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Perceived Discrimination and Major Depression and Generalized Anxiety Symptoms: In Muslim American College Students

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Abstract
Prior research has found that Muslim Americans' discrimination experiences are associated with increased risk of mental health problems. However, few studies have included Muslim American college students or identified moderators of this relationship. Among a sample of Muslim American college students ($N = 141$), the current study found that perceived discrimination was positively associated with MD and GAD symptom severity. Having a strong Muslim American identity exacerbated the relationship between perceived discrimination and GAD symptoms. The findings support practices to reduce discrimination toward Muslim American college students and the need for outreach to students with a strong Muslim American identity.

Keywords Muslim Americans · Perceived discrimination · Major depression · Generalized anxiety

Introduction

It is estimated that one percent of the US population identifies as Muslim (Sirin and Fine 2008). Muslims in the USA are diverse in terms of their race, national origin, religious practices, and immigration status (Sirin and Fine 2008). Despite this diversity, scholars (Peek 2005; Sirin and Fine 2008) have argued for an emerging Muslim American identity in part due to recent historical events, such as the September 11, 2001 terrorist attacks (9/11). Since 9/11, Muslim Americans have increasingly been targets of discrimination and hate crimes; in 2016, 307 anti-Muslim incidents in the USA were reported, the highest number since 2001 (Federal Bureau of Investigation 2017).

Although few studies to date have explored the mental health of Muslim Americans, evidence suggests that they are at elevated risk for adverse psychiatric outcomes. For example, a study by Amer and Hovey (2012) drew on a convenience sample of 601 Arab American adults, 70.4% of whom identified as Muslim. Approximately half of participants

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were classified as having depression and a quarter as having moderate or severe anxiety (Amer and Hovey 2012). Levels of depression and anxiety in this sample were found to be significantly higher than those in nationally representative samples (Amer and Hovey 2012).

Whereas a large body of literature has linked perceived discrimination and psychiatric symptoms (for a review, see Schmitt et al. 2014), only two studies to our knowledge have done so among Muslim Americans. First, Rippy and Newman (2006) found that higher perceived religious discrimination was associated with more severe subclinical paranoia in a convenience sample of 152 Muslim Americans adults, ranging in age from 18 to 71 years old and recruited from mosques, Islamic schools, and college Muslim Students Associations (MSAs) in Oklahoma. Second, Hodge, Zidan, and Husain (2016) found that, among a sample of 269 Muslim American adults recruited from Islamic organizations, those who had been called offensive names or singled out by law enforcement officials were at significantly greater odds of having clinically significant depression, relative to those without such experiences. Other research has linked perceived discrimination and adverse mental health consequences in among Arab American samples with sizeable Muslim American subsamples (e.g., Ahmed et al. 2011; Aprahamian et al. 2011; Moradi and Hasan 2004; Padela and Heisler 2010). Notably, no published study to our knowledge has linked perceived discrimination to generalized anxiety disorder (GAD) symptoms in a Muslim or Arab American sample.

The research on Muslim American mental health is further limited in two key ways. First, although a handful of studies have explored the mental health of college-age Muslim Americans (e.g., Ahmed et al. 2014; Asvat and Malcarne 2008; Sheldon et al. 2015), none to our knowledge has explored the link between perceived discrimination and psychiatric symptoms in this age group. This is a significant limitation given that a large proportion of mental health disorders have their onset in adolescence or emerging adulthood (Kessler and Wang 2008). Further, Muslim Americans are the youngest of all major religious groups in the USA, with a median age estimated at 24 years old in 2015 (Lipka 2017). Therefore, an understanding of the potential psychological impact of perceived discrimination could help prevent the development of mental health disorders in a large proportion of the Muslim American population.

A second limitation is that no published study to our knowledge has explored factors that could buffer the adverse mental health consequences of perceived discrimination among Muslim Americans. One such factor could be a *Muslim American identity*, which, drawing on seminal research on ethnic identity (e.g., Phinney 1990; Phinney and Ong 2007), we define as comprising both exploration of what it means to be a Muslim American, and commitment and a sense of belonging to the Muslim American community. As summarized by Yoo and Lee (2008), scholars have theorized that having a strong group identity could either buffer or exacerbate the effects of discrimination on psychological well-being: on the one hand, according to social identity theory (Tajfel and Turner 1986), discrimination could reinforce one's pride in his or her group, thereby bolstering mental health; on the other, according to rejection sensitivity theory (Downey and Feldman 1996), those with a strong group identity might be most sensitive to psychological distress when their group is threatened. Empirically, studies on ethnic identity as a moderator of the relationship between discrimination and mental health have produced mixed findings, with some showing a buffering effect, others an exacerbation effect, and others nonsignificant moderation (for a review, see Donovan et al. 2013).

Although no such study to our knowledge has been conducted on a sample of Muslim Americans, an investigation by Ahmed and colleagues (2011) provided some evidence that

moderation might be nonsignificant for this population. Specifically, the investigators found in a sample of 249 Arab American adolescents, 85% who identified as Muslim, significant direct paths from latent variables of sociocultural adversity (indicated by perceived racism and acculturative stress) and cultural resources (indicated by ethnic identity, religious support, and religious coping) to a latent variable of psychological distress (indicated by internalizing and externalizing symptoms, depression, and anxiety); however, the interaction between sociocultural adversity and cultural resources was not significantly associated with psychological distress. Given that this was a study of Arab Americans, this study understandably did not assess Muslim American identity directly, and participants were asked about perceived discrimination in reference to their Arab ethnicity, rather than their being Muslim. Additionally, despite the strengths of a structural equation modeling approach, the analytic approach did not allow for exploration of whether main and interactive effects varied by mental health outcome. As such, further research is needed that directly examines whether Muslim American identity moderates the association between perceived discrimination and specific classes of mental health symptoms among Muslim American youth. Insight into whether Muslim American identity serves a buffering or exacerbating role would be useful for clinicians working with this population.

The current study therefore aimed to explore associations between perceived discrimination and major depression (MD) and generalized anxiety disorder (GAD) symptoms among Muslim American college students, and whether this relationship is moderated by Muslim American identity.

Method

Participants and Procedures

This study was conducted at Montclair State University, a large public university in New Jersey, less than 20 miles outside of New York City. Students were recruited via announcements at MSA and Multicultural Psychology Scholars meetings and Arabic Studies courses; the Psychology department participant pool; posters throughout campus; and a campus-wide e-mail. Interested participants were directed to an online survey in which they provided informed consent and confirmed their Muslim American identity prior to completing study measures. The survey, which was developed in collaboration with MSA leadership, took on average 45 min to complete, and participants were compensated with either research credit or entry into a lottery for a $100 gift card. The Institutional Review Board at Montclair State University approved all study procedures.

A total of 163 Muslim American students completed the survey. Of these, 22 participants (13.5%) were dropped due to missing data on one or more variables in the analysis, leaving a final sample of 141 participants.

Measures

MD Symptoms

MD symptoms were assessed using the Patient Health Questionnaire-8 (PHQ-8; Kroenke et al. 2001). Participants indicated how often over prior month they experienced eight symptoms of MD (e.g., "feeling down, depressed, or hopeless," "feeling tired or having little energy") from 0 (*not at all*) to 3 (*every day*), and an MD symptom score was

computed as the sum of all items. Previous studies have found the PHQ-8 to have excellent internal consistency, test–retest reliability, and construct validity, with scores of 10 or greater indicative of probable MD (Kroenke et al. 2001). Cronbach's alpha (α) of internal consistency in the current study was .93.

GAD Symptoms

GAD symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7; Spitzer et al. 2006). Participants were asked how often during the past two weeks they were bothered by GAD symptoms (e.g., "feeling nervous, anxious or on edge," "not being able to stop or control worrying") from 0 (*not at all*) to 3 (*every day*). GAD symptom scores were computed as the sum of all items. GAD-7 has been shown to have excellent internal consistency and test–retest reliability, with scale scores of 10 or greater indicative of probable GAD (Spitzer et al. 2006) (α = .96).

Perceived Discrimination

Perceived discrimination was measured with an adapted version of the General Ethnic Discrimination Scale, which has shown evidence of reliability and validity with Black, Latino/a, Asian, and White samples (Landrine et al. 2006). Participants indicated how often, from 1 (*never*) to 6 (*almost all the time*), they experienced 17 discrimination experiences (e.g., "been treated unfairly by teachers and professors because of your Muslim American identity," "been called an anti-Muslim or Islamophobic name") in their lifetime (α = .93).

Muslim American Identity

The strength of participants' Muslim American identity was measured using an adapted version of the Multigroup Ethnic Identity Measure-Revised (MEIM-R; Phinney and Ong 2007). Participants rated the extent of agreement from 1 (*strongly disagree*) to 5 (*strongly agree*) with six statements (e.g., "I have a strong sense of belonging to my Muslim American community," "I have spent time trying to find out more about Islamic culture, such as its history, traditions, and customs") (α = .93). Prior research has demonstrated validity and reliability of the MEIM-R (e.g., Chakawa et al. 2015; Herrington et al. 2016), as well adapted versions assessing other aspects of identity (Ashdown et al. 2014).

Data Analysis

Prior to analyses to fulfill study aims, a series of preliminary analyses was conducted. First, independent samples *t* tests and Chi-square tests examined differences between participants in the analytic sample and those dropped due to missing data. Descriptive statistics were then computed for all variables in the study, along with frequencies of participants with probable MD and GAD diagnoses. Bivariate associations between perceived discrimination, Muslim American identity, and mental health outcomes were examined using Pearson's correlation.

Subsequently, hierarchical regression analyses predicting MD and GAD symptoms were run. Step 1 included perceived discrimination and Muslim American identity, along with the following covariates: age (continuous); gender (reference = female or transgender);

immigration status (reference = 1st generation, defined as participant and both parents born outside the USA; 2nd generation as participant USA-born, and one or both parents born outside the USA; 3rd generation as participant and both parents USA-born); and maternal education as a marker of socioeconomic status (reference = high school education or less). In Step 2, the interaction between perceived discrimination and Muslim American identity was added. Prior to these analyses, perceived discrimination and Muslim American identity were centered to facilitate interpretation of significant interactions.

Results

Preliminary Analysis

No significant differences were detected between the 141 participants in the analysis and the 22 who were dropped due to missing data. Participants in the analysis were on average 21.06 years old (SD = 3.57); 24.1% identified as male, 73.8% as female and 2.1% as transgender. Nearly half of participants (48.9%) reported that their mother's highest level of education was high school or less. Less than a quarter (22.0%) of participants were classified as being 1st generation immigrants, 53.9% as 2nd generation immigrants, and 24.1% as 3+ generation immigrants.

Thirty-four percent of participants were classified as having probable MD, 36.9% probable GAD, 42.9% either probable diagnosis, and 26.2% both probable diagnoses. At the bivariate level, perceived discrimination was significantly correlated with MD symptoms ($r = .29$, $p = .001$) and GAD symptoms ($r = 0.30$, $p < .001$), whereas the correlations between Muslim American identity and each outcome were nonsignificant ($r = -.02$, $p = .807$, and $r = .04$, $p = .656$, respectively). The correlation between perceived discrimination and Muslim American identity was also nonsignificant ($r = -.02$, $p = .792$).

Hierarchical Regression Models

MD Symptoms

The results of the models predicting MD symptoms are shown in Table 1. Step 1 was statistically significant, $F(7, 133) = 3.93$, $p = .001$, accounting for 17.1% of the variance in MD symptoms. Higher perceived discrimination was significantly associated with higher MD symptoms. The addition of the interaction between perceived discrimination and Muslim American identity was nonsignificant in Step 2, $F\Delta(1, 132) = 2.54$, $p = .114$, $R^2\Delta = .016$.

GAD Symptoms

Table 1 also shows the results of the model predicting GAD symptoms. Step 1 was statistically significant $F(7,133) = 5.06$, $p < .001$ and accounted for 21.0% of the variance in GAD symptoms. Higher perceived discrimination was significantly associated with higher GAD symptoms. The addition of the interaction between perceived discrimination and Muslim American identity was significant in Step 2, $F\Delta(1, 132) = 4.33$, $p = .039$, and accounted for 2.5% additional variance in GAD symptoms. Estimated means were computed for participants with high and low perceived discrimination reporting high and low

Table 1 Results of regression analyses predicting major depression (MD) and generalized anxiety disorder (GAD) symptoms

	MD symptoms		GAD symptoms	
	Step 1	Step 2	Step 1	Step 2
Constant	5.21 (3.35)	5.95 (3.36)	2.66 (3.94)	3.80 (3.93)
Age	.22 (.15)	.18 (.15)	.36 (.17)*	.31 (.17)
Gender				
Male	− 1.15 (1.23)	− .93 (1.23)	− 1.59 (1.44)	− 1.24 (1.43)
Female or transgender	–	–	–	–
Maternal education				
High school or less	− 2.16 (1.03)*	− 1.96 (1.03)	− 2.64 (1.21)*	− 2.34 (1.20)
More than high school	–	–	–	–
Immigrant status				
1st generation	–	–	–	–
2nd generation	.03 (1.32)	− .21 (1.32)	1.64 (1.55)	1.28 (1.54)
3+ generation	− 3.28 (1.52)*	− 3.41 (1.51)*	− 3.50 (1.79)	− 3.70 (1.77)*
Perceived discrimination	.12 (.04)**	.12 (.04)**	.13 (.04)**	.14 (.04)**
Muslim American identity	− .06 (.09)	− .08 (.09)	− .01 (.10)	− .04 (.10)
Perceived discrimination × Muslim American identity		.01 (.01)		.01 (.01)*

$N = 141$

*$p < .05$

**$p < .01$

Muslim identity (with high defined as one standard deviation above and low as one standard deviation below the mean), assuming the mean age in the sample and membership in reference groups for other demographic characteristics. As shown in Fig. 1, the interaction was such that high Muslim American identity was associated with lower GAD symptoms for participants with low perceived discrimination, but higher GAD symptoms for those with high perceived discrimination.

Discussion

The current study examined perceived discrimination and mental health among Muslim American college students and had three key findings. First, the mental health burden in this sample was high, with 42.9% being classified as having probable MD or GAD, and over a quarter as having both probable diagnoses. Second, perceived discrimination was associated with more severe MD and GAD symptoms. Lastly, Muslim American identity moderated the relationship between perceived discrimination and GAD symptoms, such that the most severe GAD symptoms were observed in participants reporting a strong Muslim American identity and high levels of perceived discrimination.

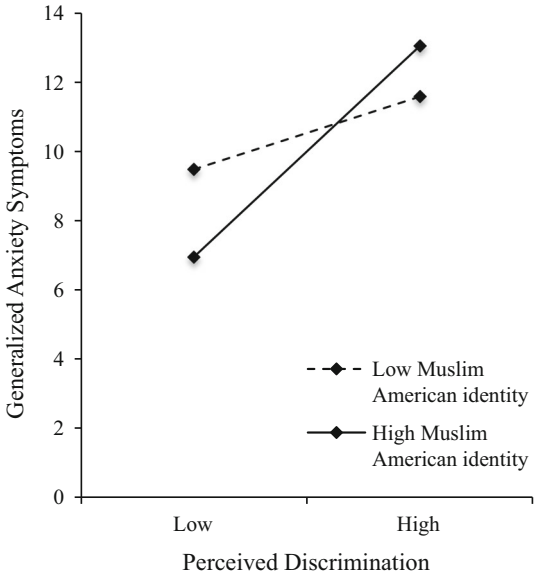

Fig. 1 Decomposition of the interaction between perceived discrimination and Muslim American identity on generalized anxiety disorder (GAD) symptoms. High and low levels of variables defined as one standard deviation above and below the mean, respectively

The pattern of probable psychiatric disorders in this sample was somewhat different than in the prior study of Arab Americans, the majority identifying as Muslim (Amer and Hovey 2012). Specifically, the percentage of participants in the current study classified as having probable MD (34.0%) was lower than that in the prior study (50.1%), whereas the percentage classified as having probable GAD (36.9%) was higher than the percentage classified as having moderate-to-severe anxiety in the prior study (25.0%) (Amer and Hovey 2012). Of course, a major caveat to comparing these studies is that Arab Americans and Muslim Americans are distinct, although overlapping, populations. Even if the prior study had reported on mental health separately for the subsample of Muslim Americans, their results would not capture the experiences of Muslim Americans who do not identify as Arab American. Other differences between the two studies, such as the measures used to assess depression and anxiety and the age of participants, could account for the divergence between the results. Differences in the geographic locations in which the two studies took place are also notable. Specifically, whereas participants in the prior study were from 34 US states and the District of Columbia, participants in the current study were all students at a university that is less than 20 miles from the World Trade Center in New York City. It is possible that some mental health symptoms, particularly GAD symptoms, could be attributable to healthy cultural paranoia and mistrust (Whaley 2001), a phenomenon that might be enhanced among our sample given the students' proximity to one of the 9/11 sites. Despite these key differences between the two studies, a commonality was that the prevalence of probable depression and anxiety were elevated compared to the general population (e.g., Kessler et al. 2005). The prevalence estimates of MD and GAD in the current study were also notably higher than those among college students in a nationally representative sample (MD 7.0%; GAD 1.6%; Blanco et al. 2008).

The association between perceived discrimination and MD and GAD symptoms is perhaps not surprising given that these have been consistently linked previously in other populations (Schmitt et al. 2014). However, to our knowledge this is only the second study to document these associations for MD, and the first to do so for GAD, in a Muslim

American sample. Although our college student sample limits the generalizability of the findings, it is notable given the large proportion of Muslim Americans in this age group (Lipka 2017). The results suggest that efforts to reduce discrimination toward Muslim American college students, including public information campaigns to correct misconceptions about Muslim Americans and events to promote interfaith and intercultural dialogue (Ahmed et al. 2017), could decrease risk for MD and GAD symptoms.

To our knowledge, this study is the first to explore Muslim American identity as a moderator of the relationship between perceived discrimination and mental health. Our finding that Muslim American identity exacerbated the relationship between perceived discrimination and anxiety symptoms suggests that college mental health interventions should in particular reach students who have a strong sense of belonging to the Muslim American community. For example, college counseling centers could conduct outreach efforts to MSAs or partner with them to hold events raising awareness about mental health in this population. As noted elsewhere (Adam and Ward 2016; Din et al. 2017), mental health stigma and perceived lack of fit between cultural practices and psychotherapy could act as barriers to mental health service utilization among Muslim Americans. It is therefore suggested that mental health practitioners strive to maximize their cultural competence in their assessment and treatment of Muslim American clients (for specific recommendations, see Ahmed et al. 2017; Ahmed and Reddy 2007; Goforth et al. 2017).

Our study had at least six limitations. First, we included a convenience sample of mostly female participants and it is thus likely that respondents do not represent all Muslim American college students. Notably, however, this approach was consistent with the few prior studies of Muslim Americans, and we made efforts to recruit from the general student population. Second, our sample size was relatively small and, although again consistent with prior research on Muslim Americans, limited the statistical power of our analysis. Third, our measures were not designed for the Muslim American population, and in particular our Muslim American identity measure was an adaptation of an ethnic identity measure, which might not capture the full complexity of the construct. Fourth, our measure of perceived discrimination asked participants to reflect upon discrimination experiences over the course of their lifetime, and it is possible that a different pattern of results might have emerged had we assessed experiences over a discrete and more recent timeframe, or explored changes in perceived discrimination over time. Fifth, we used symptom inventories to assess mental health; although prior studies suffer from this same limitation, these are not substitutable for clinical diagnosis. Finally, we did not account for sources of diversity among Muslim Americans that could have influenced both main and moderating effects, including race, national origin, and religiosity. In a similar vein, we did not assess whether the women in our sample wore hijab, a visible indicator of Muslim American identity, which could influence the extent to which they experienced discrimination and perhaps also relationships among the variables in the analysis. Addressing the various limitations of the study would be useful directions for future research.

Despite these limitations, this is among the first studies to explore the mental health correlates of perceived discrimination in Muslim Americans. The findings suggest a high mental health burden in the Muslim American college student population, the adverse impact of perceived discrimination on MD and GAD symptoms, and the enhanced risk for GAD symptoms for students with high levels of both perceived discrimination and Muslim American identity.

Compliance with Ethical Standards

Conflict of interest The authors have no conflicts of interest to declare.

Human and Animal Rights All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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