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SUICIDE AND SUICIDAL-RELATED BEHAVIORS AMONG INDIGENOUS PACIFIC ISLANDERS IN THE UNITED STATES

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The authors present a comprehensive review on U.S. Pacific Islander suicide and suicide-related behaviors to extend the knowledge and understanding of suicide and suicide-related behaviors among the indigenous peoples of the state of Hawai'i, the territories of American Samoa, Guam, Commonwealth of the Northern Mariana Islands, and the Pacific Island Nations of Micronesia (Federated States of Micronesia, the Republic of Belau [Palau], and the Republic of the Marshall Islands). Historical, geographic, epidemiological, social, and cultural information is presented on these Pacific Island populations. Suicide behavioral data are presented for Pacific Islanders living within the U.S. and affiliated Pacific territories and nations from the existing scientific literature along with archival data and 2 epidemiological studies that assess suicidal behaviors and related psychosocial factors and measures of psychopathology among large community samples of youth in Hawai'i. The authors describe common patterns and differences among these populations, along with social-cultural practices that may explain suicide phenomenology among these U.S. indigenous peoples who—while small in numbers when compared with the total U.S. population—possess striking health disparities when compared to other populations within the U.S. and in their island homelands.

Every three days someone in Hawai'i dies from suicide (Galanis, 2006). Suicide is an irreversible act that is sudden and devastating. Determining the epidemiology, along with the biological, psychological, social, developmental, and cultural factors that underpin

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suicide is needed in order to diminish and, hopefully, eliminate suicide morbidity and mortality.

Suicide remains a serious public health concern in the United States. In 2003, the suicide rate was 10.73 per 100,000 (Centers for Disease Control [CDC], 2006a), three times higher than homicides, and twice as high as deaths from HIV/AIDS (National Institute of Mental Health [NIMH], 2004). Males have higher rates of completed suicide (4:1), whereas females have higher rates for attempts (3:1; NIMH, 2003). Clinical anecdotes of suicide reveal that despite lethal methods, the illusory hope of relief from their suffering outweighs the rational deduction that suicide does not resolve the situation.

Over the past six decades suicide has become the fasting growing cause of death facing youth in America (U.S. Public Health Service [USPHS], 1999). Youth suicide in the U.S. has nearly tripled from 1952–1996 alone, and from 1980–1996, suicide rates among 15–19-year-olds increased by 14% and for 10–14-year-olds increased 100% (USPHS, 1999). Similar patterns and trends exist among indigenous Pacific Islander populations.

Suicide among U.S. Pacific Islanders

Epidemiological studies conducted among indigenous populations in Hawai'i, the Pacific, and New Zealand show pronounced spikes in completed suicide rates among youth, followed by declining rates through middle age and the elderly, often without the bimodal second spike among the elderly that is commonly seen in the general U.S. population (Booth, 1999; Galanis, 2006; Hunter & Harvey, 2002; State of Hawai'i Department of Health [SOHDOH], 2004; Tsuang et al., 1992; Yuen, Yahata, & Nahulu, 1999). Unfortunately, much of the U.S. suicide data for Pacific Islanders are aggregated into the broad category of Asian Americans and Pacific Islanders, consequently losing important differences between the two groups. A literature search revealed that disaggregate suicide data on U.S. Pacific Islander populations are very limited. Where data are disaggregated, Asian groups have been found to have substantially lower rates of completed suicide than those of Whites (Department of Health and Human Services [DHHS], 1999), whereas rates of completed suicide among Pacific Island populations are some of the highest in the world (Booth, 1999).

Pacific Islander Ethnic Groups, Populations, and Social Histories

The term *Pacific Islander* is part of the Asian and Pacific Islander racial category established in 1977 by the U.S. Office of Management, Directive 15. White, Black, American Indian or Alaskan Native, and Hispanic are the other four federal racial categories. For this article, the term *Pacific Islanders* refer to descendents of the original peoples of lands claimed by the U.S., which include Hawai'i, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands (CNMI), and the Pacific Island Nations of Micronesia, which include the Federated States of Micronesia (FSM), the Republic of Belau (Palau), and the Republic of the Marshall Islands. In addition to apparent influences upon indigenous people, a social factor that impacts wellness and health is the ability to effectively communicate. English is an official language of these U.S. Pacific Islands, but proficiency levels vary immensely. With the exception of Hawai'i, over 50% of the populace communicate more effectively using their native language, in addition to the language of other Pacific Islanders and Pacific Rim countries. Pacific Islanders whose lands were not claimed by the United States (e.g., Tonga, Tahiti, Tokelau, Fiji, Papua New Guinea, Solomon Islands, Vanuatu, etc.) will not be discussed in this article. The 2000 Census (U.S. Census, 2001) showed that within the United States there are 874,414 Pacific Islanders, 0.3% of the total U.S. population (Native Hawaiians, 45.9%; Samoans, 15.2%; and Micronesians, 13.2% [80.1% Chamorro; 0.5% CNMI; 1.8% FSM; 5.8% Marshallese; 3% Belauan; 8.6% non-specified Micronesian]). Unlike Asians who share a common history of immigration to America, Pacific Islanders are not immigrants, but indigenous peoples whose health disparities, including suicide rates, mirror American Indians and Alaskan Natives (DHHS, 2001).

Aims and Purpose of this Article

This article has four aims. First, it reviews the existing literature on the epidemiology of completed and attempted suicide rates, as well as common patterns associated with gender and age for indigenous Pacific Islanders living within the United States and its affiliated

Pacific territories and nations. Second, it presents archival data on completed and attempted suicide for Native Hawaiians compared with other major ethnic groups in the State of Hawai'i. Third, it presents the findings of two epidemiological studies that assess suicidal behaviors and related psychosocial factors and measures of psychopathology among large (Study 1, $N = 4{,}182$, and Study 2, $N = 1{,}172$) community samples of youth in Hawai'i. Fourth, it reviews common patterns and differences found among these data that highlight possible explanations for suicide among these Pacific Island populations who, although small in numbers when compared to other U.S. populations, have striking health disparities when compared to other populations within America and their island homelands.

Results of Literature Review

Suicide is the leading cause of injury-related death in Hawai'i (Galanis, 2006) and the 11th (9.6 per 100,000, in 2002) leading cause of death in Hawai'i among all deaths (SOHDOH, 2002). When compared with the main island of O'ahu, suicide rates on the neighbor islands are 28% higher, with Maui and Hawai'i island residents having the highest rates (SOHDOH, 2004). Hanging or suffocation was the most common mechanism (45%), followed by firearm use (24%). Autopsy reports for O'ahu from 1997–1999 identified 64% had at least one negative life event documented, 28% a serious illness, and 27% had a relationship end. A third (31%) tested positive at autopsy for alcohol use, with heavy alcohol use more common in youth. A quarter (26%) tested positive for illicit drugs: methamphetamine (14%), marijuana, (8%), and cocaine (6%). The majority (62%) had a documented history of mental illness and 22% had a previous suicide attempt. The overall rates for completed suicide in Hawai'i have been equal to or greater than the national average with rate differences by age, gender, and ethnicity. Among fatal injuries, suicide was the leading cause of death for 25–34-year-olds, 35–44-year-olds, 45–64-year-olds, and the second leading cause of death for 15–24-year-olds (SOHDOH, 2004). Males in Hawai'i complete suicide more often than females at a rate of approximately 3 to 1.

Hawai'i–Completed Suicides among Hawaiians

In pre-European-contact Hawai'i, completed suicide was rare. Since Hawai'i began collecting suicide statistics in 1908, completed suicide rates for Hawaiians have been increasing (Kalish, 1968). Although the overall suicide rate for Hawai'i is comparable to the U.S. average, data from 2000–2004, disaggregated by age and ethnicity (see Figure 1), revealed significantly higher rates for younger Hawaiians (ages 15–44). Caucasians had the highest rates of those 45 years and older (Galanis, 2006). These trends are consistent with completed suicide age by gender trends for Hawai'i in the years 1990–2000.

The bimodal distribution of completed suicides in the United States and most Western nations where there is a peak in young adults, a leveling out, then another peak in the elderly, does not exist for Hawaiians. By contrast, Hawaiians display a sharp increase in suicide rates from adolescence to young adulthood with 52.8/100,000 for 15–24-year-olds, increasing to 72.4/100,000 for 25–44-year-olds, approximately seven times the national average

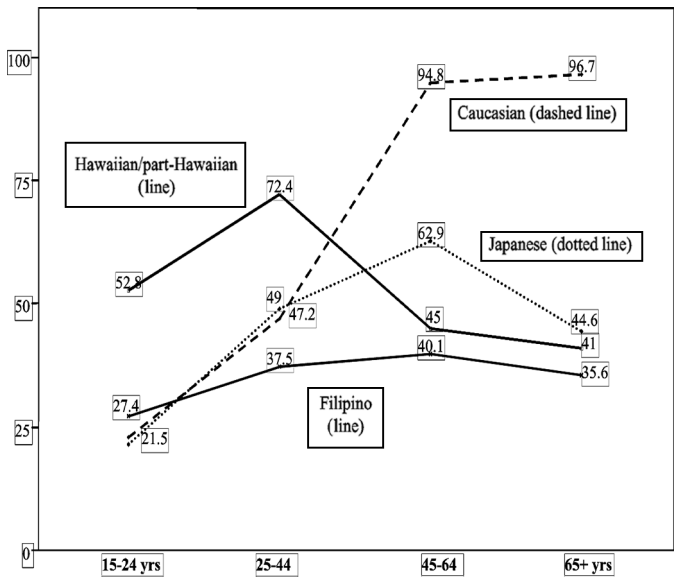

FIGURE 1 Annual suicide mortality rates (per 100,000) by age and major ethnic groups in Hawai'i, from 2000–2004 (graph from Galanis, 2006).

(see Figure 1). Rates start to drop sharply in the mid-40s and continue to drop in the middle-aged and elderly age groups. Completed suicide in Hawaiians is clearly a phenomenon of adolescents and young adults. In the 10–14-year-old group, Hawaiians account for 27% of the population in Hawai'i but account for 50% of the completed suicides (Yuen et al., 1999).

The Pacific—Completed Suicides among Samoans, Micronesians, Marshallese, and Others

In a study examining available data for 13 Pacific Island nations (excluding Hawai'i), Booth (1999) examined characteristics of completed suicides including age and gender, for the years 1960–1993. Completed suicides in Micronesia, Chuuk in particular, have some of the highest rates in the world (Booth, 1999; Rubinstein, 2002). Booth (1999) reports standardized suicide completion rates per 100,000 for Western Samoa, 34; Guam, 15; Chuuk State, 30; and Micronesia, 20. The differences in rates per 100,000 increase dramatically when youth (15–24-year-olds) are disaggregated and examined by gender for Western Samoa (64 males, 70 females); Guam (49 males, 10 females); Chuuk State (182 males, 12 females); and Micronesia (91 males, 8 females). In Micronesia, the most common method (80%) was hanging from a standing or seated position and leaning into the noose until oxygen supply was cut off (Hezel, 1989). The second, which was most common in Western Samoa, was paraquat ingestion, a toxic herbicide with no known antidote.

Similar to Hawaiians, indigenous Pacific Islanders from Micronesia, Guam, and Western Samoa have rates of completed suicide that increase sharply from adolescence to young adulthood, with rates dropping from the 30-year-age group, continuing to drop for middle age and elderly (Booth, 1999; Rubinstein, 2002). Rubinstein (1983) compared the distribution of completed suicides for Belau, Yap, Chuuk, Pohnpei, and the Marshall Islands from 1960–1980. The male suicide rates rose sharply in adolescence, peaking in ages 15–24. At older ages, the distribution of male suicide differed for each island group. Belau, Yap, and Pohnpei showed a sharp decrease after age 39, while Chuuk and the Marshall Islands show a second smaller increase in suicide at age 55–60. Through survey research in Micronesia, Rubinstein

(1983) suggested that the epidemic increase in adolescent male suicide starting in the 1960s is a cohort effect among youth of the first post-war generation, reflecting a breakdown of pre-war Micronesian village subsistence activities, which were organized around communal lineage-houses. With the disintegration of the traditional extended networks of intergenerational families, the complex developmental task of socialization fell to the much smaller immediate family. Intergenerational discord appears to be a trigger for adolescent suicide in Micronesia.

In a series of suicide autopsies related to Micronesian males, Rubinstein (1983) found that the word *anger* was used toward the family to describe emotions that immediately led up to the suicide act. Upon further interview, the definition of *anger* was similar to the way Americans describe depression. In addition, the suicide act had the connotation of an appeal to—rather than an angry retaliation toward—older family members (both siblings and parents). Similarly, Nahulu and Yuen (N. N. Andrade, 1998, personal communication) noted similar cultural meanings (i.e., "anger" used to describe "depression") and an appeal rather than retaliation, among Hawaiian youth suicide autopsies. In addition to the apparent change in social structure, Rubinstein (1983) also described a 12-year pattern of 25 suicides by hanging in the Marshall Islands, which he hypothesized as a process of modeling behavior. The original, dramatic suicide by hanging of a socially prominent young male caught in an ambivalent love triangle, was followed three days later by a second male's suicide due to marital problems. These events served as a catalyst for the community to infuse a new meaning into the act of suicide as a culturally patterned solution to intimate relationship dilemmas.

Results of Attempted Suicide in Hawai'i

State of Hawai'i Archival Data

Documented hospitalizations and emergency room visits for nonfatal suicide attempts vary by age, gender, and ethnic background. According to Galanis (2006) who examined injury data for Hawai'i, more than half (54%) of the attempted suicides are from ages 15 to 34, with the highest rates for 15- to 19-year-olds (18%). Only 3% of those 65 years and older made a suicide attempt

requiring hospitalization or a visit to an emergency room. Based on data from the 1999 Hawai'i Youth Risk Behavior Survey, Hawaiian youth (38.9%) had higher rates than Caucasian (34.1%) and other Asian American/Pacific Islanders (29.7%) of making a suicide attempt in the past year that required treatment (Nishimura, Goebert, Ramisetty-Mikler, & Caetano, 2005).

According to findings from the Youth Risk Behavior Surveillance System (CDC, 2006b), attempted suicide rates for Hawai'i youth were higher than the U.S. rates for all years (1993, 12.6% vs. 8.6%; 1995, 12.7% vs. 8.7%; 1997, 11.5% vs. 7.7%; 1999, 10.1% vs. 8.3%; and 2001, 13.4% vs. 8.8%). In addition, a study of adolescents in the state found Hawaiian youth had significantly higher rates of attempted suicide (12.7% vs. 11.4%), and rates of 18% in selected geographic areas in the state (Yuen et al., 1999).

Hawaiian Youth Community-Based Epidemiological Studies

NCIHBH EPIDEMIOLOGICAL STUDY 1 (1992–1996)

The National Center on Indigenous Hawaiian Behavioral Health (NCIHBH) at the Department of Psychiatry, John A. Burns School of Medicine, University of Hawai'i at Mānoa (UHM) conducted an epidemiological study of mental disorders among Hawai'i high school students with 4,182 students, Grades 9 to 12 from five high schools on three islands. Yuen and colleagues (2000) demonstrated that Hawaiian youth had significantly higher lifetime prevalence rates of suicide attempts (12.9%) than non-Hawaiian students (9.6%). Particularly at risk were Hawaiian adolescents whose parents had less than a 9th-grade education and whose parents were on welfare, disability, or were unemployed (lifetime suicide prevalence rates of 21.9% and 18.0%, respectively). In contrast, non-Hawaiians, whose parents fell into these categories, exhibited only modest increases in suicide attempts (14% and 12.5%, respectively). Hawaiians had higher mean symptom scores on all measures of psychopathology (depression, anxiety, aggression, and substance abuse) and Hawaiian cultural affiliation, rather than ethnicity, predicted a small but significant proportion of the variance in suicide attempt. Yuen et al. (2000) hypothesized that key transitions (as measured by grade levels) in adolescence are more difficult for Hawaiians to negotiate, and that Hawaiian youth with high levels of Hawaiian cultural

affiliation may be less acculturated to Western culture and may experience increased cultural conflict. Hawaiian adolescents with high levels of family support had lower rates of attempted suicide, suggesting that family support serves as a potential protective factor.

NCIHBH EPIDEMIOLOGICAL STUDY 2 (2001–2005)

Starting in 2001, the NCIHBH continued its epidemiological work through the Hawai'i High School Health Survey. This study required active consent from both youth and a parent/guardian. A community sample of 1,166 adolescents from ages 13–18, of which 694 (59.52%) were Hawaiian and 472 (40.48%) were non-Hawaiian, participated in this longitudinal study that observed the key developmental transitions from 8th grade to high school, and from the 12th grade to adulthood. The study was conducted in 12 schools on four islands with data collected from 2001–2005. Table 1 provides a description of those having made a lifetime suicide attempt compared to the total sample. Significantly more females, 12th graders, and those whose parents' educational level was some college or community college, or high school graduate/GED made a lifetime suicide attempt. Hawaiians were defined as those who had one or both parents with Hawaiian ancestry (and not someone who lives in Hawaii). Non-Hawaiians were defined as those who had no Hawaiian ancestry. Socioeconomic status was measured by the main wage earner's educational level.

The four psychiatric symptom scales of depression (CES-D; Radloff, 1977, see Prescott et al., 1998 for factor structure), anxiety (STAI; Spielberger et al., 1970), aggression (Braver Aggression Detection Scale [BADS]; Braver et al., 1986), and substance abuse symptoms (Substance Abuse Subtle Screening Inventory for adolescents [SASSI-A]; Miller, 1985, see Nishimura et al., 2001, for factor structure) have been found to be reliable and valid in the study population (Makini et al., 1996; Nahulu et al., 1996; Nishimura et al., 2001; Prescott et al., 1998; Yuen et al., 2000). Family support was measured with the mean of a four-item scale (Procidano & Heller, 1983): Family relations were measured with the Family Environment Scale (Moos & Moos, 1994) developed to measure social and environmental characteristics of families. Scores on 10 subscales are used to categorize families. Responses were true and false. The Parental Bonding Instrument (Parker, Tupling, & Brown, 1979) asks participants 25 questions on their

TABLE 1 Prevalences of Youth Suicide Attempts by Demographic Variables

	Yoth lifetime suicide attempts[a]		Total discription of sample[b]	
Demographic variables	%	Ratio	%	Ratio
Total	8.11	94/1,159	100.00	1,166
Ethnicity				
Non-Hawaiian	6.38	30/470	40.48	472/1,166
Native Hawaiian	9.29	64/689	59.52	694/1,166
Gender				
Male	4.58	22/480	41.42	483/1,166
Female	10.60	72/679	58.58	683/1,166
Grade level				
8th	5.04	28/556	48.11	561/1,166
12th	10.95	66/603	51.89	605/1,166
Main wage earner's educational level				
8th grade or less	12.00	3/25	2.33	26/1,116
Some high school	5.77	3/52	4.66	52/1,116
High school graduate or G.E.D	10.47	29/277	24.91	278/1,116
Some college or community college	11.19	31/277	25.00	279/1,116
College graduate	6.40	19/297	26.79	299/1,116
Master's degree	4.03	5/124	11.20	57/1,116
Doctoral degree (Ph.D., medical, law)	1.75	1/57	5.11	57/1,116

Note. OR = odds ratio; CI = confidence interval. No two-way interaction effects were statistically significant for youth suicide. Data were collected between 2001 and 2004 from seven school complexes on four islands.

[a] Lifetime: Gender, logestic χ^2 [1, $N = 1{,}159$] = 14.6, maximum $R^2 = .029$, OR = 2.5, OR 95% CI = 1.5–4.0, $p = .0001$. Grade level, logistic χ^2 [1, $N = 1{,}159$] = 14.0, maximum $R^2 = .028$, OR = 1.2, OR 95% CI = 1.1–1.4, $p = .0002$. Main wage earner's education, logistic χ^2 [1, $N = 1{,}109$] = 7.6, maximum $R^2 = .016$, OR = 1.3 CI = 1.1–1.5, $p = .0377$.

[b] Total: Ethnicity, χ^2 [1, $N = 1{,}166$] = 42.3, $p < .0001$. Gender, χ^2 [1, $N = 1{,}166$] = 34.3, $p < .0001$. Main wage earner's education level, χ^2 [6, N = 1,066] = 557.4, $p < .0001$.

parent's attitudes and behaviors towards them up to 16 years of age. Relationships with each parent are rated on two subscales: (a) "care" (warmth, empathy, and emotional support), and (b) "protection" (overprotection, control, and intrusiveness). Participants rate each parent from 0–3 (0 = *very like* to 3 = *very unlike*). Finally, the Hawaiian Culture Scale—Adolescent Version (HCS-A) measures constructs of (a) the source of learning the Hawaiian way of life, and (b) specific cultural traditions measured

by the seven subscales of lifestyles, customs and beliefs, activities and social events, folklore and legends, causes–locations, causes–access, and language proficiency (Hishinuma et al., 2000, p. 144).

Risk and Protective Factors for Youth Suicide Attempts

For all youth in the sample, risks for attempted suicide were being sexually active, sex with both males and females, experienced family conflict, witnessed or heard family violence, and low family support (see Table 2). Those who made a suicide attempt were more likely to

TABLE 2 Risk and Protective Factors Associated with Youth Suicide Attempts

	Lifetime			
Independent variables	OR	R^2_{max}	*p*	*n*
Individual level				
Sexual attitudes & behaviors				
See self with same sex, both sexes, or don't know[a]	0.8	.012	.1370	405
Sexually active[b]	6.9	.148	<.0001	404
Had sex with both sexes[c]	5.8	.071	.0149	128
Coping skills[d]				
Talk with teacher/counselor[e]	1.2	.012	.0155	1,156
Talk to minister/priest/rabbi[f]	1.0	.000	.7993	1,148
Try to talk to mother[g]	0.8	.016	.0046	1,145
Try on own to figure out how to deal[h]	1.1	.001	.5031	1,145
Get professional counseling[i]	1.5	.034	<.0001	1,147
Talk to a brother or sister[j]	1.0	.000	.7812	1,145
Try to make your own decisions[k]	1.0	.000	.7564	1,144
Talk to father[l]	0.7	.028	.0002	1,145
Family level				
Family relations[m]				
Cohesion	0.1	.053	.0017	409
Expressiveness	0.6	.003	.4873	409
Conflict	7.4	.052	.0020	409
Independence	0.6	.001	.6298	409
Achievement orientation	1.0	.000	.9925	409
Intellectual-cultural orientation	0.4	.008	.2328	409
Active recreational orientation	0.3	.009	.1876	409
Moral-religious emphasis	0.8	.000	.7802	409

(*Continued*)

TABLE 2 Continued

Independent variables	Lifetime			
	OR	R^2_{max}	*p*	*n*
Organization	0.2	.027	.0251	409
Control	1.8	.003	.4635	409
Total	0.1	.009	.2003	409
Parental bonding[n]	0.2	.085	<.0001	408
Family support[o]	0.5	.068	<.0001	1,152
Domestic violence[p]	2.6	.040	.0065	404

Note. OR = odds ratio.

[a] "Kids your age sometimes think about sex. When you think about having sex, do you see yourself with"; 0 = opposite sex;1 = same sex, both, or don't know.

[b] "Are you sexually active (circle one)?"; 0 = no, 1 = yes.

[c] "If yes, have you had sex with:"; 0 = opposite sex; 1 = same sex, both, or don't know.

[d] 1 = never, 2 = hardly ever, 3 = sometimes, 4 = often, 5 = most of the time.

[e] "Talk with a teacher or counselor at school about what bothers you".

[f] "Talk to minister/priest/rabbi."

[g] "Try to talk to your mother about what bothers you."

[h] "Try, on your own, to figure out how to deal with your problems or tension."

[i] "Get professional counseling (not from a school teacher or school counselor)."

[j] "Talk to a brother or sister about how you feel."

[k] "Try to make your own decisions."

[l] "Talk to your father about what bothers you."

[m] (from Family Environment Scale; Moos & Moos, 1994) Mean; variable number of items per subscale;0 = false, 1 = true.

[n] (from Parker, Tupling, & Brown, 1979) Mean; 50 items; 4 = very likely, 3 = moderately likely, 2 = moderately unlikely, 1 = very unlikely.

[o] Mean; 4 items; 0 = always false, 1 = often false, 2 = neither true or false, 3 = often true, 4 = always true (Procidano & Heller, 1983).

[p] "Have you ever seen or heard family violence, such as your parents hitting, kicking, pushing, or throwing things at each other (circle one)?"; 0 = no, 1 = yes.

have talked with a teacher/counselor or received professional counseling. Conversely, talking to both mothers and fathers, higher levels of family cohesion, family organization, and parental bonding were related to lower risk of lifetime suicide attempt.

Between Group Differences for Lifetime Suicide Attempts

Those who made a lifetime suicide attempt were analyzed by gender and ethnicity, resulting in four categories: Hawaiian female, Hawaiian male, non-Hawaiian female, and non-Hawaiian male.

Results are presented in Table 3. There were several significant findings between the four groups for lifetime suicide attempt. Using pair-wise comparisons, Hawaiian females had significantly higher rates of making a lifetime suicide attempt than Hawaiian and non-Hawaiian males. Non-Hawaiian females had significantly higher rates than non-Hawaiian males. Group differences were also observed with the Hawaiian culture scale and its factors. Hawaiians had higher scores than non-Hawaiians, with variability by gender. Hawaiian females followed by Hawaiian males scored significantly higher on the overall score of Hawaiian culture and factors of customs/beliefs, folklore/legends, and language. Hawaiian males followed by Hawaiian females had significantly higher scores on lifestyles, and causes–access. Hawaiian females scored significantly higher for activities, whereas Hawaiian males had the significantly higher scores for causes–locations.

Within Group Differences for Lifetime Suicide Attempt

Differences in making or not making a suicide attempt within the four groups (Hawaiian females, Hawaiian males, non-Hawaiian females, and non-Hawaiian males) are reported in Table 3 with boxes around significant differences. For substance use, females (both Hawaiian and non-Hawaiian) had significantly higher rates of alcohol, marijuana, and cigarette use, had higher levels of depression, aggression, and substance use and lower rates of family support. Hawaiian females who made a suicide attempt had significantly higher scores on Hawaiian culture factor scores of lifestyles, folklore/legends, causes–locations, and causes–access. Hawaiian males had higher rates of cigarette use, depression, anxiety, aggression, substance use and overall scores of Hawaiian culture, causes-access, and lower scores on family support. For non-Hawaiian males, they had higher rates of marijuana use, lifestyles, and language.

ACCULTURATIVE STRESSES

Again, similar to Yuen et al. (2000) findings, high levels of Hawaiian acculturation (i.e., identifying with understanding, identifying, and/or doing Hawaiian cultural practices and beliefs) was a risk factor for Hawaiian youth suicide attempts. Interestingly, two Hawaiian culture factors (lifestyles and language) were

TABLE 3 Risk and Protective Factors Associated with Lifetime Suicide Attempts by Gender and Ethnicity

	Lifetime suicide attempt													
	Hawaiian females (HF) ($n = 49$)		Hawaiian males (HM) ($n = 15$)		Non-Hawaiian females (NF) ($n = 23$)		Non-Hawaiian males (NM) ($n = 7$)		Significance (total)			Significance (comparing groups)		
	%	Ratio	%	Ratio	%	Ratio	%	Ratio	χ^2	$R^2_{max.}$	p	χ^2	$R^2_{max.}$	p
Total	11.86	49/413	5.32	15/282	8.55	23/269	3.48	7/201	(3, $N = 1165$) = 17.5	0.035	0.0005	(1, $N = 470$) = 5.3 (1, $N = 514$) = 13.3 (1, $N = 695$) = 9.2	0.030 0.047 0.029	0.0216 0.0003 0.0025
Alcohol	46.94	23/49	40.00	6/15	52.17	12/23	42.86	3/7	(3, $N = 94$) = .6	0.008	0.8984			
Marijuana	26.53	13/49	20.00	3/15	39.13	9/23	42.86	3/7	(3, $N = 94$) = 2.44	0.036	0.4856			
Cigarettes	14.29	7/49	20.00	3/15	17.39	4/23	14.29	1/7	(3, $N = 94$) = .3	0.006	0.9550			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	R^2	*p*	Groups[a]		
Depression	2.03	(0.62)	2.15	(0.57)	2.13	(0.60)	1.90	(0.66)	(3, $N = 90$) = .43	0.014	0.7345			
Anxiety	0.72	(0.44)	0.94	(0.63)	0.67	(0.50)	0.86	(0.97)	(3, $N = 90$) = .97	0.031	0.4111			
Agression	0.73	(0.44)	0.80	(0.48)	0.80	(0.54)	0.63	(0.56)	(3, $N = 90$) = .29	0.010	0.8293			
Substance use	0.29	(0.28)	0.27	(0.34)	0.36	(0.37)	0.33	(0.33)	(3, $N = 90$) = .36	0.012	0.7795			
Hawaiian culture (overall)	2.14	(0.36)	2.04	(0.42)	1.63	(0.34)	1.46	(0.37)	(3, $N = 90$) = .14.6	0.328	<.0001	HF,HM > NF, NM		

Lifestyles	1.92	(0.55)	2.13	(0.69)	1.24	(0.29)	1.48	(0.56)	(3, $N = 90$) = .11.82	0.285	<.0001	HM,HF > NM,NF
Customs/beliefs	2.12	(0.53)	1.93	(0.61)	1.73	(0.46)	1.25	(0.22)	(3, $N = 90$) = 7.54	0.203	0.0002	HF, HM,NF > NM
Activities/social events	2.42	(0.40)	2.18	(0.66)	1.82	(0.50)	1.47	(0.40)	(3, $N = 90$) = 3.17	0.097	0.0282	HF > NM
Folklore/legends	2.54	(0.55)	2.33	(0.65)	2.21	(0.66)	1.94	(0.50)	(3, $N = 90$) = 13.93	0.322	<.0001	HF,HM > NF, NM
Causes–locations	1.83	(0.49)	1.90	(0.60)	1.55	(0.48)	1.38	(0.49)	(3, $N = 90$) = 3.21	0.099	0.0270	HM > NM
Causes–acess	2.38	(0.73)	2.46	(0.78)	1.63	(0.77)	1.64	(0.85)	(3, $N = 90$) = 6.93	0.191	0.0003	HM,HF > NM,NF
Language	1.78	(0.50)	1.68	(0.46)	1.26	(0.23)	1.04	(0.09)	(3, $N = 90$) = 12.0	0.286	<.0001	HF,HM > NF, NM
Family support	2.61	(1.02)	2.67	1.01)	2.10	(1.17)	2.21	(1.43)	(3, $N = 90$) = 1.47	0.047	0.2268	

Note: Boxes below represent significant *within* ethnic/gender group comparisons. For those who did not have a lifetime suicide attempt, numbers are listed below by group:

Hawaiian females, $n = 364$.

Hawaiian males, $n = 266$.

Non-Hawaiian females, $n = 246$.

Non-Hawaiian males, $n = 194$.

□ Significantly higher rates/means for those who made a lifetime suicide attempt.

▣ Significantly lower rates/means for those who made a lifetime suicide attempt.

[a] Student Newman-Kuels comparisons.

associated with attempted suicide for the 7 non-Hawaiian males who attempted suicide.

DEVELOPMENT AND PSYCHOPATHOLOGY

The transitions to high school (from middle school to high school) and to adulthood (from 12th grade to leaving high school) were associated with higher levels of suicide attempts, which may indicate that these youth perceive fewer opportunities for their future. As they move through the 12th grade to adulthood, the transition is mired in frustrating ambivalence and disillusionment, especially if they live within family dysfunction. Do the Hawaiian cultural beliefs, practices and traditions they know and/or practice paradoxically generate conflicts between being a self-reliant individual achieving American cultural goals of individual economic affluence vs. being a conforming member within a Hawaiian family hierarchy to achieve the cultural goals of maintaining family wholeness? The findings show that Hawaiian adolescents who are raised in families that possess high cohesion, organization, parent bonding, and family support have significantly lower rates of suicide attempts. This finding provides a probable means by which youth are able to negotiate the tensions between developmental tasks, family expectations, and cultural differences within Hawaiian homes and neighborhoods with the larger dominant cultural values in America. These youth, their parents, and their family systems are able to negotiate successfully through the ethical gray zones without violating the moral absolutes demanded of their Hawaiian and non-Hawaiian (American and dominant) cultures and social structures to attain the cultural goals that they deem as measures of success (Andrade et al., 2007).

Overall Discussion

Research on completed and attempted suicide for Pacific Islanders is very limited. In addition, suicide rates in the United States are reported in the aggregate category of Asian American/Pacific Islanders thus obscuring critical differences between Pacific Islanders and Asians. Where data were available, all Pacific Islander populations showed patterns of higher suicide rates, when compared to non-Pacific Island populations, with the highest rates of suicide

found among males age 15–24. While all populations showed an age distribution where male suicides rose sharply from adolescence and peaked at age 20–25, the age distributions after this peak differed for each sub-population. Chuukese and Marshall Islanders had a dramatic decrease followed by a smaller peak at age 60–65 while Hawaiians, Belauan, Pohnpeans, and Yapese showed steady decreases without a bimodal increase among elders. Differences in older male suicide distribution may be statistical (e.g., geographic areal unit size differences), social (e.g., differences in family and social support networks), or nonsocial (e.g., medical illnesses that cause premature mortality).

There are also striking similarities in suicide rates and patterns between Pacific Islanders with other indigenous populations in the United States, Canada, and New Zealand. For all, the highest rates of suicide are found among males age 15–24, peaking at ages 20–25. In the United States and Canada rates decline after age 20–25 then increase at age 60–65, similar to patterns for Chuukese and Marshallese (DHHS, 1999; Tsuang et al., 1992). New Zealand Māori have a pattern similar to Hawaiians, Belauans, and Pohnpeans, with rates steadily decreasing after ages 20–25 without a bimodal peak for elderly males (Beautrais, 2000).

SUICIDE LIFESPAN DISTRIBUTION FOR HAWAIIAN MALES

Hawaiian, Māori, Pohnpean, and Belauans males commit suicide most often during the ages of 15–24, peaking at around age 20, then declining. Hawaiian men who live to age 40–45 have a sharp decline in completed suicides. One possible explanation for this finding is the roles that are designated within the traditional Hawaiian family and community system for *keiki* or *moʻopuna* (infants and children or grandchildren, up to the age of 14), *ʻōpio* (youth ages 15–35), *mākua* (parent generation ages 35–60), and *kūpuna* (elders or grandparents, ages 60 and older). In the Hawaiian family system chronological age is not as important as the social role that a person plays within their *ʻohana* (the extended multi-generational group bonded by blood and *aloha*) who live within neighborhoods and communities that are typically located within an hour of each other.

Role designations for each stage within the life span carry implicit and explicit psychosocial roles. The two extremes of the life span, (i.e., *keiki* and *kūpuna*) are cherished by Hawaiian

society because *keiki* or *mo'opuna* (which literally translates as the generational wellspring or source) are the future generations that assure the continuity of the people, whereas *kūpuna* (which literally translates as the start of the source) assure continuity of the cultural and historical traditions, knowledge, skills, and traditions. The *mākua* generation has the primary responsibility of supporting, nurturing, and protecting children and elders, while acquiring the knowledge and developing the skills and mastery to become *kūpuna.*

There is a special role designation for adolescents and young adults or *'ōpio* in Hawaiian society. *'Ōpio*, which literally means "young, juvenile, immature," connotes a person, male or female, between the ages of 14–35 who is not ready for significant family responsibilities. From about the mid 20th century and earlier, *'ōpio* were given the freedom to develop within the structured framework of their *'ohana*, their innate talents, interests and preferences honed by the apprenticeship of *mākua* and *kūpuna.* The motivation, ability, and speed of mastery determined how rapidly an *'ōpio* would advance through to the next level of development within the *'ohana.* The advent of urbanization and the movement of rural Hawaiians into cities separated them from both their families and their family lands. Without the orienting social structures and framework of the *'ohana*, Hawaiian families living in large towns and cities, often without their family elders, had only partially understood social structures and meanings to guide *'ōpio* and their family networks. '*Ōpio* and their families were left to pursue the cultural goals of American society without the means, access to, or "level playing field" to do so.

Starting in the 1940s, the role of the Hawaiian male *'ōpio* has changed dramatically whereby losing its social–cultural significance. Currently, he may not be expected to, or be allowed to accomplish more than mastering the skills to acquire sustenance for himself and his *'ohana.* Commonly, male *'ōpio* may live at home, and if married, often move into the wife's home. There he will be treated more as another son who contributes to the family from his employment rather than as the head of a household. A gainfully employed male *'ōpio* may be expected to turn over a significant part of their income to their mothers, fathers, and/or grandparents. In the presence of *mākua* and *kūpuna*, an *'ōpio* remains as a younger family member lacking a leadership

voice in the family, until he/she establishes a set of special talents or capabilities that redefine their role designation within the *'ohana*.

Usually between age 40–45, Hawaiian men and women move from being *'ōpio* to being *mākua*, and are called *Uncle* and *Aunty*, which are terms of respect in the Hawaiian community. For Hawaiian men, the term *Uncle* signifies that one has become an adult and are given increasing levels of responsibility, which focus on the mentoring and care for younger members of the family (*keiki* or children and *'ōpio*). During the *mākua* phase of life men and women become experts in their area of work, talents, and interest, and commonly take on roles that assure family history continuity (e.g., learning the family genealogy or oral traditions).

Finally, at age 60 and older, Hawaiian men and women are recognized as *kūpuna*, treated with reverence and respect for their unique levels of expertise, and are given an enormous measure of social standing and power. We hypothesize that the aforementioned Hawaiian family influences underpin the high suicide rates for young males that peak at age 20–25. The steady decline after age 40 and the absence of the second smaller spike at age 60–65 (i.e., not bimodal distribution) is due to the more structured role designations that occur for men, who after age 40 become *mākua*, followed by becoming *kūpuna* at age 60. It is also hypothesized that similar generational processes would be true for other Pacific Islanders.

For future studies, we will apply the Ethnocultural Identification Dissonance model (EIDM; Andrade, 2007), to evaluate generational and family process. The EIDM posits that health, specifically behavioral and mental health disparities (including suicide and self-injury), within indigenous people, result from the dissonance between their internalized ideal ethnocultural self or identity, and their external or manifest ethnocultural identity or persona. The former encompasses the personal dreams, ambitions, and aspirations of the individual. The latter is the reified persona of what the individual decides is the functional compromise between what he/she desires with what is expected of him/her from their family and friendship networks, as well as the cultures of their ethnic group and the dominant society they live within.

Limitations

Several limitations of this article need to be identified. For suicide rate descriptions, completed suicide and attempted suicide data in the United States for Pacific Islanders are rarely disaggregated from Asian Americans, which obscure important differences in the two populations. Instead, rates for Pacific Islanders in the Pacific were reported. There are no published studies of suicide among American Samoans. Suicide statistics are often based on death and hospitalization reports where there is clear evidence of intent to harm oneself, potentially underestimating rates of completed and attempted suicide. For the study data presented, there is a sample bias for non-participants who are particularly at risk due to absenteeism from school, suspensions, dropouts, and expulsions. It is likely that rates of attempted suicide and other related behaviors of substance use and psychopathology have been underreported.

Summary and Conclusions

This article makes several contributions that enhance the current scientific knowledge base on these Pacific Island populations. First, Pacific Islanders are not Asians, immigrants or descendants of American immigrants. They are indigenous peoples who have lived in homelands that were seized and/or colonized by others, including the United States, through historical events. Furthermore, Pacific Islanders have suicide rates and patterns, along with their associated measures of psychosocial adversity and psychopathology, which are strikingly similar to other indigenous populations.

Second, all indigenous Pacific Islander populations showed patterns of higher suicide rates with highest rates for males ages 15–25 and a peak at ages 20–25. Male suicide rates for Hawaiians, Pohnpeans, and Belauans did not have a bimodal distribution with a smaller second peak at ages 60–65. The authors posit that for Hawaiians, and perhaps other Pacific Islanders, this difference in age distribution may be due to social–cultural influences in the Hawaiian family system and role designations for youth, adults, and elders.

Third, suicide behaviors among Pacific Islanders require an understanding of culture and acculturation because data show that high cultural affiliation is associated with higher risk for suicide-related behaviors. Further, the fundamental link to the individual and culture is the family, who ideally plays the crucial role of navigator through periods of adversity and acculturation without violating the moral absolutes embedded in each culture.

Finally, groups of people within communities give the act of suicide culturally relevant meanings that maintain and strengthen the cohesion of their group and assure conformity to their social mores and ethics. Suicide acts of resistance reassert group values. For example, how Marshallese redefined suicidal hangings as an acceptable means to settle irreconcilable dilemmas in love. These recurrent themes show the power of a community to completely and artificially create the meaningfulness of suicide and its relationship to behaviors—both pathological and healthy.

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