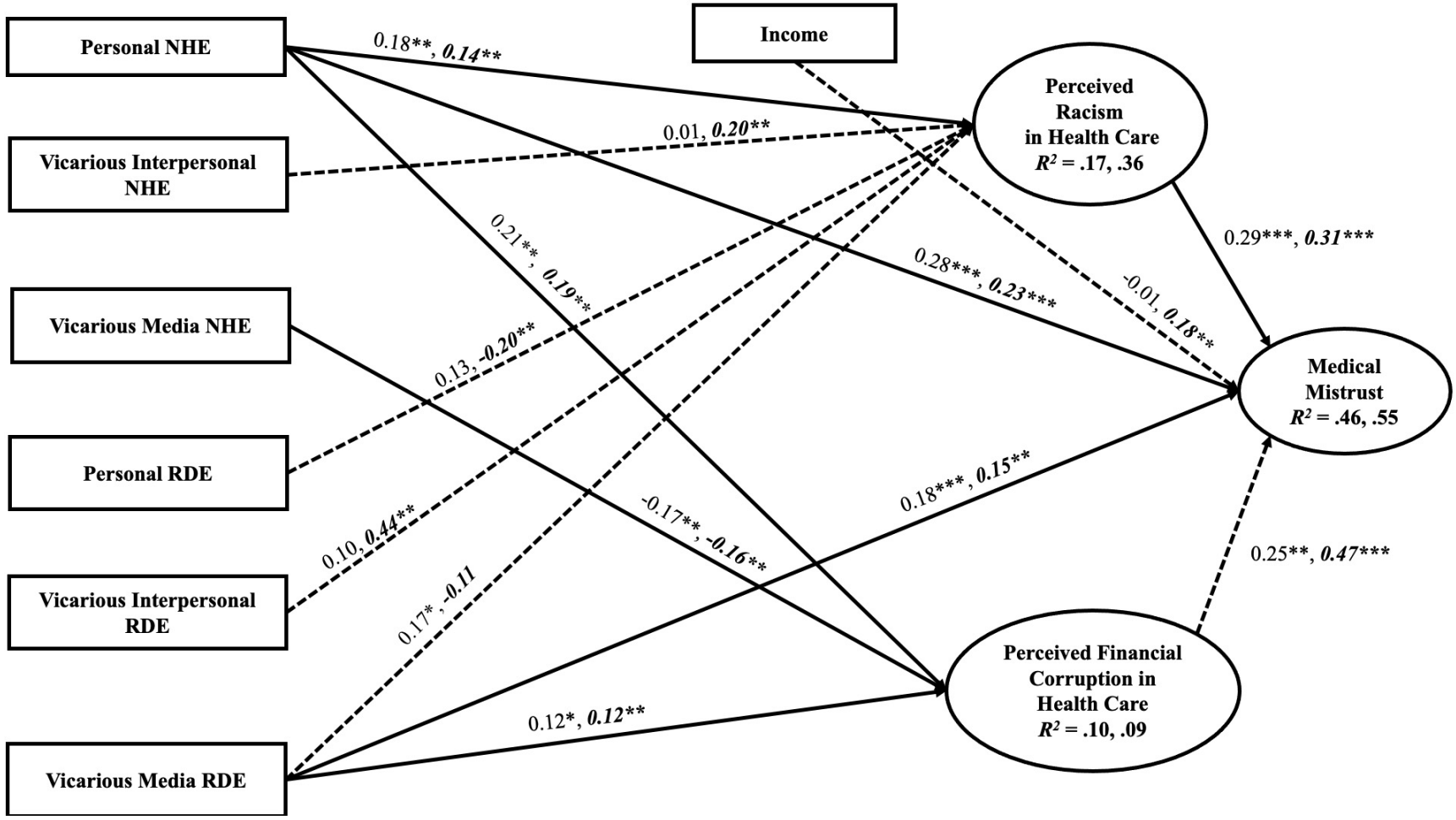
NHE = negative health-care experiences

Table 4. Direct and Indirect Effects for Racial Discrimination Experiences

	Black				White			
Association	b	SE	p	95% CI	b	SE	p	95% CI
Personal RDE								
Direct Effect on Mistrust	0.14	0.12	0.24	-0.10 to 0.36	0.14	0.12	0.24	-0.10 to 0.36
Indirect Effect via Racism	0.06	0.04	0.10	0.000 to 0.14	-0.17	0.08	0.03	-0.35 to -0.05
Indirect Effect via Corruption	0.02	0.03	0.39	-0.02 to 0.10	0.05	0.06	0.37	-0.05 to 0.17
Total Indirect Effect	0.08	0.05	0.07	0.001 to 0.18	-0.12	0.09	0.20	-0.32 to 0.04
Total	0.22	0.12	0.08	-0.04 to 0.45	0.02	0.14	0.91	-0.26 to 0.27
Vicarious Interpersonal RDE								
Direct Effect on Mistrust	0.07	0.09	0.41	-0.11 to 0.24	0.07	0.09	0.41	-0.11 to 0.24
Indirect Effect via Racism	0.04	0.03	0.29	-0.03 to 0.11	0.20	0.07	<.01	0.09 to 0.35
Indirect Effect via Corruption	0.01	0.02	0.56	-0.02 to 0.06	0.03	0.04	0.54	-0.05 to 0.12
Total Indirect Effect	0.05	0.04	0.24	-0.03 to 0.13	0.23	0.08	0.01	0.09 to 0.39
Total	0.12	0.09	0.21	-0.08 to 0.29	0.30	0.10	<.01	0.10 to 0.49
Vicarious Media RDE								
Direct Effect on Mistrust	0.25	0.08	<.01	0.08 to 0.39	0.25	0.08	<.01	0.08 to 0.39
Indirect Effect via Racism	0.07	0.04	0.05	0.02 to 0.16	-0.05	0.05	0.26	-0.16 to 0.03
Indirect Effect via Corruption	0.04	0.03	0.12	0.01 to 0.12	0.09	0.05	0.07	0.01 to 0.20
Total Indirect Effect	0.11	0.05	0.01	0.04 to 0.22	0.04	0.08	0.61	-0.11 to 0.19
Total	0.36	0.09	<0.001	0.19 to 0.53	0.29	0.10	0.01	0.08 to 0.49

RDE = racial discrimination experiences.

Figure 1. Full Structural Model



NHE = negative health-care experiences, RDE = racial discrimination experiences.
For visual simplicity, only significant pathways are shown. Standardized estimates are presented above or to the right of the pathway. The coefficient for the Black sample is presented first, followed by the White sample (which is bolded and italicized). Solid lines represent constrained pathways; dotted lines are unconstrained pathways. *p < .05, **p <.01, ***p<.001