

# **Exploring the Effect of Discrimination-related Experience, Worry and Social Media Exposure on Depression Among Asians in the U.S. During COVID-19: Cross-Sectional Survey Study**

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# Exploring the Effect of Discrimination-related Experience, Worry and Social Media Exposure on Depression Among Asians in the U.S. During COVID-19: Cross-Sectional Survey Study

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## Abstract

**Background:** The outbreak of COVID-19 has spurred increasing anti-Asian racism and xenophobia in the United States, which can compromise the psychological well-being among Asian people. The impact of racial discrimination fueled by a global pandemic on the well-being remains unclear. This study is a novel attempt to empirically examine how racial discrimination during COVID-19 would be associated with depression among Asians in the United States.

**Objective:** We investigated three discrimination-related variables, including experience of discrimination, worry about discrimination, and social media exposure to racism-related information during COVID-19, and aimed to examine how three variables were related to depression among Asians in the United States.

**Methods:** A cross-sectional online survey was conducted. A total of 222 people (Mage = 33.53, SD = 11.35; 46.40% female) who identified themselves as Asian or Asian American and resided in the United States completed the questionnaire.

**Results:** Our study showed that only experience of discrimination was significantly associated with depression among US Asians ( $\beta = .29$ ,  $P = .002$ ), whereas worry about discrimination ( $\beta = .13$ ,  $P = .128$ ) and social media exposure to racism-related information ( $\beta = .09$ ,  $P = .209$ ) were not. Meanwhile, our study also suggested that those who were younger ( $\beta = -.17$ ,  $P = .021$ ), not married ( $\beta = -.15$ ,  $P = .046$ ), infected by COVID-19 ( $\beta = .23$ ,  $P = .001$ ) and whose income were affected because of the pandemic ( $\beta = .13$ ,  $P = .046$ ) were more vulnerable to depression.

**Conclusions:** The present study provides preliminary evidence about the impact of racial discrimination during COVID-19 on mental health among Asian people. Based on our findings, future research could advance the understanding of incident-induced discrimination in relation to the well-being by identifying moderators that may buffer or exacerbate the influence of such racial discrimination. Practically, developing effective and tailored interventions to address different demographic groups' needs in a timely fashion is much-needed to help Asians cope with racial discrimination during an unprecedented global health crisis.

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## Original Manuscript

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### Abstract

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**Keywords:** racial discrimination; depression; social media use; COVID-19

## Introduction

The COVID-19 outbreak has become a global concern (WHO, 2020). Since the virus first emerged in China and spread around Asian countries, accompanied by the term “Chinese virus” coined by U.S. government officials, anti-Asian racism and xenophobia associated with COVID-19 has been spurred in the U.S. (Human Rights Watch, 2020). There have been increasing violent attacks against people who appear to be Asian (Haynes, 2020). The growing discrimination against the Asian community, combined with multifaceted pressures from COVID-19, can make Asian people more vulnerable to mental health problems. In light of prevalent racism, the current paper is a novel attempt to empirically examine the psychological consequences of racial discrimination associated with the outbreak of COVID-19 among Asian people. Specifically, we looked into three factors related to discrimination during COVID-19 and examined their impacts on depressive symptoms among Asian people. The three factors included: 1) experience of discrimination, 2) worry about discrimination, and 3) social media exposure to racism-related information during COVID-19.

Racial discrimination was defined as a phenomenon where people are unfairly treated or disadvantaged because of their race or phenotypic difference (Fox & Stallworth, 2005). This could occur in interpersonal social interactions, in workplace, in education, or in receiving services and justice (Chakraborty & McKenzie, 2002). In some worse cases, racial discrimination could take forms of hate crime or physical attacks (Barnes & Ephross, 1994). Goffman (1963) states that others' views play an important role in the formation of self-concept. According to this theory, racial discrimination would damage the well-being through the process where self feels being rejected or excluded by a large society and thus finds it harder to take control of lives (Wirth & Williams, 2009). A huge amount of research has provided strong empirical evidence that racial discrimination can have negative impacts on the well-being of the stigmatized (e.g., Benner et al., 2018; Brown et al., 2000; Feinstein, Goldfried, & Davila, 2012). The findings are applicable to the Asian population in the U.S. (Hwang & Goto, 2008; Yip, Gee, & Takeuchi, 2008; Yoo & Lee, 2005).

Current conceptualizations of racial discrimination vary across literatures (Atkins, 2015), but almost all attempt to measure it in a subjective way which asks about the perception of racial discrimination in cognitive, affective and behavioral domains. Dovidio and Gaertner (1991) explains that it is because most incidents of discrimination are subtle and hard to document. However, scholars do point out the necessity to differentiate two different ways to construct perceived racial discrimination: one is the perception of actually encountered discrimination by oneself, and the other one is the general worry about the fact that oneself could be a potential target of racial discrimination (Paradies, 2016). Paradies (2016) further points out that, it is worthwhile to examine the influence of racial discrimination in both ways since they are associated with unique consequences to the psychological well-being. Therefore, the current study examines how actual experiences of racial discrimination and worry about being a potential target of racial discrimination during COVID-19 could have impacts on the well-being of Asian people.

In addition, racial discrimination in previous studies are normally considered a long-term and chronic stressor, and the negative impact may be accumulative, stemming from the enduring presence of discrimination. Racial discrimination associated with an infectious disease, such as the outbreak of COVID-19, has not been fully studied. The present study also attempts to fill this gap in the literature.

Finally, we took into account social media exposure to racism-related information during COVID-19. Social media has become an important channel for people to retrieve and exchange information about urgent health crises, but its impacts on the psychological well-being remains inconclusive. On the one hand, being exposed to extensive misinformation and negative information on social media, especially during the time of a public crisis, might lead to information overload and do harm to the well-being (Bontcheva, Gorrell, & Wessels, 2013). Gao et al. (2020) found that general social media exposure was associated with higher odds of anxiety among the public in China during the COVID-19 outbreak, even after controlling for the demographic factors. For Asian

individuals in the U.S., being exposed to more racism-related information on social media may be detrimental to the well-being, as such exposure might make racism-related information in memory particularly accessible, leading to a perceived social reality where being Asian is unsafe and devalued (Shrum, 2002). On the other hand, social media provides the affordances to maintain relationships and request information and support, and has been found to directly or indirectly associate with higher social capital and better well-being (Ellison et al., 2014a, 2014b, Lian et al., 2018). Given the mixed findings, we refrained from proposing a specific hypothesis for social media exposure to racism-related information and proposed a research question instead.

Based on the literature reviewed above, the following two hypotheses and one research question were proposed:

H1: Experience of discrimination would be positively associated with depression among Asians in the U.S. during COVID-19.

H2: Worry about discrimination would be positively associated with depression among Asians in the U.S. during COVID-19.

RQ1: How would social media exposure to racism-related information be related to depression among Asians in the U.S. during COVID-19?

## Methods

### Procedures

An IRB-approved cross-sectional online survey was first created on Qualtrics and then distributed to qualified participants via Amazon Mechanical Turk (MTurk) in mid-May, 2020. Eligible participants had to be from Asian ethnic groups and resided in the United States. The first page of the questionnaire was a consent form providing the participants with brief background on the study and information about anonymity, confidentiality, and compensation. The rest of the pages asked questions about demographic information, media usage, discrimination-related experiences and perceptions during COVID-19, and some psychological measurements. The survey took an average of 15 minutes to complete.

### Participants

Using a listwise deletion approach, a total of 222 Asian individuals in the U.S. were included in the study. They were between the ages of 18 and 73 ( $M = 33.53$ ,  $SD = 11.35$ ). Among them 103 (46.40%) were females and 119 (53.60%) were males. Most participants were either single ( $N = 118$ ; 53.15%) or married ( $N = 97$ ; 43.69%). The majority of the participants had a bachelor's degree ( $N = 109$ ; 49.10%), with the remaining having a degree below bachelor ( $N = 57$ ; 25.67%) or a degree above bachelor ( $N = 56$ ; 25.23%). About half of the participants were employed for full time ( $N = 103$ ; 46.40%). The income levels were relatively evenly distributed among participants, but more than half of the participants reported that their income had somehow been affected by COVID-19 ( $N = 121$ ; 54.50%).

Meanwhile, most participants claimed to be U.S. citizens ( $N = 205$ ; 93.34%) and did not identify themselves as Chinese ( $N = 141$ ; 63.51%). Regarding the COVID-19 infection history, a small percentage of participants reported having been infected ( $N = 6$ , 2.70%). Table 1 presents demographic information of the sample.

**Table 1: Demographic information, infection history and group differences of depression scores (N=222)**

	Respondents		Depression		F/t	p
	N	%	M	SD		
<b>Age (18-73)</b>					4.96	<.001
≤30	101	45.50	23.54	5.06		
>30	121	54.50	19.81	6.16		
<b>Gender</b>					-1.62	.107



Female	103	46.40	22.20	5.82		
Male	119	53.60	20.91	6.05		
<b>Marital status</b>					5.15	.002
Single	118	53.15	22.94	5.54		
Married	97	43.69	19.86	6.21		
Widowed	2	0.90	21.50	4.95		
Divorced	5	2.25	19.80	3.56		
<b>Education</b>					1.85	.091
Less than high school degree	1	0.45	21.00	.		
High school graduate	10	4.50	21.40	5.78		
Some college but no degree	33	14.86	21.58	4.12		
Associate degree in college	13	5.86	20.69	6.70		
Bachelor's degree in college	109	49.10	22.62	6.16		
Master's degree	41	18.47	19.88	5.78		
Doctoral degree	15	6.76	18.53	6.95		
<b>Employment status</b>					1.97	.100
Employed, working 40 or more hours per week	103	46.40	21.44	6.70		
Employed, working 1-39 hours per week	48	21.62	21.06	4.91		
Not employed, looking for work	45	20.27	22.76	5.61		
Not employed, NOT looking for work	22	9.91	21.55	4.84		
Retired	4	1.80	14.50	2.52		
<b>Income</b>					1.80	.056
Less than \$10,000	17	7.66	25.35	6.83		
\$10,000 to \$19,999	12	5.41	23.08	4.25		
\$20,000 to \$29,999	12	5.41	18.50	4.81		
\$30,000 to \$39,999	13	5.86	21.23	3.03		
\$40,000 to \$49,999	20	9.01	22.60	4.43		
\$50,000 to \$59,999	20	9.01	21.35	5.50		
\$60,000 to \$69,999	10	4.50	21.70	5.48		
\$70,000 to \$79,999	21	9.46	22.00	6.85		
\$80,000 to \$89,999	16	7.21	20.19	5.26		
\$90,000 to \$99,999	18	8.11	20.22	7.77		
\$100,000 to \$149,999	39	17.57	22.36	6.33		
\$150,000 or more	24	10.81	18.83	5.80		
<b>Income affected</b>					3.98	.020
Yes	121	54.50	22.50	5.83		
No	94	42.34	20.21	6.11		
Not sure	7	3.15	21.86	3.18		
<b>Infection history</b>					5.05	.007
Yes	6	2.70	29.00	2.19		
No	194	87.39	21.27	6.04		
Not sure	22	9.91	21.55	4.71		
<b>Citizenship</b>					-1.00	.328
Yes	205	92.34	21.42	6.09		
No	17	7.66	22.53	4.20		
<b>Chinese</b>					.76	.470
Yes	79	35.59	21.80	5.88		
No	141	63.51	21.28	6.04		
Not sure	2	0.90	26.00	5.66		

## Measurements

**Experience of discrimination.** The 5-item Everyday Discrimination Scale (Williams et al., 1997) was adapted to measure how often the respondents had experienced discrimination since the COVID-19 outbreak. The scale ranged from never (1) to a lot (5). The five items are: 1) You are treated with less courtesy or respect than other people; 2) You receive poorer service than other people; 3) People will act as if they think you are dangerous; 4) People act as if they are afraid of you; 5) You are threatened or harassed. The item “People act as if they think you are not smart” was changed as “People act as if you are dangerous” to better indicate the common bias against Asians during COVID-19. The scores of the 5 items were added up to reflect participants’ experience of discrimination during COVID-19 ( $\alpha = .94$ ,  $M = 9.60$ ,  $SD = 4.78$ ).

**Worry about discrimination.** Participants were also asked to rate the extent to which they worry about the listed things in Everyday Discrimination Scale (Williams et al., 1997). The items were changed to future tense since worry tends to be an emotion related to things that may happen in the future (Borkovec, Robinson, Pruzinsky, & DePree, 1983). The scores of the 5 items were added up to indicate overall worry about discrimination during COVID-19 ( $\alpha = .96$ ,  $M = 12.96$ ,  $SD = 5.91$ ).

**Social media exposure.** The participants responded to 4 questions, rating how intensively they had been using social media to read, post, comment on and private message about racism-related information since the COVID-19 outbreak. A seven-point Likert scale, ranging from not at all (1) to very much (7) was used, and scores of the 4 items were summed up to show overall exposure to racism-related information on social media ( $\alpha = 0.85$ ,  $M = 12.76$ ,  $SD = 6.40$ ).

**Depression.** A 10-item depression scale created by Meadows et al. (2006) was used to measure the level of depression among Asian individuals during COVID-19. Respondents were asked to rate how often they felt they “couldn’t shake off the blues even with help from your family and your friends,” for example. The scale ranged from rarely or none of the time (1) to most or all of the time (4). The 10 items were summed to indicate participants’ level of depression ( $\alpha = .86$ ,  $M = 21.51$ ,  $SD = 5.97$ ).

**Demographics and infection history.** Respondents reported basic demographic information, including age, gender, marital status, education level, employment status, income, and whether income was affected by COVID-19. We also asked respondents about their U.S. citizenship, and whether they identified themselves as Chinese. Compared to Asian Americans, the COVID-19 outbreak may have greater impacts on the mental health of Asian foreigners because they have fewer resources to protect and support them during such crisis (Xiang et al, 2020). Self-identification of Chinese was also considered because of the close connection between the COVID-19 outbreak and China. We also asked respondents whether they had been infected with COVID-19 (1 = no; 2 = yes; 3 = not sure).

In the regression analyses, we dichotomized marital status, employment status, U.S. citizenship, self-identification as Chinese, and infection history, with those who were married, employed full-time, U.S. citizens, self-identified Chinese, and infected being coded as 1 and other categories coded as 0.

## Data analysis

Data cleaning and analyses were all conducted using SPSS 26. Through data cleaning process, we excluded participants that missed our attention check questions, who didn’t reach our minimum time requirements (300 seconds) for completing the survey, who had missing values on the variables examined in the study, and who were outliers. In the data analysis process, we conducted descriptive statistics, scale reliability, T tests and ANOVA tests, and OLS regression models. The significance level was set at  $P < .05$ .

## Result

### Demographics, infection history and depression

As shown in Table 1, we did a set of t tests and ANOVA tests to compare the differences in depression levels among different demographic groups. Results showed that Asians under age 30 were more likely to be depressed during COVID-19 than those who are older than 30 ( $t = 4.96$ ,  $P < .001$ ). Marital status also had a significant impact on depression: Single Asians were found to have higher depression scores than married Asians ( $F = 5.15$ ,  $P = .002$ ). Those who claimed that their income had been affected during COVID-19 had higher scores of depression ( $F = 3.98$ ,  $P = .020$ ). Those who had been infected by COVID-19 showed greater depressive symptoms as well ( $F = 5.05$ ,  $P = .007$ ).

We did not find significant differences in depression scores between males and females, and among people who fell into different groups based on education level, employment status, and income ranges. No significant differences were found between citizens and non-citizens, and between Chinese and non-Chinese.

### Regression models predicting depression

As shown in Table 2, two steps of OLS multiple regressions were conducted to test the influences of different factors on depression among Asians in the United States. In the first block, we included demographic variables and infection history. In the second block, we added the three discrimination-related variables. The results showed that two regression models were both significant: Step 1 model [ $R^2 = .18$ ,  $F = 4.50$ ,  $P < .001$ ] and step 2 model [ $R^2 = .34$ ,  $F = 8.25$ ,  $P < .001$ ]. A-priori sample size calculator for multiple regressions showed that with the anticipated effect size set at .35 and the statistical power level set at .8, the minimum sample size required was 63. We have reached the sample size requirements in this study.

In the step 1 model, similar to the findings shown in Table 1, those who were younger ( $\beta = -.17$ ,  $SE = .04$ ,  $p < .05$ ), were not married ( $\beta = -.15$ ,  $SE = .07$ ,  $P = .046$ ), got infected by COVID-19 ( $\beta = .23$ ,  $SE = 2.44$ ,  $P = .001$ ), and got income being affected by COVID-19 ( $\beta = .13$ ,  $SE = .78$ ,  $P = .046$ ) reported higher depression scores.

In the step 2 model, only experience of discrimination was positively associated with depressive symptoms ( $\beta = .29$ ,  $SE = .12$ ,  $P = .002$ ). Worry about discrimination ( $\beta = .13$ ,  $SE = .09$ ,  $P = .128$ ) and social media exposure to racism-related information ( $\beta = .09$ ,  $SE = .07$ ,  $P = .209$ ) were not significant predictors for depression in this study (see Table 2).

**Table 2: OLS multiple regression analyses on depression scores predicted by demographic factors, infection history and discrimination-related variables**

Variables	Depression Scores			$R^2$	Adjusted $R^2$	$R^2$ Change	F
	B	SE	$\beta$				
<b>Step 1</b>				.18	.14	.18	4.50***
Age	-.09	.04	-.17*				
Male	-1.21	.79	-.10				
Married	-1.75	.87	-.15*				
Education	-.15	.34	-.03				
Employed fully	.48	.82	.04				
Income	-.12	.12	-.07				
Income affected	1.57	.78	.13*				
Citizen	-1.27	1.44	-.06				
Chinese	.08	.81	.01				
Infected	8.52	2.44	.23*				

Constant	27.35	2.27				
<b>Step 2</b>				.34	.30	.16
Age	-.07	.04	-.13			8.25***
Male	-1.31	.71	-.11			
Married	-1.47	.83	-.12			
Education	-.30	.31	-.06			
Employed full-time	.65	.75	.05			
Income	-.11	.10	-.06			
Income affected	1.11	.71	.09			
Citizen	-1.14	1.31	-.05			
Chinese	-.85	.74	-.07			
Infected	3.92	2.36	.11			
Experience of discrimination	.36	.12	.29**			
Worry about discrimination	.13	.09	.13			
Social media exposure	.08	.07	.09			
Constant	21.45	2.29				

. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## Discussion

This study provides preliminary evidence that experience of discrimination during COVID-19 is a strong risk factor of depressive symptoms among Asian people in the United States. Using a survey of 222 Asians residing in America, the findings confirm that experience of racial discrimination induced by sudden, environmental changes can also generate negative impact on the well-being. Effective interventions should be designed to provide timely assistance to Asians who have experienced discrimination during COVID-19 to prevent them from developing further depressive symptoms. Meanwhile, the current study used an existing measurement of experienced racial discrimination, which may fail to capture the specific experiences of racial discrimination associated with COVID-19. More exploratory research could be conducted to mine out the unique elements of racial discrimination in the COVID-19 context so that more acute conclusions could be made.

Contrary to our hypothesis, worry about discrimination did not directly predict depression in the present study. When the worry about discrimination was considered alongside actual experience of discrimination, it was the actual experience that was detrimental. Worry is believed to be a normal emotion in our lives, and it only becomes a threat to the well-being when it is less controllable by corrective efforts (Craske, et al., 1989; Wells, 1995). Under some situations, it can also be instrumental by motivating people to cope, to conduct more analytical thinking, and to take more goal-oriented actions (Davey, Tallis, & Capuzzo, 1996; Sweeny & Dooley, 2017). The benefits and detriments of worry may have cancelled out each other. It is also possible that worry impacts some people more than others, making the main effect non-significant. It may be worthwhile for future research to examine the possible moderators, such as coping styles and social support-seeking behaviors, to better understand the impacts of this type of worry on mental health.

In addition, as some scholars have suggested, worry about future threats may be a greater risk factor for anxiety disorders than for depression among clinical samples (Merino, Senra, & Ferreira, 2016; Merino, Ferreira, & Senra, 2014). Our non-significant result may suggest that such differential effects of worry are also applicable to general samples, although future research is needed to test this hypothesis.

Social media exposure to racism-related information was not associated with depression. As shown in previous literature, the relationship between social media use and the well-being varies as a

function of use patterns (Frison & Eggermont, 2016; Yang, 2016). Whereas active use of social media is indirectly associated with less depressed mood via more perceived online social support, passive use of social media directly associates with more depressed mood (Frison & Eggermont, 2016). Our measure of social media exposure to racism-related information might have had better predictive power had it included subscales for different use patterns. It is noteworthy, however, that when we entered this variable into the regression model without experience of and worry about discrimination (but still along with all the control variables), social media exposure to racism-related information was indeed associated with higher depression. Therefore, it would be inaccurate to conclude that social media exposure to racism-related information was irrelevant to participants' well-being. Rather, the results suggest that social media exposure to racism-related information was detrimental, but it was actual experience of discrimination that played the most critical role in participants' well-being.

Among demographic factors, it is surprisingly to find that the younger were more vulnerable to depression among Asians. The result is consistent with the findings of another research which examined the age influence on depressive symptoms using a sample in China during the COVID-19 outbreak (Huang & Zhao, 2020). Similar findings were also identified during SARS outbreak (Su et al., 2007). The possible explanation is that, younger people might be less experienced in coping with the sudden environmental changes brought by COVID-19, including social isolation from long-time lockdowns, the challenges in work and academic studies and so forth. Older people might be more adaptive to such crisis because of their richer life experiences of handling the similar crisis (Almeida & Horn, 2004). Future research should take a deeper investigation of age influence on depression during the crisis like COVID-19 and attempts to find out the underlying mechanism behind it.

Not surprisingly, married Asians coped better with the COVID-19 crisis than those who were not married. This is consistent with previous literature which shows the emotional benefits of marriage (Simon, 2002). Moreover, although income didn't significantly influence depression, those whose income were affected because of the outbreak of COVID-19 were found to be more depressed. Data shows that COVID-19 has brought destroying impacts on the job market in the United States, causing many people losing jobs and reducing incomes (Chiwaya & Wu, 2020). Our study shows that it could be a critical trigger to the occurrence of depression. More attention needs be paid for those are economically affected during this crisis.

Our study also shows that those who had infection history were more vulnerable to depression. During the 2003 SARS outbreak, the psychological distress was also widely identified among SARS survivors (Cheng et al., 2004). This suggests the necessity of implementing the effective psychological interventions targeting the COVID-19 survivors.

## Limitations and Conclusions

The study has some limitations. One is that the research model was not tested with a random sample, which might affect the generalizability of the results. Another limitation is that the cross-sectional study did not imply a causal relationship among variables we examined. Finally, the construction of racial discrimination might be limited to fully capture the complex reality of the racial discrimination associated with COVID-19. Therefore, readers are advised to take caution when generalizing the results to the overall Asian population in the U.S. or Asian groups in another country.

Despite these limitations, the present study provides preliminary evidence about the impact of racial discrimination during COVID-19 on mental health among Asian people. Based on our findings, future research could advance the understanding of incident-induced discrimination in relation to the well-being by identifying moderators that may buffer or exacerbate the influence of such racial discrimination. Practically, developing effective and tailored interventions to address different demographic groups' needs in a timely fashion is much-needed to help Asians cope with racial discrimination during an unprecedented global health crisis.

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