

PREVALENCE OF MAJOR STRESSFUL LIFE EVENTS AND MENTAL HEALTH SYMPTOMS OF AMERICAN INDIAN AND ALASKA NATIVE ADOLESCENTS IN HAWAI‘I

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Abstract: While progress has been made in learning more about American Indians and Alaska Natives (AI/ANs) who reside in Hawai‘i, much more research is needed regarding adolescents’ mental health and the major life events that they encounter. Utilizing a large cross-sequential epidemiologic design (N = 7,214; 1992-1996), this study found AI/AN-Hawaiian youth self-reported higher risk of predominantly negative major life events and mental health symptoms than for the non-Indigenous adolescent ethnic group, with the AI/AN and Native Hawaiian ethnic groups falling generally in between. However, when statistically controlling for covariates, overall, Native Hawaiian youth self-reported higher mental-health-symptom risk than the other three ethnic groups. Implications are discussed, including protective factors, prevention, and future research.

INTRODUCTION

Nationally

In the United States, American Indian and Alaska Native (AI/AN) adolescents represent one of the most diverse and fastest-growing populations (Center for Native American Youth, 2016). Much has been written on the mental and behavioral health of AI/AN youth (American Psychiatric Association [APA], 2017; Gone & Trimble, 2012; Goodkind et al., 2010; Sarche, Spicer, Farrell, & Fitzgerald, 2011; Whitbeck, Walls, & Hartshorn, 2014). In addition to setting the foundation for intervention and future research, one conclusion has been that protective factors for AI/AN adolescents include enduring spirit, adaptability, resiliency, culture’s supportive role (e.g., strong cultural identification), connections with the past, traditional health practices, pro-social networks as adolescents mature (e.g., family, elders’ wisdom), and positive life events (APA, 2017; Center for Native American Youth, 2016; Whitbeck et al., 2014).

Countering these protective factors have been risk factors, such as socioeconomic, demographic, and physical and mental health disparities (e.g., poverty, unemployment, low educational attainment, infant mortality, violence, substance use, mood and anxiety disorders, suicide, and comorbidity/dual diagnosis; American Indian and Alaska Native Mental Health Research, 1994; APA, 2017; Center for Native American Youth, 2016; Gone & Trimble, 2012; Goodkind et al., 2010; Sarche et al., 2011).

Many of these risk factors can be conceptualized as stressful or negative life events. Chen (2003) found that 95% of the AI/AN adolescents who were surveyed self-reported at least one of 11 negative life events. This study was also the only one to compare the prevalence of negative life events across groups, whereby it was found that upper-midwest AI/AN 5th- to 8th-grade adolescents had higher self-reported rates, compared to rural Iowa 7th-grade adolescents on 7 of 10 negative life events (i.e., moved, close relative died, pet died, close friend moved away, failed in class, seriously injured, family member victim of crime).

Based on an AI/AN youth literature review, negative life events were found to be robustly associated with higher levels of mental health symptoms, substance use, and diagnosable psychopathology (Bechtold, Manson, & Shore, 1994), as well as a host of other risk factors, including violence exposure and victimization, trauma, injury, education-related problems, suicidality, and family and peer difficulties (Arizala, 2011; Baldwin, Brown, Wayment, Nez, & Brelsford, 2011; Burnette & Figley, 2015; Chen, 2003; Dinges & Duong-Tran, 1993; King, Beals, Manson, & Trimble, 1992; Novins & Mitchell, 1998; O'Connell et al., 2007; Office of Technology Assessment, 1990; Soto, Baezconde-Garbanati, Schwartz, & Unger, 2015; Whitesell et al., 2009).

Therefore, gaps in the literature include only minimal research conducted on the prevalence of negative life events for AI/AN youth in contrast to non-AI/AN groups, and although the risk literature found robust associations between stressful life events and substance use and depression, minimal research was found on the association between stressful life events and anxiety and conduct problems.

Hawai'i

Although individuals of AI/AN ancestry constitute only a small percentage of Hawai'i's population (0.3% full AI/AN, U.S. Census Bureau, 2000; 31,052 or 2.2% mixed AI/AN, U.S. Census Bureau, 2011-2013), there are important reasons to study AI/ANs in Hawai'i. To start, not much is known about AI/AN adolescents who reside in Hawai'i. Based on a literature review, there was only

one study that primarily focused on AI/ANs in Hawai'i and their behavioral health (i.e., Munnelly, Hishinuma, Lee, Smith, & McCarthy, 2018), despite there being great concern in the scientific literature on the disparities experienced by Native Hawaiians—the indigenous people of the Hawaiian Islands (e.g., lower socioeconomic status, poorer mental health; Andrade et al., 2006; Choi-Misailidis & Kaulukukui, 2004; Kamehameha Schools, 2014; Office of Hawaiian Affairs, 2015). Additionally, AI/ANs who reside in Hawai'i may be further removed from protective cultural and tribal attachments. Also, gaining knowledge of the similarities and differences between the two indigenous cultures of Native Hawaiians and AI/ANs may be invaluable in improving the mental and behavioral health of AI/ANs in Hawai'i and the continental United States via potential generalizations and adaptations in knowledge and practice (Munnelly et al., 2018).

There have been only three major empirical efforts that included the behavioral health of AI/AN adolescents in Hawai'i. First, as extrapolated by Munnelly et al. (2018) from the U.S. Census (2011-2013), a much higher percent of AI/ANs in Hawai'i was of mixed ancestry (90.5%) as compared to the mixed ethnicity percent of the entire Hawai'i population (23.6%). This pattern of difference was also true for the United States as a whole, where 51.1% of AI/ANs was of mixed ancestry compared to only 2.8% of the entire U.S. population. In addition, AI/ANs (mixed or full) in Hawai'i and the United States were comprised of a larger proportion of children and adolescents compared to the general population, and there was a trend of lower socioeconomic status, including (1) higher percentage of grandparents who were responsible for grandchildren; (2) higher proportion of families who had children in poverty; (3) higher rate of individuals 16 years of age or over who were unemployed; (4) lower household median income; (5) lower percent with health insurance; and (6) lower proportion who completed a college or professional degree. In addition, AI/ANs in both the United States and in Hawai'i had a slightly higher rate of being civilian veterans as compared to their respective populations. The only inconsistent result was AI/ANs of one or more ancestries in Hawai'i had a smaller average family size than Hawai'i's population, but the converse was true for the U.S. population. Unfortunately, the U.S. Census data did not include important factors (e.g., academic, social, physical and mental health, cultural identification) on an individual level.

Second, Hishinuma et al. (2005) examined violence victimization (defined as an individual who “was a victim of violence [was physically harmed by someone]”) for adolescents, their family members, and their close friends within the past six months (Major Life Events Scale; Andrews, Lewinsohn, Hops, & Roberts, 1993). This study utilized the large 1992-1996 epidemiologic data from the National Center on Indigenous Hawaiian Behavioral Health (formerly, Native Hawaiian

Mental Health Research Development Program). The overall rate of being a victim of violence for part-full AI/ANs was 4.4% (compared to 3.2% for all others; difference not statistically significant). Female part-full AI/AN adolescents were at greater risk of being victims of violence (5.0%) compared to their male counterparts (3.7%). In addition, part-full AI/AN family members (9.7%) and close friends (15.8%) were at greater risk of being victims of violence than non-AI/AN family members (6.6%) and close friends (10.1%). Further, part-full AI/AN females tended to self-report being victims of violence at a higher rate than AI/AN males for family members (females = 11.0%, males = 8.2%) and close friends (females = 20.1%, males = 10.8%).

And third, utilizing the same data as Hishinuma et al. (2005), Munnelly et al. (2018) compared part-full AI/AN adolescents to (1) part-full Native Hawaiians, (2) mixed AI/AN and Native Hawaiians, and (3) non-AI/AN/Native Hawaiians (i.e., Other ethnic group). Overall, this study found AI/AN adolescents, as compared to the other three ethnic groups, had relatively more non-traditional families with a smaller social network and may be more at risk for academic difficulties and health issues, with particular risk for mental health issues for those of mixed AI/AN-Native Hawaiian ancestry. In particular, mixed AI/AN-Native Hawaiians (1) worried more about their mental health in the past month (compared to AI/ANs and the Other ethnic group); (2) had more serious mental health problems in the past six months; and (3) had more recent counseling or any other mental health service. AI/ANs had a higher proportion who discussed problems with family members or friends relative to the other ethnic groups; however, AI/ANs also had a higher percent who self-reported that this did not help at all (as compared to Native Hawaiians and the Other ethnic group). Further, AI/ANs had a greater preference seeing a church minister or priest when experiencing mental health problems relative to the other three groups.

These three empirical efforts suggested that, while positive protective factors existed, AI/AN adolescents in Hawai'i may have experienced substantially more negative major life events and self-report more traditional forms of mental health symptoms (e.g., symptoms of depression, anxiety, conduct, and substance use). However, to date, there has not been a study examining AI/AN adolescents in Hawai'i and their major life events and mental health symptoms.

Purpose

The purpose of the present study is to examine the major life events and mental health symptoms among four mutually exclusive adolescent ethnic groups residing in Hawai'i: (1) AI/ANs; (2) AI/AN-Hawaiians; (3) Native Hawaiians; and (4) Other (non-Indigenous). The two

previous studies (i.e., Hishinuma et al., 2005; Munnelly et al., 2018) that used the same data set examined demographic, cultural, psycho-social, and violence victimization. In the present study, major life events are disaggregated based on stressors for the youth themselves, family members, and close friends. Demographic and social-support variables are used as co-variates to control for existing group differences. Based on Munnelly et al.'s (2018) prior finding of mixed AI/AN-Native Hawaiians having higher rates of self-reported mental health issues, we hypothesized that this same group would also have higher rates of self-reported negative life events and mental health symptoms as compared to the other three ethnic groups. Although the data are from the 1990s, these data are the only data set with such rich variables and this effort will further advance our understanding by clarifying the prevalence and risk-protective factors for AI/AN adolescents in Hawai'i.

METHODS

Sample Description

The data utilized for the present study were from Hishinuma et al. (2005) and Munnelly et al. (2018). These data were based on a five-year longitudinal cohort study conducted by the National Center on Indigenous Hawaiian Behavioral Health using the Hawaiian High Schools Health Survey (HSHS; see Andrade et al., 2006). The HSHS was based on the Sequoia High School Health Survey (Ackerson, Wiegman-Dick, Manson, & Baron, 1990). A total of 7,317 high school students (Grades 9-12) completed 12,284 surveys from the 1991-1992 to 1995-1996 school year across three Hawaiian Islands. For student participants who completed more than one questionnaire across the five-year period, the data from their first survey that they completed were utilized. Only 103 (1.4% of 7,317) did not complete the ethnicity question (see Measures section). Given the purpose of present study, data from these 103 students were not included in the analyses.

Table 1 presents the sample description ($N = 7,214$) with four mutually exclusive ethnic groups:

- 1) 287 of AI/AN ancestry (A; full or part, but no Native Hawaiian ancestry)
- 2) 614 of AI/AN and Native Hawaiian ancestries (AH; which could include other ancestries)
- 3) 4,219 of Native Hawaiian ancestry (H; full or part, but no AI/AN ancestry)
- 4) 2,094 of Other ancestry (O; with no AI/AN and/or Native Hawaiian ancestry), including Chinese American (0.9%), Japanese American (22.0%), European American (9.9%),

Filipino American (16.3%), Portuguese (0.8%), Korean American (1.0%), Hispanic (0.4%), Samoan (1.3%), Tongan (0.3%), African American (0.2%), Puerto Rican (0.1%), or Mixed or other but no Native Hawaiian or AI/AN (46.6%)

Native Hawaiian adolescents were over-represented because the original purpose of the five-year study was to examine the mental health of Native Hawaiians. More females than males completed surveys, with this difference greater for AI/AN-Hawaiians as compared to Native Hawaiians and Others. There were more ninth graders primarily because we examined the first questionnaire completed for each student. The three indigenous groups had significantly more ninth graders than the Other group, and the Other group had significantly more eleventh graders than AI/AN-Hawaiians and Native Hawaiians. Despite these grade-level differences, there were no age differences (overall $p > .05$) among the four groups: AI/AN ($m = 15.5$, $sd = 1.3$, $n = 287$); AI/AN-Hawaiian ($m = 15.4$, $sd = 1.2$, $n = 613$); Native Hawaiian ($m = 15.5$, $sd = 1.3$, $n = 4,216$); and Other ($m = 15.5$, $sd = 1.2$, $n = 2,090$).

Measures

Ethnicity Group. Ethnicity was based on two questions: (1) “What is your biological mother’s ethnic background (‘nationality’ or race)?” and (2) “What is your biological father’s ethnic background (‘nationality’ or race)?” The response choices were: “Hawaiian, Chinese, Japanese, Caucasian, Filipino, Portuguese, Korean, Hispanic, Samoan, Tongan, Black, American Indian/Alaska Native, Puerto Rican, Don’t Know, and Other.” The instructions indicated, “Check all that apply.” The four ethnic groups were defined as follows: (1) AI/AN = mother and/or father with AI/AN ancestry, but neither parent with Native Hawaiian ancestry; (2) AI/AN-Hawaiian = mother and/or father with AI/AN ancestry, and at least one parent with Native Hawaiian ancestry; (3) Native Hawaiian = mother and/or father with Native Hawaiian ancestry, but neither parent with AI/AN ancestry; and (4) Other = no parent with AI/AN or Native Hawaiian ancestry.

Gender. Gender was based on, “What is your sex?” with 1 = male and 2 = female.

Grade Level. Grade level was based on, “What is your grade in school right now?” with 9, 10, 11, and 12 as response choices. Grade level was based on the first survey completed by each participant.

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Table 1
Sample Characteristics (N = 7,214)

		Total		One-Way χ^2	Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Two-Way χ^2		
		<i>N</i>	% ^a	Multiple Comparisons (Pairwise) ^b	<i>n</i>	% ^a	<i>n</i>	% ^a	<i>n</i>	% ^a	<i>n</i>	% ^a	<i>Overall R</i> ^{2c}	Multiple Comparisons (2x4 Crosstabs) <i>p</i> ^d	Multiple Comparisons (2x2 Crosstabs) ^e
Ethnicity		7,214	100.0	H > O > AH > A	287	4.0	614	8.5	4,219	58.5	2,094	29.0			
Gender What is your sex?	Female	3,725	51.7	Females > Males	154	53.7	348	56.7	2,184	51.8	1,039	49.6	.001	*	AH > H & O
	Male	3,484	48.3		133	46.3	266	43.3	2,031	48.2	1,054	50.4			
Grade Level What is your grade in school right now?	9th	2,925	40.6	9th > 10th & 11th > 12th	125	43.9	282	46.0	1,780	42.3	738	35.3	.006	****	A, AH, & H > O
	10th	1,549	21.5		58	20.4	124	20.2	896	21.3	471	22.6			
	11th	1,445	20.1		57	20.0	106	17.3	787	18.7	495	23.7		****	O > AH & H
	12th	1,278	17.8		45	15.8	101	16.5	747	17.7	385	18.4			

Note: AI/AN = American Indian or Alaska Native

* $p < .05$, **** $p < .0001$

^aColumn percents

^bOne-way multiple comparisons were performed only if the overall one-way chi-square test was statistically significant; all overall one-way chi-square tests were statistically significant ($p < .05$)

^cSquare of the phi coefficient for interaction

^dTwo-way multiple comparisons (2x4) were performed only if the overall two-way chi-square test was statistically significant; all overall two-way chi-square tests were statistically significant ($p < .05$)

^eTwo-way multiple comparisons (2x2) were performed only if the two-way multiple comparisons (2x4) were statistically significant ($p < .05$)

Age. Age was based on, “How old are you now?” with 12, 13, 14, 15, 16, 17, 18, 19, and 20 as response choices.

Main Wage Earner’s Education. “Main wage earner” was defined as the “breadwinner, who brings in the main money support into the family.” Main wage earners’ education was based on, “How much school did the main wage earner have?” with the following codes and response choices: (1) “8th grade or less”; (2) “some high school”; (3) “high school graduate or G.E.D.” (general educational development); (4) “some college or community college”; (5) “college graduate”; (6) “master’s degree”; and (7) “doctoral degree (Ph.D., medical, law).”

Main Wage Earner’s Income Source. Main wage earners’ income source was based on, “For the wage earner checked above, what is his/her source of income?” with the response choices: “employed part-time”; “employed full-time”; “unemployed; welfare”; “self-employed/own business or farm”; “retired”; and “disability.” These seven choices were coded into four more homogenous

categories: (1) unemployed, welfare, or disability; (2) retired or employed part-time; (3) self-employed/own business or farm; and (4) employed full-time.

Family Support and Friends' Support. Used as co-variates, family support and friends' support were based on six items each from the reliable and valid Perceived Social Support Scale (Procidano & Heller, 1983). One of the six items was reverse-scored resulting in higher mean scores reflected higher levels of social support. Both of these scales were found to be reliable and valid with the HSHS sample (e.g., construct validity; positive association with grade-point average, negative correlation with suspensions and school infractions; Hishinuma et al., 2004).

Major Life Events Scale (MLES). The Major Life Events Scale (MLES) originated from Andrews, Lewinsohn, Hops, and Roberts (1993). The instructions were as follows: "Some events are listed on the left side of the chart below. We would like to know which of them has happened within the past 6 months and who it has happened to. If an event has happened, please put a check in the box under the person(s) it happened to." The students could check off boxes associated with "Family Member," "Close Friend," "Yourself," or "No One." There were 14 items: (1) "Died"; (2) "Had an illness or accident requiring hospitalization"; (3) "Was a victim of violence (was physically harmed by someone)"; (4) "Was arrested or got in serious trouble with the law"; (5) "Lost job or finances got worse"; (6) "Broke up with girl/boyfriend, got divorced, or separated"; (7) "Re-married or started living with someone"; (8) "Got pregnant (or got someone pregnant)"; (9) "Got in a lot of arguments or fights"; (10) "Had problems with drugs or alcohol"; (11) "Tried to commit suicide"; (12) "Left home or moved away"; (13) "Important possession stolen"; and (14) "Got in car or bike accident." The "Yourself" did not include, "Died" because the youth completing the survey could not have died. Items that were not checked off were scored 0, and items that were checked off were scored 1, with higher mean scores reflecting more major life events. Individual items (e.g., "was a victim of violence"; Hishinuma et al., 2005) and the whole scale have been shown to be reliable and valid (e.g., Makini et al., 2001; Miyamoto et al., 2001) for the HSHS sample.

Depressive Symptoms. Depressive symptoms were measured using the reliable and valid Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The 20 items were rated on a 0–3 scale: 0 = "rarely or none of the time (0–1 day)"; 1 = "some or little of the time (1–2 days)"; 2 = "a moderate amount of time (3–4 days)"; and 3 = "most or all of the time (5–7 days)." Four composite mean scores were derived based on prior research, including on the HSHS sample (e.g., Hishinuma et al., 2012): (1) Negative Affect Factor, 13 items; (2) Positive Affect Factor, 5 reverse-scored items; (3) Social Factor, 2 items; and (4) Overall = mean of 3 factors. Higher scores

indicated higher levels of depressive symptoms. The CES-D was found to be valid with the HSHS sample (e.g., criterion validity, CES-D predicted Diagnostic Interview Scale for Children major depressive disorder; Prescott et al., 1998).

Anxiety Symptoms. Anxiety symptoms were represented by the reliable and valid State-Trait Anxiety Inventory (STAI, Form X; Spielberger, Gorsuch, & Lushene, 1970). The STAI State subscale consisted of 20 items rated on “how you feel now” with 0 = “not at all,” 1 = “somewhat,” 2 = “moderately so,” and 3 = “very much so.” Available for only one of the school years, the STAI Trait subscale consisted of 20 items rated on “how you generally feel” with 0 = “almost never,” 1 = “sometimes,” 2 = “often,” and 3 = “almost always.” Based on prior research using the HSHS sample (e.g., Hishinuma et al., 2000), both the State and Trait subscales factored into positively worded (anxiety absent) and negatively worded (anxiety present) items: State Anxiety Absent = 10 items reverse-scored; State Anxiety Present = 10 items; Trait Anxiety Absent = 7 items reverse-scored; and Trait Anxiety Present = 12 items. One Trait Anxiety Present item (i.e., “I try to avoid facing a crisis or difficulty”) was omitted because of the poor psychometric properties. Three composite scores were also computed: (1) State-Anxiety Overall (mean of the 2 State subscales); (2) Trait-Anxiety Overall (mean of the 2 Trait subscales); and (3) Overall (mean of the State-Anxiety Overall and Trait-Anxiety Overall composites). Higher mean scores indicated higher levels of anxiety symptoms. Cronbach alphas ranged from .83 to .93 and the inter-factor correlations were supportive of the STAI’s validity for the HSHS sample. The STAI’s construct validity was supported with the HSHS sample (e.g., STAI predicted Diagnostic Interview Scale for Children anxiety disorders; Hishinuma, Miyamoto et al., 2001).

Conduct Symptoms. Conduct symptoms were measured using the reliable and valid Braver Aggressiveness Dimension Scale (BADs; Braver, Fogas, Sandler, & Wolchik, 1986). The BADs consisted of 14 items rated on a 0–2 scale: 0 = “not true,” 1 = “somewhat true,” and 2 = “very or often true.” Four composite mean scores were derived based on prior research using the HSHS sample: (1) Negative Mood Factor, 7 items; (2) Intimidation Factor, 5 items; (3) Vocal Factor, 2 items; and (4) Overall = mean of 3 factors (e.g., Chang, 2007). Higher scores indicated higher levels of aggression/conduct symptoms. Cronbach alpha was .85 for the HSHS sample (Chang, 2007). The BADs was found to be valid with the HSHS sample (e.g., construct validity, negatively correlated with measures of academic achievement; Hishinuma, Foster et al., 2001).

Substance Use Symptoms. Substance use was measured using an abbreviated version of the Substance Abuse Subtle Screening Inventory for Adolescents (SASSI-A; Miller, 1990). This

abbreviated version consisted of six items with 0 = “no” and 1 = “yes.” Three composite mean scores were derived based on prior research using the HSHS sample (Nishimura et al., 2001): (1) Substance Use (subscale), 3 items; (2) Negative Impact, 3 items; and (3) Overall = mean of 2 factors. Higher scores indicated higher levels of substance use. Cronbach alpha was .66 for the 6 items (Nishimura et al., 2001). The SASSI-A was found to be valid with the HSHS sample (e.g., criterion validity, SASSI-A predicted Diagnostic Interview Scale for Children substance abuse and dependency; Nishimura et al., 2001).

Procedure

Parents and students were provided written materials describing the nature and purpose of the HSHS questionnaire. Parents were asked to return a postcard if they did not want their child to participate. Students who had their parents’ permission to participate had the option of providing their formal agreement or not on the day of the HSHS administration. Students who provided their written agreement completed the survey in their homerooms with supervision by their teachers. At the time that this study was conducted in 1992, this type of “passive consent” was considered appropriate and was approved by the University of Hawai‘i at Mānoa’s Committee on Human Studies (i.e., Institutional Review Board). The survey generally took 30 to 45 minutes for the students to complete. Approximately 60% of the student body was surveyed. A previous analysis showed that there was a higher proportion of females who were surveyed, and individuals who were surveyed were more likely to have fewer absences, suspensions, and conduct infractions, and higher grade-point averages (Andrade et al., 2006).

Data Analysis

The analyses were conducted using SAS 9.4. One-way and two-way chi square tests were utilized to determine whether there were frequency and proportional differences based on ethnicity, gender, ethnicity-by-gender, grade level, and ethnicity-by-grade level.

Means, standard deviations, and sample sizes were computed for each of the dependent measures (i.e., major life events and symptoms of depression, anxiety, conduct, and substance use) for each of the four groups. Analysis of variance (ANOVA) and Student-Neuman-Keuls pairwise comparisons were employed to determine whether there were group differences for each of the dependent variables. The overall variance accounted for was also computed as a measure of effect

size. In addition, for the four sets of mental health symptoms, multiple regression was utilized with the following covariates as part of the model of independent variables: gender, grade level, main wage earner's education, main wage earner's income source, family support, friends' support, and the three major life events (i.e., self, family member, close friend). For all tests, we set $\alpha = .05$ because we employed Student-Neuman-Keuls, which takes into account the number of pairwise comparisons.

RESULTS

Table 2 (see Appendix) presents the results of the four ethnic-group differences based on the dependent measures of major life events and mental health symptoms. When no covariates were utilized, ethnic group was statistically significant for 18 of the 21 dependent measures. The most consistent pattern was that the AI/AN-Hawaiian group scored higher and the Other ethnic group scored lower on the outcome measures. The AI/AN group also scored on the higher side, but typically alongside the AI/AN-Hawaiian group for five of the dependent measures (i.e., self and close friend major life events, conduct overall, substance use Factor 1, and overall substance use). Specific to major life events, AI/ANs and AI/AN-Hawaiians had higher self and close friend major life events than the Native Hawaiian and Other ethnic group, and AI/AN-Hawaiians had higher family member major life events than the other three ethnic groups. However, the variances accounted for by the group differences were relatively small, ranging from only .001 to .022.

When controlling for the nine covariates (i.e., gender, grade level, main wage earner's education, main wage earner's income source, family support, friends' support, and three major life events), the overall pattern changed with the Native Hawaiian group scoring generally higher on 11 of the 13 dependent measures that had statistically significant group differences, with the exception being for substance use symptoms. The AI/AN-Hawaiian group remained high as well on 8 of the 13 dependent measures, including for substance use symptoms. The overall model with 10 independent variables (i.e., 9 covariates and ethnic group) resulted in substantially higher variances accounted for ranging from .063 to .335.

DISCUSSION

The purpose of the present study was to examine the major life events and mental health symptoms among four mutually exclusive adolescent ethnic groups residing in Hawai'i: (1)

AI/ANs; (2) AI/AN-Hawaiians; (3) Native Hawaiians; and (4) Other (non-Indigenous).

The overall results were consistent with our hypothesis indicating generally higher self-reported rates of predominantly negative major life events and mental health symptoms for AI/AN-Hawaiian youth. However, when taking into account the differential impact of the nine covariates (including major life events), the overall pattern was that the Native Hawaiian adolescent group self-reported higher symptoms, followed by AI/AN-Hawaiians.

Limitations

As indicated in Munnelly et al. (2018), there were several limitations to the use of this data set. First, the data were from the early to mid-1990s. However, the data set was used because it was the only large existing database that included an adequate number of AI/ANs with raw data at the individual level. The relevant question is, “Has there been any major event or trend since the 1990s that would make the results different if the same study was conducted at present?” One substantial movement that started in the 1960s and 1970s was the Native Hawaiian Renaissance (e.g., Tsai, 2009). This movement increased awareness of past injustices (e.g., overthrow of the Native Hawaiian monarchy), fostered pride in Native Hawaiian culture, and resulted in concrete advances for Native Hawaiians (e.g., immersion charter schools). In addition, there has been a general increase in minority and indigenous perspectives and rights nationally and globally (e.g., United Nations, 2007). Particular to Native Hawaiians and AI/ANs, Native Hawaiians supported the protests of building the Dakota Access Pipeline on the Standing Rock Indian Reservation in North Dakota in 2016, and likewise, AI/ANs supported the protests of building the Thirty Meter Telescope on Mauna Kea on Hawai‘i Island in 2019 (Gomes, 2019; Ladao & Nakaso, 2019). Therefore, it is important to conduct studies that will attempt to either replicate these findings or refute them based on contemporary research.

Second, there was variability in the sample sizes for the four ethnic groups (i.e., 287 AI/ANs, 614 mixed AI/AN-Native Hawaiians, 4,219 Native Hawaiians, 2,094 in the Other ethnic group). Therefore, there was more statistical power for pairwise comparisons that involved the Native Hawaiians and Other ethnic group.

And third, we did not analyze group differences among each of the 14 major life events given the relatively low prevalences for some of the items (e.g., suicide attempt) and the scope of this study.

Implications

Despite these limitations, this study provided several implications. AI/AN-Hawaiians and AI/ANs self-reported more negative major life events, and AI/AN-Hawaiians had generally higher mental health symptoms. The latter finding is consistent with additive risk for youth who are indigenous to more than one culture, especially when the indigenous cultures have been colonized and marginalized. Thus, the additive risk calls for commensurate supports and resources that are responsive to the unique combination of Native Hawaiian and AI/AN cultures.

To complicate matters, however, when the covariates, including major life events, were controlled for, there was increased mental health symptom risk for Native Hawaiians and the total variance accounted for increased from a high of .022 to a high of .335. This set of findings suggests the need for prevention and treatment efforts for all ethnic groups that decrease stressful life events, including injury and mortality, suicidality, victimization, crime, substance use, drastic vocational and financial challenges, and major negative disruptions to social networks. In addition, however, the overall finding of Native Hawaiian youth being at greater risk based on both this study and the previous literature (e.g., Andrade et al., 2006) reinforces the unfortunate status of Native Hawaiian youth in their own homeland and the social determinants of health and mental health (Kaholokula, 2017; Papa Ola Lōkahi, 2020). This set of circumstances calls for a strategic indigenous, strength- and place-based approach that affords the necessary resources to improve the mental health of Native Hawaiians.

The effect sizes of the present study, even at the high of .335, suggest that much more needs to be considered to improve the mental health of AI/ANs. For example, as indicated by the American Psychiatric Association (2017), key barriers to accessing AI/AN mental health services include: economic obstacles (cost, lack of insurance); lack of awareness about mental health and available services; stigma associated with mental illness; lack of culturally sensitive mental health services; mistrust of health care providers; and lack of appropriate intervention strategies (including integration of mental health and primary health care services). An added barrier for AI/AN youth in Hawai'i is that they are difficult to identify because they are not in any particular geographic location. Therefore, strategic outreach efforts are needed, including AI/AN and Native Hawaiian leaders engaging their communities to help identify and screen AI/AN youth with the goal of providing individualized services that minimize risk factors and enhance protective factors, and to ideally create a platform for AI/ANs for promoting better and more effective youth and family-based healing strategies.

Such efforts must also consider the unique role of indigenous culture for AI/ANs and Native Hawaiians in Hawai‘i, including the complexity of mixed ancestry and identity, given that the large majority of AI/ANs and Native Hawaiians in Hawai‘i are of mixed heritage. Recent events that have gained national attention have also demonstrated a common kindred spirit between AI/ANs and Native Hawaiians. As indicated above, Native Hawaiians supported the protests of building the Dakota Access Pipeline on the Standing Rock Indian Reservation in North Dakota in 2016, and AI/ANs supported the protests of building the Thirty Meter Telescope on Mauna Kea on Hawai‘i Island in 2019 (Gomes, 2019; Ladao & Nakaso, 2019). As indicated by Munnelly et al. (2018), a youth AI/AN cultural identification scale has yet to be developed that is tailored to AI/AN youth in Hawai‘i who are more likely to be of mixed ancestry. Research on such an instrument should provide greater insight into the role of culture for AI/AN youth in Hawai‘i.

In particular reference to the present study, future research should examine whether there are patterned associations between individual stressful life events and specific mental health symptoms to better target prevention and intervention efforts. When such associations are identified and involve, for example, such negative life events as being a victim or perpetrator of crime, consideration should be given to more culturally appropriate interventions, such as restorative justice (Martin, 2014). In addition to this, however, it is important to also determine the association between protective factors, such as resilience and mental health well-being, and to incorporate nurturing these protective factors in interventions. Given the smaller family size of AI/ANs in Hawai‘i, greater supports may be needed both for and surrounding the family.

These implications and future research derived from the present study complement well the previous ramifications explicated by Munnelly et al.’s (2018) discussion points as follows: First, AI/AN youth appear to be open to different avenues of protective factors, including social supports and alternative-complementary interventions. Second, creative and/or targeted assistance are needed, including culturally appropriate and “bottom-up” community-based approaches (Allen et al., 2011; Gone & Trimble, 2012; Goodkind et al., 2010; Markstrom, Whitesell, & Galliher, 2011; Novins & Bess, 2011; Snipp & Saraff, 2011). Third, positive, strength-based youth developmental approaches should be considered (Allen et al., 2011; Antonio & Chung-Do, 2015) in more traditional environments (e.g., one-on-one therapy), but also in non-traditional venues (e.g., in schools, at churches, in the community; Castagno & Brayboy, 2008; using technology, such as telepsychiatry for rural and neighbor islands). And fourth, we should address more macro historical, political, and sociological issues that may more likely impact all indigenous youth (e.g.,

Campbell & Evans-Campbell, 2011; Center for Native American Youth, 2016; Gone & Trimble, 2012; Goodkind et al., 2010; Sequist, 2017).

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APPENDIX

Table 2
Ethnic Group Differences in Major Life Events and Mental Health Symptoms

Table 1. Means, Standard Deviations, and Correlations for the Study Variables																								
Category	Variable	Total			Full of Part AI/AN (A)			Part AI/AN & Native Hawaiian (AH)			Full of Part Native Hawaiian (H)			Not AI/AN or Native Hawaiian (O)			Analysis of Variance					Multiple Regression		
		M	SD	N	m	sd	n	m	sd	n	m	sd	n	m	sd	n	F	df	R ^{2a}	n ^a	Pairwise Multiple Comparisons ^b	R ^{2c}	p ^c	Pairwise Multiple Comparisons ^d
Major Life Events	Youth (Self)	0.07	0.11	6,919	0.09	0.12	278	0.09	0.13	590	0.07	0.10	4,013	0.07	0.10	2,038	11.3	3, 6915	.005	****	A, AH > H, O	n.a.	n.a.	n.a.
	Family Member	0.16	0.16	6,919	0.17	0.17	278	0.20	0.18	590	0.17	0.16	4,013	0.13	0.14	2,038	51.9	3, 6915	.022	****	AH > H, A > O	n.a.	n.a.	n.a.
	Close Friend	0.13	0.17	6,919	0.17	0.21	278	0.16	0.19	590	0.14	0.16	4,013	0.12	0.16	2,038	16.0	3, 6915	.007	****	A, AH > H, O	n.a.	n.a.	n.a.
Depressive Symptoms	Negative Affect (Factor 1)	0.67	0.59	6,750	0.68	0.61	267	0.75	0.63	576	0.68	0.59	3,904	0.63	0.59	2,003	6.9	3, 6746	.003	****	AH > O	.294	*	H > O
	Positive Affect (Factor 2)	1.19	0.59	6,718	1.16	0.64	268	1.23	0.62	575	1.19	0.57	3,881	1.17	0.60	1,994	1.7	3, 6714	.001		none	.170	*	H, AH > A
	Social (Factor 3)	0.47	0.69	6,671	0.49	0.73	266	0.57	0.76	572	0.47	0.69	3,843	0.44	0.67	1,990	5.5	3, 6667	.002	***	AH > A, H, O	.133		AH > A, O
	Overall	0.78	0.49	6,751	0.78	0.52	268	0.85	0.54	576	0.78	0.49	3,904	0.75	0.49	2,003	6.6	3, 6747	.003	***	AH > H, A, O	.275	**	AH, H > A; H > O
Anxiety Symptoms	State-Anxiety Absent	1.28	0.74	6,741	1.34	0.78	272	1.36	0.78	572	1.27	0.74	3,892	1.28	0.73	2,005	3.1	3, 6737	.001	*	none	.231		none
	State-Anxiety Present	0.67	0.57	6,737	0.62	0.57	271	0.72	0.59	572	0.70	0.57	3,891	0.61	0.54	2,003	12.6	3, 6733	.006	****	AH, H > A, O	.147	****	AH, H > A; H > O
	Trait-Anxiety Absent	1.29	0.66	2,947	1.31	0.67	144	1.35	0.67	205	1.28	0.67	1,390	1.28	0.66	1,208	0.9	3, 2943	.001		none	.272		none
	Trait-Anxiety Present	0.99	0.59	2,950	0.95	0.59	144	0.96	0.56	205	1.03	0.60	1,391	0.96	0.57	1,210	4.2	3, 2946	.004	**	none	.231	**	H, O > A; H > AH
	State-Anxiety Overall	0.98	0.53	6,744	0.98	0.56	272	1.04	0.56	573	0.99	0.54	3,893	0.94	0.51	2,006	5.6	3, 6740	.002	***	AH > O	.256	**	AH, H > A; H > O
	Trait-Anxiety Overall	1.14	0.52	2,950	1.13	0.54	144	1.16	0.52	205	1.16	0.52	1,391	1.12	0.52	1,210	1.3	3, 2946	.001		none	.335		H > A
	Overall	1.01	0.52	6,795	1.01	0.53	275	1.07	0.54	578	1.01	0.52	3,917	1.00	0.50	2,025	2.7	3, 6791	.001	*	none	.277	*	H, AH, O > A
Conduct Symptoms	Negative Mood (Factor 1)	0.56	0.46	6,988	0.57	0.50	274	0.62	0.48	598	0.57	0.46	4,064	0.53	0.45	2,052	7.5	3, 6984	.003	****	AH > O	.234		none
	Intimidation (Factor 2)	0.19	0.31	6,983	0.18	0.30	274	0.22	0.34	597	0.20	0.32	4,063	0.15	0.29	2,049	12.5	3, 6979	.005	****	AH > A, O; H > O	.159	***	H, AH > A, O
	Vocal (Factor 3)	0.44	0.60	6,964	0.45	0.60	274	0.48	0.62	594	0.46	0.61	4,049	0.40	0.57	2,047	5.9	3, 6960	.003	***	AH > O	.063		H > O
	Overall	0.40	0.36	6,988	0.40	0.37	274	0.44	0.39	598	0.41	0.37	4,064	0.36	0.35	2,052	11.7	3, 6984	.005	****	AH, H, A > O	.184	**	H > A, O
Substance Use Symptoms	Substance Use (Factor 1)	0.19	0.30	6,671	0.23	0.32	268	0.21	0.32	571	0.19	0.30	3,823	0.17	0.29	2,009	5.4	3, 6667	.002	**	A > H, O; AH > O	.207		none
	Negative Impact (Factor 2)	0.05	0.16	6,662	0.05	0.17	267	0.07	0.20	571	0.05	0.16	3,815	0.04	0.16	2,009	4.2	3, 6658	.002	**	AH > A, H, O	.140		AH > A, H
	Overall	0.12	0.20	6,671	0.14	0.22	268	0.14	0.23	571	0.12	0.20	3,823	0.11	0.20	2,009	6.0	3, 6667	.003	***	A, AH > O	.230		none

Note: AI/AN = American Indian or Alaska Native; n.a. = not applicable (because major life events were employed as covariates)

p* < .05, *p* < .01, ****p* < .001, *****p* < .0001

^aWithout covariates

^bt -test pairwise multiple comparisons without covariates adjusting the means

^cWith covariates of sex, grade level, main wage earner's education level, main wage earner's income, family support, friends support, and major life events for youth, family member, and close friend; *p* value of ethnic group main effect

^dt -test pairwise multiple comparisons with covariates adjusting the means