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Stress and Coping among American Indian and Alaska Natives in the Age of COVID-19

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We acknowledge the original stewards of Land, Water, and Sky and recognize their commitment to Indigenous culture and community since time immemorial. We honor every living person, a child yet to be, Elders who pass to us their wisdom of country, and ancestors who came before us.

The coronavirus disease of 2019 has shed light on deeply rooted inequities in the United States. Communities of color, particularly American Indian and Alaska Native communities, have suffered some of the highest infection and mortality rates, for two notable reasons: higher rates of comorbidities that increase risk of respiratory complications, and long-standing unequal access to basic resources and healthcare.¹ The risk of adverse outcomes due to COVID-19 is exacerbated in American Indian and Alaska Native communities by preexisting exposure to daily stressors that stem

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from a history of colonial oppression and institutionalized discrimination.² Currently, no literature exists characterizing the experience of stress and coping related to COVID-19 in American Indian and Alaska Native communities. This study serves to fill that gap by providing data to support culturally appropriate programming, research initiatives, and policies centered on improving the psychosocial health for American Indians and Alaska Natives, and ultimately to decrease this disparity in COVID-19's negative effects.

LITERATURE REVIEW

As of this writing, the rates of COVID-19 within American Indian and Alaska Native communities are significantly higher than any other United States community, including COVID-19 hot spots such as New York and Wuhan, China. For example, as of August 2020, the Navajo Nation surpassed New York and New Jersey in deaths per capita.³ In Arizona, American Indians and Alaska Natives are dying at a rate six times higher than that of white Americans, and in Mississippi, death rates due to COVID-19 are ten times that of non-Hispanic whites.⁴ In New Mexico, American Indian and Alaska Native individuals comprise more than 33 percent of the entire coronavirus caseload, but less than 10 percent of the population.⁵ Furthermore, mortality rates continue to rise for Indigenous Americans and are second only to African Americans' COVID-related mortality rate. The mortality rate for American Indian and Alaska Natives is currently 60.5 deaths per 100,000 persons. This ratio may be much higher due to underreporting of American Indian and Alaska Native COVID-19-related deaths across the United States.⁶

Shockingly, recent data (as of July 21, 2020) is unfolding that deaths of younger American Indians and Alaska Natives are widening the disparity in mortality rates between American Indian and Alaska Natives and non-Hispanic whites.⁷ A recent analysis has documented that the cumulative incidence of laboratory-confirmed COVID-19 cases in 23 states were 3.5 times higher among American Indians and Alaska Natives than among white Americans from January 31 to July 3, 2020.⁸ Furthermore, 181,576 cases of COVID-19 among American Indians and Alaska Natives have been reported to the Indian Health Service as of February 7, 2021.⁹ Devastatingly, since the start of the pandemic, one in every 475 American Indians and Alaska Natives has died from COVID-19 compared with one in every 825 white Americans and one in every 645 Black Americans nationwide. Tragically, American Indians and Alaska Natives have disproportionately suffered 211 deaths per 100,000 people in comparison to 121 white Americans per 100,000 people during the first year of the pandemic.¹⁰ Recently, in the four weeks leading up to February 2, 2021, 958 deaths were reported for American Indian and Alaska Natives, which makes this time period the deadliest stretch of the pandemic for this population so far.¹¹ The COVID-19 pandemic has hit communities in Mississippi, New Mexico, Arizona, Montana, Wyoming and the Dakotas the hardest. The true death toll is expected to be significantly higher as several states and cities provide inconsistent or no COVID-19 mortality data for American Indians and Alaska Natives.¹²

The pandemic has illuminated the health inequities and inequalities that negatively impact racial and ethnic minorities, especially from American Indian and Alaska Native communities. This continuing pattern of health disparity lends itself to a lower life expectancy for American Indian and Alaska Native individuals, compromised by “inadequate education, disproportionate poverty, discrimination in the delivery of health services, and cultural differences” that stem from historically imposed socioeconomic adversity.¹³ Even before COVID-19’s arrival, American Indian/Alaska Natives suffered the highest rate of health inequities of any minority group in the United States.¹⁴ These mortality rates are due specifically to liver disease, diabetes mellitus, and chronic respiratory diseases.¹⁵ Notably, American Indians and Alaska Natives across the United States exhibit epidemic proportions of type 2 diabetes mellitus (T2D), a prevalent risk factor associated with increased COVID-19 incidence.¹⁶ The rate of diagnosed diabetes among American Indian and Alaska Native adults in 2017–2018 (14.7%) was twice the rate among non-Hispanic white adults (7.5%).¹⁷ Also, in 2018, the age adjusted death rate for American Indian and Alaska Native adults 18 and older (43.7 per 100,000 population) was more than twice that of non-Hispanic white adults (18.9 per 100,000 population).¹⁸

Stress and Coping in American Indians and Alaska Natives

The compounding historical effects of societal disadvantages, cultural oppression, and marginalization significantly worsen the outcomes associated with COVID-19, creating an environment of chronic stressors in the daily lives of American Indian and Alaska Native peoples in the United States. Studies related to stress have shown that the inequities experienced by racial groups are not explained by mere socioeconomic status.¹⁹ Instead, these inequities are examples of the “wear and tear of experiences of racism and discrimination in regular encounters with societal institutions and everyday life.”²⁰ For American Indians and Alaska Natives, this wear and tear is deeply rooted in the effects of colonialism, which has also been conceptualized as historical trauma. Historical trauma is defined as an intentional event, or series of events, crafted and aimed at eradicating a group of people who share a specific identity (such as ethnicity or tribal affiliation), or erasing their culture.²¹ Historical events targeting American Indians and Alaska Natives include, but are not limited to, conquest, warfare, forced migration, Indian removal policies, induction into boarding schools, and destruction of the environment, which carries intergenerational effects. When coupled with daily, chronic stressors such as discrimination and microaggressions, the effects of historical trauma have a lasting impact on health, including emotional well-being.²²

Karina L. Walters and Jane M. Simoni’s 2002 article recognizes the context of historic and contemporary oppression, yet provides a stress-coping model that includes “cultural factors such as identity attitudes that function as buffers and strengthen psychological and emotional health.”²³ Michelle Sotero expands on Walters and Simoni’s model and also describes the continued subordination of American Indian/Alaska Natives and the cumulative generational effects of injustice and discrimination that are linked to the foundation components of “soul wound” that impacts health

outcomes for Indigenous People.²⁴ The current public health implications, health disparities, and lack of systematic health assistance related to COVID-19 again mirror the historical anguish that American Indian and Alaska Natives have endured, and continue to endure, from generation to generation.

Transactional Model of Stress and Coping

In order to understand stress and coping with COVID-19, the Transactional Model of Stress and Coping (TMSC) was used as the theoretical foundation for this study (fig. 1). First introduced in 1988 by Richard S. Lazarus and Susan Folkman, this model has become a classic framework for evaluating processes of coping with stressful events.²⁵ The TMSC characterizes every encounter as a transaction between a person and their environment.²⁶ “Stress” is conceptualized as a relationship between the person and the environment in which the person assesses the environment as demanding or a threat to their well-being due to a lack of sufficient resources to address those demands.²⁷

This study examined (1) primary appraisal, (2) secondary appraisal, (3) coping, and (4) emotional well-being, which is measured by depressive symptoms. *Primary appraisal* was measured through the Brief Encounter Psychosocial Instrument (BEPSI), to explore how the stress of COVID-19 may impact the individual and to garner whether the pandemic is perceived as benign or a threat. The ten-item Connor-Davidson Resilience Scale (CD-RISC-10) encapsulates *secondary appraisal*, with its view of how much control and resources the individual has associated with the stress of COVID-19. The Ways of Coping Questionnaire (WCQ) provides insight into *coping* processes, with an emphasis on utilized cognitive and behavioral responses. The Center for Epidemiologic Studies Depression Scale (CES-D), measured *emotional well-being*, with an emphasis on depressive symptoms.

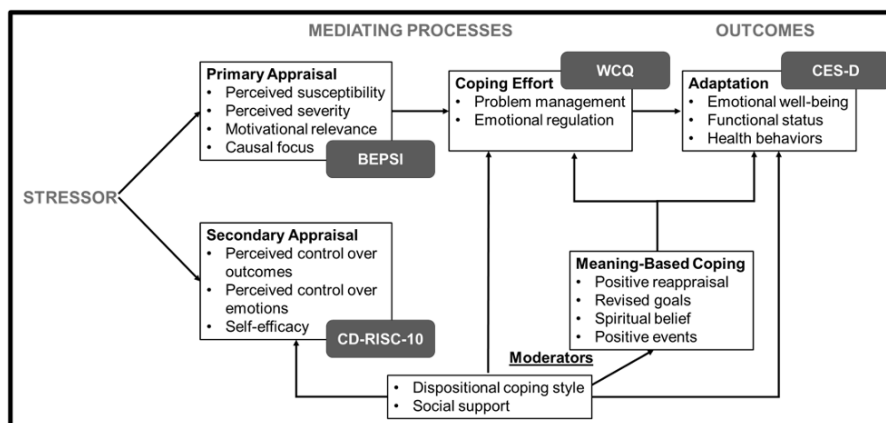


FIGURE 1: Diagram of the Transaction Model of Stress and Coping, adapted from Richard S. Lazarus and Susan Folkman, “Transactional Theory and Research on Emotions and Coping,” *European Journal of Personality* 1, no. 3 (1988): 151–155.

The perception, or cognitive appraisal, of a stressful encounter, determines how well one will cope with the stressor, and how negative the experience will be perceived afterward.²⁸ Cognitive appraisal has two subsequent components: a primary appraisal, in which the individual determines whether the stressor poses a threat, and, if a threat is perceived, a secondary appraisal, in which there is an evaluation of what coping strategies and resources are available for managing the threat posed by that stressor.²⁹ Coping relates to the person's cognitive and behavioral efforts to manage the internal and external demands of the person-environment transaction that is evaluated as challenging or exceeding the person's resources. The immediate outcome of an encounter is dependent upon the person's judgment of their ability to resolve the encounter successfully. This judgment is based upon the individual's values and goals as well as their expectations regarding various aspects of the stressful encounter.³⁰

The TMSC provides a theoretical framework to investigate how American Indian/Alaska Natives are coping with the stress of COVID-19. COVID-19 and its consequences pose a significant risk of aggravating preexisting mental health issues such as depression, suicidal ideation, alcohol addiction, and tobacco abuse in Indigenous communities.³¹ Given the health disparities that have begun to arise, understanding the mental health risks that may result from this current pandemic is essential to effectively address the emotional well-being of American Indian/Alaska Natives in the United States in a culturally competent, respectful manner.

PURPOSE AND METHODS OF THIS STUDY

The purpose of this investigation is to understand the differences in stress and coping processes related to COVID-19 among American Indian/Alaska Natives and non-Hispanic whites. Furthermore, this study will inform current practice and suggest future interventions related to COVID-19 and providing American Indian/Alaska Native-specific psychosocial support. The following research questions were developed from the Transactional Model of Stress and Coping:

1. Does COVID-19 increase depressive symptoms, overall stress, and resilience for American Indians and Alaska Natives and non-Hispanic whites in the United States?
2. What is the relationship between stressors related to COVID-19 and depressive symptoms among American Indians and Alaska Natives and non-Hispanic whites in the United States?
3. Within the epoch of COVID-19, what types of coping do American Indians and Alaska Natives and non-Hispanic whites predominantly utilize in the United States?
4. Within the epoch of COVID-19, what impact does cognitive appraisal have on coping efforts among American Indians and Alaska Natives and non-Hispanic whites in the United States?

Study Design and Participants

This cross-sectional study was developed by a collaborative and diverse group of researchers across the United States, with a third of its members identifying as American Indian and/or Alaska Native. Data were collected from an ongoing, larger study evaluating stress and coping in populations of color in the United States during the COVID-19 pandemic. The University of Nevada, Las Vegas (Protocol Number 1605172) and University of Wisconsin- Madison institutional review boards (Protocol Number 2020-0789) approved this study. Due to the COVID-19 pandemic and the resulting stay-at-home orders that some individuals across the United States experienced, participants were recruited through social media and email outlets, with recruitment performed through channels that members of the research team had access to, and/or relationships. Participants were asked to complete the informed consent, followed by an online Qualtrics survey.³² Between May and July 2020, participants who volunteered for this study were eighteen years or older, resided in the United States, and self-identified as American Indian and/or Alaska Native or non-Hispanic white.

Survey Instruments

To measure the Transactional Model of Stress and Coping constructs, we used a quantitative survey consisting of forty questions. Questions pertained to participants' demographics, stressors associated with COVID-19, and four validated questionnaires that examined psychosocial health. Stressors associated with COVID-19 were evaluated using six questions adapted from other validated surveys or developed specifically for this survey. These questions include: (1) financial strain (one item with two response options: yes [1] and no [0]); (2) food insecurity (two items with three response options: often [2], sometimes [1], never [0], and one item with two response options: yes [1] and no [0]);³³ (3) lack of social support (one item with three response options: as much as you would like [2], some, but would like more [1], and much less than you would like [0]);³⁴ (4) anxiety regarding COVID-19 news reports (one item with two response options: yes [1] and no, they make me feel more comfortable [0]). Total scores were calculated by adding the sum of responses for the six questions. Therefore, COVID-19 stressors scores could range from 0–9, with higher scores indicating more stress related to the COVID-19 pandemic.

The survey had validated questionnaires, including the Center for Epidemiologic Studies Depression Scale (CES-D; 20 items),³⁵ Brief Encounter Psychosocial Instrument (BEPSI; six items),³⁶ 10-item Connor-Davidson Resilience Scale (CD-RISC-10),³⁷ and, the Ways of Coping Questionnaire (WCQ; 24 items),³⁸ which examined coping processes. Through retrospective and current responses, this study assesses the difference between life prior to (“retrospectively”) and during the COVID-19 pandemic (“currently”).

The outcome of interest was depressive symptoms, which were evaluated using the CES-D questionnaire. The CES-D instrument is a short self-report scale designed to measure depressive symptomatology in the general population³⁹ and was used

to measure emotional well-being, which is the study's outcome. Respondents were asked to complete this instrument for two-time points: (1) before COVID-19 (retrospectively) and (2) since the COVID-19 pandemic (currently). The CES-D was developed to measure the current level of depressive symptomatology experienced by an individual, focusing on depressed mood. Therefore, the symptoms listed in the scale are among those in which a clinical depression diagnosis is based.⁴⁰ The score for the CES-D is the sum of 20 questions. Thus, a possible range for a participant is 0 to 60. A score of 16 points or more is considered at risk for clinical depression.⁴¹

The BEPSI is a six-item instrument that measures subjective stress and fatigue⁴² and was used to measure primary appraisal in the study.⁴³ Respondents were asked to complete this instrument for two time points: (1) before COVID-19 (retrospectively) and (2) since the COVID-19 pandemic (currently). The first question in the BEPSI is closed-ended and assessed overall stress with relationship to illness for respondents. This question was not used for scoring. Additionally, this instrument consisted of five pairs of questions in which the first question in the pair required a yes or no response, and the second required rating the yes response within a ten-point Likert scale. Scores were calculated by taking the sum of each question containing the Likert scoring and dividing that number by five. Responses within the Likert scale ranged from one to ten where one represented a response of "not at all" and ten represented a response of "totally." If a participant responded "no" to the first question within the pair, a score of zero was designated for that response. Therefore, scores could range from zero to ten. A participant with a higher final score means that they experience more stress.⁴⁴ Questions include asking about their sense of security and how much these feelings impact them. The BEPSI measure frequently has been used to assess relationships between stress levels and disease.

The CD-RISC-10 provided insight into one's resilience with health-related stressors and was used to measure secondary appraisal in the study. Participants were asked to provide a retrospective—before COVID-19, and current—since COVID-19 response for each question. Of twenty-five items from the Connor-Davidson Resilience Scale, the study used ten in Likert scale format.⁴⁵ All of these items were measured using a 0–4 interval-level scale, with "0" labeled as "not true at all" and "4" labeled as "true all of the time." Scores could range from zero to forty. This scale evaluates one's ability to face adversity and bounce back from stress and assesses one's acceptance of change and perception of secure relationships.⁴⁶

The WCQ was designed to assess the thoughts and actions individuals use to cope with daily stressful encounters,⁴⁷ and for this study was used to measure coping. The WCQ was derived from a cognitive-phenomenological theory of stress and coping and is based on a definition of coping as "the cognitive and behavioral efforts to manage specific external and/or internal demands appraised as taxing or exceeding the resources of the individual."⁴⁸ A shortened version of the WCQ, which includes twenty-four items representing eight subscales, was used.⁴⁹ The eight subscales are: *confrontive coping* (aggressive efforts to change the situation); *distancing* (distancing oneself to minimize the situation); *self-controlling* (regulating one's actions towards and feelings about the problem); *seeking social support* (emotional, informational, or

tangible support); *accepting responsibility* (for the problem to correct it); *escape-avoidance* (behavioral efforts to avoid or escape from the situation, or wishful thinking); *planful problem-solving* (deliberate efforts to solve the problem analytically); and *positive reappraisal* (defining problem with a positive meaning; can include a religious aspect).

According to Susan Folkman and Richard S. Lazarus, if a specific question needs exploration, investigators can identify a focal encounter for the respondents.⁵⁰ Therefore, a paragraph was constructed that allowed respondents to address their stressful experiences of dealing with the COVID-19 crisis within the last seven days. These stressful experiences included not having enough money to pay bills or buy food, following stay-at-home orders, feeling isolated from friends or family, caring for or losing a loved one, or falling ill because of COVID-19. A Likert scale ranging from “0” labeled as “does not apply or not used” to “3” labeled as “used a great deal” was used to answer each question related to a subscale, and the sum of each subscale was used for scoring. The sum of the participant’s responses to items for each subscale provides a summary of the extent to which each type of coping was used in a particular encounter.⁵¹ Scores for each subscale can range from zero to nine.

Lastly, demographic information was collected that pertained to participant age, gender, race/ethnicity, education, marital status, employment status, and comfort with returning to work. These questions also assessed if children were in the home, household size, whether any elderly family members lived in the home, and monthly income before and since COVID-19. Further, information regarding participation in food assistance programs, self-reported health, ZIP code in which the respondent resides, chronic disease status, concerns about receiving medications, current living situation, and unsafe feelings from a partner/family member was also elicited.

Statistical Analysis

The data collected from the online survey was exported into the Statistical Package for the Social Sciences (SPSS, Chicago, IL, USA), version 26, for data analysis. To describe the demographic characteristics of participants, the frequency of responses and, when appropriate, means and standard deviations were calculated. A chi-square analysis and paired samples t-tests were performed to determine if there were any significant differences in the study’s sample population and to understand if COVID-19 had an impact on depressive symptoms, stress, and resilience in American Indian/Alaska Natives and non-Hispanic whites in the United States. Next, Pearson correlations were performed to understand the relationships between COVID-19 stressors and depressive symptoms among American Indian/Alaska Natives and non-Hispanic whites. Mean scores of the eight coping scales were used to identify the three types of coping that are predominantly utilized by American Indian/Alaska Natives and non-Hispanic whites. Finally, multiple regression analyses were performed to understand the impact that cognitive appraisal and race have on the eight types of coping among American Indian/Alaska Natives and non-Hispanic whites.

RESULTS

Descriptive Characteristics of Participants

In this study, data from 207 participants were included. A total of 109 participants were American Indian and/or Alaska Native, and ninety-eight were non-Hispanic whites. Roughly 6 percent of American Indian and Alaska Native participants identified as having a Hispanic ethnic background. The age of the participants ranged from twenty-one to seventy-five years, with an average age for American Indians and/or Alaska Natives as 43.1 years, and for non-Hispanic whites, 41.7 years. American Indian and Alaska Native participants resided in urban areas and tribal reservations across the United States. A total of thirty-three different American Indian and Alaska Native tribes were represented in this sample, with members from Navajo, Paiute, Oneida, Mohican, and Ojibwe tribes predominating. The majority of the sample population for both Native and non-Native groups were females (>80%), with at least some graduate education (>46%), married (>44%), employed as a full-time nonessential workers (>36%), and with higher monthly incomes before and since COVID-19 (>64%).

However, roughly 14 percent of American Indian and Alaska Native participants reported a 3 percent decrease in monthly income since COVID-19 (to under \$2,000 or less) as compared to non-Hispanic whites. Furthermore, more than 25 percent of American Indian and Alaska Native participants reported having to rely on food assistance programs, as compared to only 8.2 percent of non-Hispanic white participants. Although both groups exhibited similar levels of chronic disease (except for diabetes, which was twice as high in American Indian and Alaska Native participants), American Indians and Alaska Natives rated their overall health lower than non-Hispanic whites. Forty percent of American Indian and Alaska Native participants rated their health as either excellent or very good, as compared to 61.2 percent of non-Hispanic white participants. Additionally, non-Hispanic white participants reported more medication use (63.2%). Other descriptive characteristics of participants are shown in table 1.

Characteristics of Psychosocial Measures: Depressive Symptoms, Stress, Resilience, and Coping

The mean scores for depressive symptoms, stress, resilience, and coping for each study population are shown in table 2. For both groups, since the COVID-19 pandemic the number of participants that were considered depressed increased by at least 80 percent in comparison to the time before COVID-19. Scores for the stressors related to COVID-19 measurement ranged from 1 to 9, with a mean of 4.5 ($SD = 1.7$) for American Indians and/or Alaska Natives, and the scores ranged from 0 to 9, with a mean of 3.7 ($SD = 1.2$) for non-Hispanic whites. In measuring overall stress, the first question was used not for scoring, but to gauge participants' overall stress with illness. This question asked, "Stress can allow us to become more ill (mental health, physical health, lack of sleep). Do you think anything like that is going on for you pre-COVID-19/since COVID-19?"

TABLE 1
DESCRIPTIVE CHARACTERISTICS OF PARTICIPANTS BY RACE (N=207)

Variable	Number (%)		χ^2	P value ^A
	AI/AN (n= 109)	white (n= 98)		
Age (yr)			1.012	.603
21-39	48 (44.0)	45 (45.9)		
40-59	41 (37.6)	40 (40.8)		
≥60	20 (13.3)	20 (18.3)		
Sex			0.000	.997
Men	20 (18.3)	18 (18.4)		
Women	89 (81.7)	80 (81.6)		
Education			10.053	.007
≤ Some College	32 (30.2)	12 (12.2)		
Completed College	25 (23.6)	33 (33.7)		
Graduate or Professional Degree	49 (46.2)	53 (54.1)		
Marital Status			2.893	.408
Married	50 (46.3)	43 (43.9)		
Divorced/Widowed/Separated	14 (13.0)	16 (16.3)		
Never Married	33 (30.6)	23 (23.5)		
Member of an Unmarried Couple	11 (10.2)	16 (16.3)		
Religious Affiliation			26.336	.000
Yes ^B	38 (36.9)	56 (57.7)		
No	30 (29.1)	36 (37.1)		
Other	35 (34.0)	5 (5.2)		
Employment Status			7.091	.312
Unemployed	12 (11.1)	4 (4.1)		
Unemployed/Furloughed due to COVID-19	14 (13.0)	10 (10.2)		
Full-Time Essential Worker	19 (17.6)	15 (15.3)		
Part-Time Essential Worker	5 (4.6)	6 (6.1)		
Full-Time Non-Essential Worker	39 (36.1)	49 (50.0)		
Part-Time Non-Essential Worker	9 (8.3)	5 (5.1)		
Retired	10 (9.3)	9 (9.2)		
Filed/ Planning to File for Unemployment	11 (78.6)	7 (70.0)	0.229	.633
Student	26 (24.1)	23 (23.5)	0.010	.919
Monthly Income Before COVID-19			0.051	.822
\$0-\$2,000	25 (24.3)	22 (22.9)		
\$2,001 or more	78 (75.7)	74 (77.1)		
Current Monthly Income			2.635	.105
\$0-\$2,000	37 (35.6)	24 (25.0)		
\$2,001 or more	67 (64.4)	72 (75.0)		
Comfort Returning to Work/School When Stay-At-Home Orders are Lifted			1.095	.579
Yes	29 (27.9)	33 (34.4)		
No	52 (50.0)	42 (43.8)		
Not currently employed, furloughed, or a student	23 (22.1)	21 (21.9)		
Household Size			2.726	.099
1-2 people	51 (47.7)	58 (59.2)		
3 or more people	56 (52.3)	40 (40.8)		
Has Children Under Age 18 in Household	43 (40.2)	19 (19.4)	10.489	.001
Number of Children Under Age 18 in Household^C	2.0 (1.2)	1.8 (0.8)		N/A

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Variable	Number (%)		χ^2	P value ^A
	AI/AN (n= 109)	white (n= 98)		
Has Child(ren) Participate in Online School Interaction	31 (72.1)	16 (84.2)	1.055	.304
Has Elderly Family Members in Household	23 (21.5)	15 (15.3)	1.298	.255
Number of Elderly Family Members in Household ^C	1.36 (.5)	1.5 (.5)		N/A
Worry About Keeping Elderly Family Safe from COVID-19	22 (95.7)	15 (100)	0.670	.413
Food Assistance Program			12.085	.002
Yes ^D	17 (16.5)	3 (3.2)		
None	80 (77.7)	90 (91.8)		
Other	6 (5.8)	2 (2.0)		
Tested for COVID-19	33 (31.1)	15 (15.3)	7.088	.008
Self-Rated Health			9.500	.009
Very Good-Excellent	42 (40.0)	60 (61.2)		
Good	42 (40.0)	23 (23.5)		
Poor-Fair	21 (20.0)	15 (15.3)		
Chronic Conditions (<i>respondents could select more than one option</i>)				N/A
Heart Disease	4 (3.7)	4 (3.3)		
Diabetes	14 (12.8)	6 (6.1)		
Asthma	19 (17.4)	13 (13.3)		
Depression	35 (32.1)	34 (34.7)		
Overweight	35 (32.1)	37 (37.8)		
Obesity	20 (18.3)	13 (13.3)		
Hypertension	15 (13.8)	15 (15.3)		
Chronic Obstructive Pulmonary Disease (COPD)	2 (1.8)	1 (1.0)		
Other Diseases or Conditions	14 (12.8)	10 (10.2)		
None	28 (25.7)	27 (27.6)		
Currently on Medication	50 (47.6)	61 (62.2)	4.376	.036
Has Concern About Getting Medication/Seeing Healthcare Provider	27 (54.0)	23 (37.7)	2.947	.086
Primary Healthcare Services				N/A
Emergency Room/ Urgent Care	5 (4.8)	10 (10.5)		
Local Community Health Center/Federally Qualified Health Center	21 (20.2)	31 (32.6)		
Tribal Clinic/Indian Health Services	42 (40.4)	0 (0)		
Veteran Healthcare Administration (VA)	1 (1.0)	0 (0)		
Telemedicine	7 (6.7)	15 (15.8)		
Other	16 (15.4)	27 (28.4)		
None	12 (11.5)	12 (12.6)		

Note: N/A, not applicable, for χ^2 analysis.

^A Two-tailed χ^2 analysis conducted for significance testing.

^B Participants selected one of the following religious affiliation: Christianity, Catholic, Islam, Buddhism, Mormon, or Agnostic

^C Value shown as Mean (SD), SD = standard deviation.

^D Participants selected at least one of the following food assistance programs: SNAP/Food Stamps, WIC, Soup Kitchen, Food Pantries, Meal Programs Delivered to Home.

Before COVID-19, 67.0 percent of American Indian/Alaska Natives and 72.4 percent of white participants responded “yes.” Since COVID-19, these numbers increased to 81.7 and 76.5 percent of American Indians and/or Alaska Natives, and non-Hispanic whites, respectively. For both groups, depressive symptoms and overall stress increased since COVID-19 and resilience decreased since COVID-19. Furthermore, American Indian and Alaska Native participants mean scores were higher or equal to white participants in the coping scales, except in seeking social support (American Indian and Alaska Native: $M = 3.9 \pm 2.6$; white: $M = 4.0 \pm 2.4$).

TABLE 2
MEAN SCORES FOR DEPRESSIVE SYMPTOMS, STRESS, RESILIENCE,
AND COPING

Variable	Mean (SD)	
	AI/AN (n= 109)	white (n= 98)
Depression		
CES-D Before COVID-19	13.4 (11.1)	11.4 (8.8)
CES-D Since COVID-19	20.5 (12.6)	18.8 (11.6)
Depressed Before COVID-19†	35 (34.0)	22 (23.4)
Depressed Since COVID-19†	61 (61.6)	53 (57.0)
Stress		
Stressors Related to COVID-19	4.5 (1.7)	3.7 (1.2)
BEPSI Before COVID-19	3.9 (3.1)	4.1 (2.6)
BEPSI Since COVID-19	5.5 (2.9)	4.6 (2.8)
Resilience		
CD-RISC-10 Before COVID-19	28.5 (5.9)	28.6 (6.1)
CD-RISC-10 Since COVID-19	12.3 (4.2)	12.7 (3.5)
Coping: WCQ Subscales		
Confrontive Coping	3.2 (2.3)	2.8 (2.3)
Distancing	3.3 (2.0)	3.0 (2.1)
Self-Controlling	4.1 (2.4)	3.5 (2.3)
Seeking Social Support	3.9 (2.6)	4.0 (2.4)
Accepting Responsibility Score	3.3 (2.2)	2.5 (2.4)
Escape-Avoidance Score	4.4 (3.0)	4.4 (3.1)
Planful Problem-Solving Score	4.7 (2.4)	4.3 (2.6)
Positive Reappraisal Score	3.7 (2.6)	2.7 (2.4)

Abbreviations: BEPSI, Brief Encounter Psychosocial Instrument; CD-RISC-10, 10-item Connor-Davidson Resilience Scale; CES-D, Center for Epidemiologic Studies Depression Scale; SD, standard deviation; WCQ, Ways of Coping Questionnaire.

†Before COVID-19† is examining a retrospective response.

† Denotes depression frequency (percentage) based on results from CES-D survey.

Does COVID-19 increase depressive symptoms, overall stress, and resilience for American Indians and/or Alaska Natives and Non-Hispanic whites in the United States?

Paired samples t-tests were performed to evaluate the impact of COVID-19 on depressive symptoms (CES-D), overall stress (BEPST), and resilience (CD-RISC-10) for American Indian and Alaska Native and white participants. For American Indian and/or Alaska Native participants, a statistically significant increase in depressive symptoms was found from before COVID-19 ($M = 13.38, SD = 11.27$) to since COVID-19 ($M = 20.50, SD = 12.66$), $t(97) = 6.30, p < .0005$ (two-tailed). The mean increase in scores for depressive symptoms was 7.12, with a 95% CI ranging from 4.88 to 9.26. Similarly, for non-Hispanic white participants, there was a statistically significant increase in depressive symptoms found from before COVID-19 ($M = 11.25, SD = 8.2$) to since COVID-19 ($M = 18.96, SD = 11.51$), $t(91) = 7.11, p < .0005$ (two-tailed). The mean increase in depressive symptom scores was 7.71 with a 95% CI ranging from 5.55 to 9.86.

For American Indian and/or Alaska Natives, a statistically significant increase in overall stress from before COVID-19 ($M = 3.94, SD = 3.07$) to since COVID-19 ($M = 5.47, SD = 2.94$), $t(108) = 4.98, p < .0005$ (two-tailed) was seen. The mean increase in overall stress scores were 1.54 with a 95% CI ranging from 0.92 to 2.15. Similarly, for non-Hispanic whites a statistically significant increase in overall stress was found from before COVID-19 ($M = 4.07, SD = 2.59$) to since COVID-19 ($M = 4.58, SD = 2.72$), $t(97) = 2.72, p < .008$ (two-tailed). The mean increase in overall stress scores were 0.51 with a 95% CI ranging from 0.14 to 0.87.

However, for American Indians and/or Alaska Natives, a statistically significant decrease in resilience was found from before COVID-19 ($M = 28.56, SD = 5.97$) to since COVID-19 ($M = 12.25, SD = 4.15$), $t(107) = -30.37, p < .0005$ (two-tailed). The mean decrease of resilience scores was -16.31, with a 95% CI ranging from -17.37 to -15.24. Similarly, for non-Hispanic whites a statistically significant decrease in resilience was found from before COVID-19 ($M = 28.57, SD = 6.10$) to since COVID-19 ($M = 12.78, SD = 3.55$), $t(97) = -38.41, p < .0005$ (two-tailed). The mean decrease in resilience scores was 15.80, with a 95% CI ranging from -16.61 to -14.98.

What is the relationship between stressors related to COVID-19 and depressive symptoms among American Indians and/or Alaska Natives and Non-Hispanic whites in the United States?

Pearson correlations were performed using data from the stressors related to COVID-19 and the CES-D scores to identify the relationship between COVID-19 stressors and depressive symptoms for American Indian/Alaska Natives in comparison to white participants. Results show a moderate, positive correlation with stressors related to COVID-19 and depressive symptoms among American Indian/Alaska Natives ($r = .361, n = 93, p < .001$). COVID-19 stressors help to explain 13.0% of the variance in depressive symptoms for American Indian/Alaska Natives. However, there was a small, positive correlation with stressors related to COVID-19 and depressive symptoms for non-Hispanic whites ($r = 0.271, n = 99, p < .001$). COVID-19 stressors help to explain 7.3% of the variance in depressive symptoms for non-Hispanic whites.

Within the epoch of COVID-19, what types of coping do American Indians and/or Alaska Natives and Non-Hispanic whites predominantly utilize in the United States?

Data shown in table 2 from the WCQ was used to identify the three types of coping predominantly used by American Indians and/or Alaska Natives in comparison to non-Hispanic whites. The primary coping processes used by American Indians and/or Alaska Natives were (1) planful problem solving ($M = 4.70 \pm 2.38$), (2) escape-avoidance ($M = 4.42 \pm 3.01$), and (3) self-controlling ($M = 4.12 \pm 2.38$). For non-Hispanic whites, the primary coping processes used were (1) planful problem solving ($M = 4.29 \pm 2.58$), (2) escape-avoidance ($M = 4.37 \pm 3.05$), and (3) seeking social support ($M = 3.96 \pm 2.35$). Both groups utilized planful problem solving, followed by escape-avoidance as predominant types of coping with COVID-19.

Within the epoch of COVID-19, what impact does cognitive appraisal have on coping efforts among American Indian/Alaska Natives and Non-Hispanic whites in the United States?

Table 3 displays the results of the multiple regression analyses that were performed to determine the impact of cognitive appraisal and race on the eight types of coping. Cognitive appraisal includes primary appraisal, which was measured with the BEPSI instrument, and secondary appraisal, which was measured with the CD-RISC-10 instrument. The multiple regression analyses revealed that primary appraisal (stress) significantly impacted confrontive coping ($B = .280, p = .001$), distancing ($B = .125, p = .027$), self-controlling ($B = .211, p = .001$), seeking social support ($B = .144, p = .037$), accepting responsibility ($B = .352, p = .001$), escape-avoidance ($B = .431, p = .001$), and planful problem solving ($B = .145, p = .034$). However, secondary appraisal (resilience) significantly impacted confrontive coping ($B = .113, p = .013$), escape-avoidance ($B = -.199, p = .001$), planful problem solving ($B = .153, p = .003$) and positive reappraisal ($B = .248, p = .001$). Race, which compared American Indian/Alaska Natives to non-Hispanic whites, significantly impacted positive reappraisal ($B = .248, p = .001$).

DISCUSSION AND SUMMARY

To our knowledge, this study is the first to examine the psychosocial health of American Indians and/or Alaska Natives exclusively, and in comparison, to non-Hispanic whites as it relates to COVID-19. We posed four questions to understand if COVID-19 impacts depressive symptoms, stress, resilience, and coping processes utilizing the Transactional Model of Stress and Coping as a theoretical framework. For this study, American Indians and/or Alaska Natives were compared to non-Hispanic whites in terms of demographics, and within-group analyses were performed to examine factors related to depressive symptoms, stress, resilience, and coping, before and since COVID-19. In comparing the population groups, respondents were relatively similar in age, gender, income, educational attainment, and employment status. At a statistically significant level, American Indians and/or Alaska Natives more frequently used emergency food services, had children in the home under eighteen years old, rated their health as less than very good/excellent, were taking fewer medications, indicated more religious/spiritual affiliation, and were tested for COVID-19 more frequently.

TABLE 3
MULTIPLE REGRESSION RESULTS FOR COPING STRATEGIES

Variable	B	SE B	β	t	p	95% CI for B		Δ R2
						LL	UL	
Confrontive Coping								
Stress	.280	.061	.344	4.578	.001***	.159	.400	.103***
Resilience	.113	.045	.186	2.500	.013*	.024	.201	
Race (AI/AN vs non-Hispanic white)	.099	.157	.043	.627	.531	-.212	.409	
Distancing								
Stress	.125	.056	.175	2.228	.027*	.014	.235	.029
Resilience	.024	.041	.044	.573	.567	-.058	.105	
Race (AI/AN vs non-Hispanic white)	.081	.145	.040	.558	.577	-.204	.366	
Self-Controlling								
Stress	.211	.062	.255	3.390	.001**	.088	.334	.122***
Resilience	-.072	.047	-.115	-1.554	.122	-.164	.019	
Race (AI/AN vs non-Hispanic white)	.224	.161	.094	1.397	.164	-.092	.541	
Seeking Social Support								
Stress	.144	.068	.168	2.104	.037*	.009	.279	.022
Resilience	.039	.051	.059	.754	.452	-.062	.139	
Race (AI/AN vs non-Hispanic white)	-.062	.176	-.025	-.351	.726	-.408	.285	
Accepting Responsibility								
Stress	.352	.058	.427	6.051	.001***	.237	.466	.235***
Resilience	-.045	.043	-.071	-1.025	.307	-.130	.041	
Race (AI/AN vs non-Hispanic white)	.208	.149	.088	1.392	.166	-.087	.502	
Escape-Avoidance								
Stress	.431	.071	.409	6.117	.001***	.292	.570	.313***
Resilience	-.199	.053	-.249	-3.767	.001***	-.303	-.095	
Race (AI/AN vs non-Hispanic white)	-.202	.181	-.067	-1.113	.267	-.559	.156	
Planful Problem Solving								
Stress	.145	.068	.168	2.137	.034*	.011	.279	.055**
Resilience	.153	.051	.234	3.017	.003**	.053	.253	
Race (AI/AN vs non-Hispanic white)	.173	.174	.070	.994	.321	-.170	.517	
Positive Reappraisal								
Stress	.063	.066	.071	.959	.339	-.067	.193	.156***
Resilience	.248	.049	.369	5.032	.001***	.151	.345	
Race (AI/AN vs non-Hispanic white)	.518	.169	.204	3.066	.002**	.185	.852	

Note: Model = "Enter" method in SPSS Statistics; B = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE B = standard error of the coefficient; t = t statistic; p = p-value; β = standardized coefficient; Δ R2 = adjusted coefficient of determination. * Denotes significant p-values where *p < .05, **p < .01, and ***p < .001.

In examining the study measures for depressive symptoms, stress, and resilience before and since COVID-19, data indicated that both populations exhibited more depressive symptoms, more stress, and less resilience, on average, since COVID-19 began. When asked about stress before and since COVID-19, non-Hispanic whites in this sample reported a higher stress level before COVID-19, while American Indian/Alaska Natives in this sample reported a higher level since COVID-19. The stress level for non-Hispanic whites increased by 12 percent, while levels for American Indians and/or Alaska Natives increased by 41 percent since COVID-19 began. While both populations saw increases in their depressive symptoms scores based on the CES-D, American Indian and Alaska Native scores were higher than non-Hispanic whites, both before and since COVID-19. These findings may be the result of not including Indigenous-centric measures in the survey instrument, which may more effectively evaluate stress for the American Indian and/or Alaska Native sample population, particularly before COVID-19. Furthermore, overall depressive symptoms in American Indian and/or Alaska Natives was higher than whites, which may be related to historical trauma and systemic racism, as previously documented, but not measured here.⁵²

As expected, as perceived stress levels increased, the participants' depressive symptoms increased based on the correlation results. This study has shown that for this sample population, COVID-19 is a contributor to this additional stress and depressive symptoms for both populations. Efforts focused on containing COVID-19 should consider examining and addressing stress as well as depressive symptoms for both populations.

This study highlighted the use of playful problem solving and escape-avoidance as the primary coping mechanisms that both groups utilized to deal with the stress of COVID-19. Playful problem solving is considered a problem-focused coping strategy in which the participant is directly changing the elements of their stressful event.⁵³ Escape-avoidance is considered an emotion-focused coping strategy whereby one attempts to manage emotional stress by changing the meaning of the situation, or interpreting the stressful event differently.⁵⁴ Depending on the type of stressful encounter, using escape-avoidance can be beneficial when one partakes in avoidance activities, such as exercising or meditation, that are conducive to a healthy lifestyle.⁵⁵ However, escape-avoidance may also lead to unhealthy behaviors, such as binge-eating, as well as more stress caused by persistence of the original problem.⁵⁶

The significant differences observed between American Indian/Alaska Natives and non-Hispanic whites in this sample related to the third leading coping process observed in each group. American Indian/Alaska Natives practiced self-control while non-Hispanic whites sought social support. Self-controlling is defined as "efforts to regulate one's feelings and actions"⁵⁷ and is considered a problem-focused coping strategy.⁵⁸ In comparison, seeking social support is considered an emotion-focused strategy in which efforts are made to pursue tangible, informational, and/or emotional support. Thus, most American Indians and/or Alaska Natives and non-Hispanic whites in this sample employed intentional problem-focused efforts to manage their COVID-19 related stress. In addition, American Indians and/or Alaska Natives and

non-Hispanic whites used wishful thinking and behavioral strategies to escape the stress of COVID-19.

Based on the results, clinical implications of this study include recognizing coping as a process, and the coping processes used may impact their propensity for depressive symptoms. Since the prevalent forms of coping used among American Indians and/or Alaska Native individuals in this sample were planful problem solving and/or escape-avoidance, clinical suggestions of additional coping processes may be fruitful. Additional coping processes that could be explored and suggested are utilizing one's support system and spirituality if appropriate, and reducing escape behaviors, such as consuming alcohol. During clinical interactions, increased screening for depressive symptoms may assist with identifying those who are emotionally vulnerable. Since resilience decreased since the onset of COVID-19, providing hope may be important for the American Indian and Alaska Native community. During a time of pandemic uncertainty, providing community resource information, such as financial and food instability resources, can have a major impact on personal well-being and resource options.

The multiple regression analyses determined what impact cognitive appraisal and race have on coping efforts. Cognitive appraisal consists of primary and secondary appraisal, with primary appraisal in this study being participants' evaluation of the significance of COVID-19 for their well-being. The regression results revealed that primary appraisal significantly impacted seven of the eight types of coping: confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, and planful problem solving. This result demonstrates that overall stress has an impact on the majority of ways that participants cope with the COVID-19 pandemic, including both problem-focused and emotion-focused forms.

Secondary appraisal in this study is participants' assessment of their coping resources and options for dealing with the COVID-19 pandemic. The regression results showed that secondary appraisal had a significant impact on confrontive coping, escape-avoidance, planful problem solving, and positive reappraisal. These types of coping reflect resilience, or one's ability to face adversity and bounce back from stress. Thus, as participants deal with the stress of COVID-19, resilience appears in aggressive and problem-focused efforts to change the situation causing the stress of COVID-19, wishful thinking to escape the stress of COVID-19, and creating positive meaning from the COVID-19 pandemic by focusing on personal growth and religion.

Race had an impact only on positive appraisal. A difference was found in the way that participants in this sample created positive meaning from the COVID-19 pandemic by focusing on personal growth and religion, a difference that can be seen in the 70.9 percent of American Indian and/or Alaska Natives who identified a religious affiliation, in comparison to 62.6 percent of non-Hispanic whites. American Indians and/or Alaska Natives may be utilizing more religious coping to deal with the stress of COVID-19 than non-Hispanic whites. A review of the "other" responses from American Indian and/or Alaska Native participants provided a continuum of responses that reflects Native spirituality and tribal customs. The connection between spirituality with one's appraisal process has been previously reported.⁵⁹ Since

one's belief system impacts the appraisal process, spirituality may be used within the decision-making process and can allow for a greater sense of decision certainty.⁶⁰ Furthermore, spirituality can affect one's perception of an outcome as to whether a situation is a threat or will have few consequences to the individual, which is a large facet of primary appraisal.⁶¹

As with any study, this one is not without limitations. This study utilized a cross-sectional research design. Selected study variables were examined looking at participants' perspective retrospectively and currently. Unfortunately, these data points do not provide enough information to determine if there is any causality between selected variables and the outcomes of interest. Future studies could focus on determining if there is a causal relationship here.

Due to the convenience sampling and conducting the study during the COVID-19 pandemic, which resulted in stay-at-home procedures, it is possible that data were collected from a unique group of participants. For example, only those persons who had access to a computer, smartphone, or tablet device, as well as time to complete the survey, were able to do so. As a result, the results of this study may not be generalizable to those without Internet access or time to complete the survey.

Despite our best recruitment efforts, the data presented here are based on small sample sizes. The small sample size does not allow for extrapolating these results to a larger population. Since participants were asked to recall information prior to COVID-19, another limitation may be due to recall bias of responses related to depressive symptoms, overall stress, and resilience.

The data for this manuscript reflect a portion of data from a larger national dataset. Due to the overarching larger nature of the original study, culturally specific measures of stress, resilience, and ways of coping were not measured here. The use of more Indigenous-centric measures could have produced different results for American Indian/Alaska Natives, but it is unclear how relevant these measures would have been for the non-Hispanic whites, who are also included here as a part of the analysis. Future research with American Indians and/or Alaska Natives, in particular, should include Indigenous-centric measures. Additionally, other stressors, such as caring for persons with COVID-19, and specific ways of coping, such as substance use and suicide ideation, were not measured here. The addition of these measures would have provided additional insight. As such, the results here are considered to be conservative estimates of stress, depressive symptoms, resilience, and ways of coping for each sample population studied.

Furthermore, the sample population for both groups consisted of more-educated middle-aged women. Data may reflect differently with more men and a less-educated population. While the sample populations were similar on many demographic variables, they did differ at statistically significant levels in terms of use of emergency food services, having children in the home under eighteen, and being tested for COVID-19. These differences could possibly provide further explanation of the differences in key study variables, such as levels of depression and stress as well as ways of coping.

Despite the limitations, this study makes significant contributions to the scientific literature and knowledge base. Due to the quick time frame for collecting data and

the uncertainty with regard to the number of American Indian and/or Alaska Native respondents, it was decided that neither Walters and Simoni's nor Sotero's model of historical trauma could be effectively utilized at this time. However, these models have a strong potential for illustrating psychological and social pathways that link historical trauma to COVID-19 health disparities. This study shows that while non-Hispanic whites and American Indians and/or Alaska Natives in this sample are experiencing stress and depressive symptoms as a result of COVID-19, each population has unique coping processes for the epoch of COVID-19. As American Indian and Alaska Native communities continue to manage and recover in this epoch, it is important that interventions and support programs are sensitive to the unique coping processes for this community to improve their psychosocial health.

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