

Health Access for Native Hawaiians and Pacific Islanders:
Latent Determinants of Mental Health Care Service Utilization
by
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ABSTRACT

A high percentage of Native Hawaiian and other Pacific Islander (NHPI) adults (37.4%) aged 18 and older did not see a doctor in the past year. This is the highest percentage among all racial groups. Furthermore, approximately one in eight NHPI adults (12%) are uninsured, a rate that is markedly higher than Whites. Federal reports historically struggle to capture data that could explain these phenomena. Hence, NHPI are insufficiently and incompletely represented in health statistics, access health services at lower rates, and are insured at lower rates than other racial and ethnic minority groups. This has implications for perpetuating adverse mental health conditions and mental health disparities that are prevalent in this community (e.g., depression, anxiety, alcohol use disorder, and tobacco use), particularly following the global COVID-19 pandemic. The overarching goal of this research is to improve and broaden understanding of novel multi-level health determinants causing low mental health care service utilization rates of NHPIs, a presently understudied health disparity for Native Hawaiians and other Pacific Islanders in the U.S. Design: A closed access, cross-sectional Internet survey was used to collect data. Participants were recruited with announcements distributed nationwide via email to NHPI organizations, associations, and networks across the United States and social media. The sample included 395 NHPI adults aged 18 and older. Analysis: Latent profile analysis (LPA) were conducted using *Mplus* 8 statistical software to examine whether different conceptually meaningful profiles of NHPI Islanders emerge based on hypothesized health determinants measuring Symptom Distress (*Perceived Health Status, Depression/Anxiety, and Perceived Stress*), Protective Factors (*Pacific Cultural Efficacy, Religious Centrality and Embeddedness, Pacific Connectedness and Belonging, and Perceived Societal Wellbeing*) and Health Attitudes (*Medical Mistrust and Service*

Provider Preferences [i.e., Traditional/Native Healer vs Medical Doctor/Nurse]) while accounting for demographic covariates (e.g., education, income, and insurance status). Results supported a four-profile model solution, where four distinct groups (named “*Very Low Symptomatic*,” “*Low Symptomatic*,” “*Moderate Symptomatic*,” and “*High Symptomatic*”) of participants demonstrated varying levels of symptom distress, endorsement of protective factors, and health attitudes. Furthermore, planned mental health care utilization was analyzed as an outcome variable, demonstrating varying levels of planned mental health service utilization across the four profiles. Significance: Findings may inform public policy and healthcare professionals about how to meaningfully engage NHPI communities in culturally competent mental health care services.

DEDICATION

O le tagata, ma lona fa'asinomaga. A person and their identity – every person belongs to an ‘*aiga*’ and every ‘*aiga*’ belongs to a person. Thank you to my parents Serita and Scott, and to my family. *Ou te alofa i lou aiga.* And for the Indigenous data sovereignty movement, where the right and responsibility to govern data about peoples, lands, and resources belongs to our Pasifika communities.

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CHAPTER 1

OVERVIEW

Determinants of mental health care access for Native Hawaiians and Pacific Islanders (NHPI) in the United States are unexplored in the current literature. Mental health service utilization rates are particularly poor health care access outcomes for this underrepresented community. The current study utilizes the National Institute on Minority Health and Health Disparities (NIMHD) research framework to examine latent determinants of mental health service utilization and health attitudes for NHPI across several categories of influence – Symptom Distress, Protective Factors, and Health Attitudes. Latent profile analysis (LPA) will identify profiles of NHPI study participants based on these hypothesized health determinant variables while accounting for demographic covariates. Mental health care (i.e., planned mental health care service utilization) will also be analyzed as a health outcome differing across the determined profiles.

A high percentage of NHPI adults (37.4%) aged 18 and older did not see a doctor in the past year (National Center for Health Statistics [NCHS], 2012). This is the highest percentage among all racial groups. Furthermore, approximately one in eight NHPI adults (12%) are uninsured, a rate that is markedly higher than Whites (NCHS, 2017). Federal reports historically struggle to capture data that could explain these phenomena. Additionally, results from the 2019 National Survey on Drug Use and Health demonstrated that while 10.1% of Native Hawaiian and Pacific Islander adults expressed serious psychological distress in the past year, only 6.1% of adults received mental health services in the past year and only 5.2% of adults received prescription medications for mental health treatment or counseling (Substance Abuse and Mental Health Services Administration

[SAMHSA], 2019). Importantly, previous studies by NHPI researchers have demonstrated that mental health distress among the community may be higher than is captured by federal surveys. Cha et al. (2023) found that nearly half of NHPI respondents ($N = 439$) reported moderate (37.6%) or severe (9%) psychological distress, yet less than half saw a mental health provider in the past year. Respondents with moderate or severe psychological distress were also less likely to utilize a mental health provider in the past year compared to those reporting little to no psychological distress.

Previous research has also demonstrated how Indigenous Peoples often find it difficult to access mainstream primary health care services, including mental health care (Davy et al., 2016). Accessing health care services is far more complex than simply locating a service within or close to Indigenous communities. Nevertheless, measures of access at a population level (e.g., NHIS and other national health surveys) are often confined to spatial factors including location and distance, using primarily quantitative data. Past efforts also cite the small size of the NHPI population (1.6 million, or .4% of the total U.S. population), limited geographic concentrations, and the utility of traditional data collection methods as reasons for incomplete health data (Manuela & Anae, 2017; U.S. Census Bureau, 2019). Hence, NHPI are insufficiently and incompletely represented in health statistics, particularly with regard to mental health care engagement and what factors may improve engagement. The current proposal aims to address this dearth of available data.

Utilizing data from the “Native Hawaiian and Pacific Islander National Health Interview Survey” (NHPI NHIS) by the National Center for Health Statistics (NCHS), I found via multiple regression analyses that individual-level demographic data (e.g., citizenship status, total earnings, reported health status, etc.) can determine whether NHPI

in the U.S. have insurance coverage or not, and whether participants are confident that they can obtain affordable health care or not. To date however, research studies – including the aforementioned survey – have not examined broader sociocultural influences that may influence mental health care access and utilization for NHPI above and beyond individual characteristics.

Latent profile analysis (LPA) is an innovative and intersectional approach which postulates that true, underlying classes (or subgroups) are not directly observable, but that can be inferred from the associations among a set of observed characteristics. LPA involves grouping participants based on their similarities on single or multiple dimensions and generating groups that maximize similarity within the group and minimize similarity between groups. Thus, LPA will create sets of qualitatively distinct and heterogeneous subgroups of Native Hawaiians and other Pacific Islander participants, which have not been identified in previous academic or federal datasets. LPA fits the purpose of this study, which is to determine distinct configurations (i.e., profiles) of potential symptom distress, protective factors, and health attitude latent determinants of intended mental health care service utilization and to examine differences in latent variable scores across the “Yes” and “No” groups. Latent profile analysis also allows for the estimation of measurement error to improve accuracy of estimates.

The current study utilizes health determinant measures that reflect the sociocultural background of NHPI, which have been found to have a predictive effect on diminished health care access for this population (e.g., medical mistrust; Manuela & Sibley, 2015; Morisako, Tauli'i, Ambrose & Withy, 2017; Townsend et al., 2015). While demographic variables can often predict health care access for ethnic minority populations, analyzing

health care access across several categories of latent predictors (i.e., Symptom Distress, Protective Factors, and Health Attitudes) allows for a more comprehensive understanding of NHPIs in relation to utilization of mental health care services in the U.S. The current study accounts for this in the following aims and hypothesized variable measures that are currently unexamined among NHPI.

A traditional variable-centered design (e.g., regression) would only allow researchers to detect variables that each independently associate with health utilization and health insurance coverage. In contrast, LPA allows us to identify groups or profiles of NHPI adults who are similar to one another based on concomitant individual, interpersonal community, and societal-based determinants of mental health care utilization. It also allows for comparisons among profiles on hypothesized characteristics as well as in relation to a target health behavior – in this case intended use of mental health care services within the next year. It is also important to note that calculating profiles produces different groups of participants that have similar intersecting characteristics within the same profile, but different characteristics from the other profiles, which will contribute to a more nuanced discussion and understanding of medical-seeking attitudes and motivations in this population.

The overarching goal of this research is to improve and broaden our understanding of novel multi-level health determinants causing low mental health care service utilization rates of NHPIs, which are presently understudied health access disparities for Native Hawaiians and other Pacific Islanders in the U.S. Novel multi-level determinants included various items and subscales organized into categories for describing the resulting study profiles. These categories included **Symptom Distress**, **Protective Factors**, and **Health**

Attitudes. The Symptom Distress category includes an item measuring perceived health status (e.g., *In general, would you say your health is: “excellent,” “very good,” “good,” “fair,” or “poor”*), the Patient Health Questionnaire-4 measuring depression and anxiety (Kroenke et al., 2009), the Perceived Stress Scale (Cohen et al., 1983; Crosswell et al., 2020) measuring current psychosocial stress levels, and the Brief Perceived Ethnic Discrimination Questionnaire–Community Version (PEDQ-CVB; Blair et al. 2020; Brandolo et al., 2005) assessing experiences with racial discrimination related to microaggressions. The Protective Factors category included four subscales of the *Pacific Identity and Wellbeing Scale-Revised* (PIWBS-R; Manuela & Sibley, 2015), including the Cultural Efficacy (CE) subscale, the Pacific Connectedness and Belonging (PCB) subscale, the Religious Centrality and Embeddedness (RCE) subscale, and the Perceived Societal Wellbeing (PSW) subscale. Finally, the Health Attitudes category includes The Group-Based Medical Mistrust Scale (GBMMS; Thomsson et al., 2004) measuring levels of mistrust in healthcare systems and providers, and a service preference questionnaire adapted from Aronson et al. (2016), assessing participants’ comfort levels with receiving health care from a list of different health providers, including traditional or Native healers, medical doctors, nurses, etc. Further rationale for the selection of study variables and profile descriptions is described below in Chapter 2: Literature Review.

The first goal of the current study is to empirically identify latent profiles of NHPI participants based on hypothesized determinants of intended mental health care service utilization. Latent health determinants of mental health care utilization will be based on theory-based latent determinants of mental health care service utilization, organized into three categories that will assess Symptom Distress (*Health Status, Depression/Anxiety, Perceived Stress*, and *Perceived Ethnic Discrimination*), Protective Factors

(Cultural Efficacy, Pacific Connectedness and Belonging, Religious Centrality and Embeddedness, and Perceived Societal Wellbeing) and Health Attitudes (*Medical Mistrust and Service Provider Preferences*) of participants while also accounting for demographic covariates (e.g., income, education, and health insurance status). Using Mplus 8 software, LPA will identify profiles of study participants. I expect to identify four latent groups of NHPI individuals that will (1) group participants based on similar characteristics on one or multiple latent health indicators and (2) generate groups that maximize similarity within the group and minimize similarity between groups. It is hypothesized that one profile will indicate the lowest symptom distress, highest protective factors, and most comfortable or trusting health attitudes, and Profiles 2-4 will indicate more symptom distress, less protective factors, and less comfort and trust with medical providers and U.S. healthcare systems. This first goal will also enhance our understanding of which intersecting health determinants and indicators are the most meaningfully influential regarding mental health care service utilization among NHPIs.

The second goal of the current study is to determine intended or planned mental health care utilization as an outcome across the identified profiles, to examine how mental health service utilization relates with profile membership while accounting for demographic covariates. Using Mplus 8, intended mental health care service utilization in the next year will then be examined across the profiles of the final LPA model by splitting participants into two groups—those who indicate “Yes” to wanting to see a mental health professional in the next 12 months, as opposed to those in the “No” group. My proposal to analyze mental health care utilization across identified profiles will yield insight that will improve the field’s awareness of which novel health determinants are facilitative or detrimental in nature toward mental health service utilization rates among

NHPI in the U.S. I hypothesize that participants in the “ $N\theta$ ” group to wanting to see a mental health professional in the next 12 months will belong to a latent profile consisting of participants who indicate lower symptom distress scores, higher protective factors, and more comfortable/trusting health attitudes with U.S. healthcare systems and different types of providers more often than peers in the other four profiles. In addition to focusing on a population that is insufficiently represented in health statistics, LPA will identify distinct groups of participants based on multiple intersecting latent dimensions that are critically neglected in current NHPI health datasets. Findings may inform public policy and healthcare professionals about this severely underrepresented population in health research to help eliminate excessively low levels of utilization of mental health care services.

CHAPTER 2

LITERATURE REVIEW

Review of the literature will include discussion of data sovereignty and representation as ongoing issues for Native Hawaiians and Pacific Islanders, in the context of a dearth of health data and literature for this population. The need for complete datasets postulated by the current lack of data available on determinants of mental health care utilization for NHPI will be discussed next as it provides theoretical background for the purpose of the study. Then, the prevalent health issues that necessitate increased health access for NHPI will be discussed, while also considering a conceptual framework for carrying out this research with NHPI adults, as well as the rationale for inclusion of the study's variables and the resulting latent profile descriptions. Finally, the study aims and hypotheses will be presented.

Insufficient Data on Health Determinants for Native Hawaiians and Pacific Islanders

The proposed study is an innovative step toward understanding differences within heterogenous NHPI subgroups through the inclusion of an ethnically diverse sample (Tongans, Native Hawaiians, Sāmoans, and Fijians, etc.), and furthermore allows for behavioral health comparisons between identified NHPI latent profiles regarding health indicators that reflect their unique cultural background (e.g., *Pacific Connectedness and Belonging* and *Pacific Cultural Efficacy*). The state of mental and physical health of NHPI are often unknown because they are frequently categorically conflated with Asian Americans. Due to this historical and ongoing aggregation, the actual issues prevalent within NHPI populations are relatively understudied and misunderstood at the local, state and federal levels (Morisako et al., 2017). This methodological error also obscures appropriate intervention and

prevention methods from being programmed and implemented for the NHPI community. Regrettably, culturally appropriate methods of improving behavioral health patterns and addressing adverse health behaviors among NHPI communities are often subsequently impractical to theorize or implement due to this lack of data and knowledge (Subica et al., 2022). Without reliable data to gain a wider perspective on health disparities for Native Hawaiians and other Pacific Islanders, health interventions cannot be responsibly implemented for this community.

Presently, federal agencies are required to report statistics that describe the characteristics of a minimum of five race categories, including Native Hawaiians and Pacific Islanders, instead of an aggregate Asian Pacific Islander group (Zelaya et al., 2017). The U.S. government also recognizes that: Native Hawaiians, Sāmoans and Chamorros are indigenous peoples to the State of Hawai'i, the U.S. Territory of American Sāmoa and the U.S. Territory of Guam, respectively (White House Initiative on Asian Americans and Pacific Islanders, 2011). However, the National Center for Health Statistics (NCHS) has also noted that federal agencies have collected almost no reliable national health statistics for these detailed NHPI groups (e.g., Native Hawaiian, Sāmoan, Tongan, Marshallese, Fijian, etc.) under the category of “NHPI” in the past twenty-five years since this change in policy was implemented (Zelaya et al., 2017). This is also evident in U.S. Census and American Community Survey data where NHPI representation remains sparse or nonexistent. Other large federal reports such as the “Health, United States” by the NCHS include sections with a preface stating that issues concerning quality of data, amount of missing data, and number of observations significantly affect the availability of reportable data for certain populations, including but not limited to NHPI (CDC, 2016).

Appropriate representation remains a prevailing issue in NHPI data gathering because NHPI face greater challenges that inhibit their potential to be represented in data collection. These challenges include (1) finding stable and affordable housing; (2) having higher incidences of poverty and unemployment; (3) having lower educational attainment; and (4) indicating greater language barriers (Lowenthal, 2014). Unfortunately, all these barriers greatly inhibit health outcome survey-taking. This contributes to *undercounting* – an issue that inordinately affects NHPI because these populations cannot be consistently captured in federal data using the U.S. Census and other traditional data collection methods.

Undercounting is enumerating at a lower estimated figure than the actual figure. Today, roughly one third of NHPIs live in hard-to-count Census tracts that make it difficult for the NHPI population to be accurately encompassed in federal reporting and statistics (Asian Americans Advancing Justice, 2019). Undercounting constrains the ability to oversample the U.S. NHPI population, to make substantial inferences based on data if the standard error margins of those statistics are too great and contributes to low reliability for many estimates that plague federal reports (Zelaya et al., 2017). The proposed study addresses underrepresentation of NHPI in health research by collecting data from NHPI individuals exclusively. Furthermore, latent profile analysis (LPA) accounts for error to improve the accuracy of estimates and potentially identifies intersecting health determinants.

The Need for Increased Access to Health Care for NHPI

Although the focus of the present study is on the intended mental health care utilization of NHPI adult participants, the presence of physical illness, particularly comorbid physical illness, has been found to increase the likelihood of mental health service use in U.S. adult populations (Jimenez et al., 2015). The sheer prevalence of physical health conditions

and illnesses among NHPI justifies the need to measure intended mental health care utilization in this population due to this comorbid connection between physical and mental health. Regarding physical conditions among Native Hawaiians and Pacific Islanders, obesity, diabetes, and other cardiovascular disease are related cardiometabolic conditions that have reached epidemic proportions in the Pacific Region (Mau et al., 2009; Hawley & McGarvey, 2015). As a public health priority, culturally relevant and responsive prevention programs should be implemented that account for the sociocultural influences (i.e., *Pacific Cultural Efficacy, Pacific Connectedness and Belonging, Racial Discrimination, and Perceived Societal Wellbeing*) determining the prevalence of obesity in the NHPI population. Overall, the highest rates of obesity and diabetes in the world are found in the Pacific Region, among people whose origins are from Polynesia, Melanesia, and Micronesia (Chan et al., 2013). The combined rates of obesity and overweight among NHPI in the U.S. are 73.4%, which is 20% higher than for non-Hispanic Whites (Schiller, Lucas & Peregoy, 2012). The prevalence of diabetes and heart disease is 19% and 19.7% among NHPI, compared respectively to 5% and 6.6% for non-Hispanic Whites (Grandinetti et al., 2007; Kirtland, Cho & Geiss, 2015; Zelaya et al., 2017).

Among NHPI adults, 27.3% are diagnosed with hypertension as opposed to 24.5% of the total U.S. population (Galinsky et al., 2017). NHPI suffered a stroke an average of 10 years younger than non-Hispanic Whites, due in part to poorer hypertension management (Nakagawa, 2012). Heart disease is also the leading cause of death for NHPI, causing over one in three deaths between 2005 and 2010 (34%; Empowering Pacific Islander Communities [EPIC] and AAAJ, 2014). Thus, reducing the risk of cardiometabolic disorders in NHPI through the development of health interventions and policies has been declared a

public health priority (Cook et al., 2010). Being able to identify specific barriers to health care access could assist in delineating the lack of knowledge surrounding health prevention services for NHPI. Although little is known about the national substance use patterns of Native Hawaiian and Pacific Islanders, prior research has found that NHPI adolescents demonstrate higher lifetime prevalence of cocaine, heroin, and methamphetamine use than non-Hispanic Whites (Subica & Wu, 2018). Furthermore, studies of adolescents in California found that NHPI: had the highest rates of marijuana use (22%) along with African Americans at the same rate; had the highest binge alcohol use rate (22.3%) compared to all other racial/ethnic groups; males had the highest rate of lifetime smoking (18.7%), past-month cigarette smoking (39.3%), lifetime methamphetamine use (12.8%), and past-month methamphetamine use (11.7%), in comparison to all other racial groups (Austin & Skager, 2008). Use and lifetime prevalence of these specific illicit street drugs increases the likelihood of NHPI youth developing addiction and associated negative outcomes such as homelessness, overdose, and increased likelihood for substantial comorbidity with other diseases such as diabetes and cardiovascular disease (Whiteford et al., 2013). Current cigarette use predicted greater odds of attempted suicide in NHPI as well (Subica & Wu, 2018). Substance dependence is also connected to depressive symptoms, indicating that individuals with negative mood states (including depression) are more likely to use cigarettes and alcohol and develop a dependence (Jane-Llopis & Matytsina, 2006). Given substantial findings on substance use, depressed mood, and suicide-related disparities when compared to Whites – NHPI may be especially vulnerable to developing behavioral health problems throughout the lifespan (Subica & Wu, 2018).

In addition to the high prevalence of adverse health conditions indicated above, approximately 1 in 5 NHPI adults suffer disproportionately from chronic respiratory disease (20% of adults vs. 12.8% of the total U.S. population); Native Hawaiians and Sāmoans have reported the shortest life expectancies of the state of Hawai'i's seven major ethnic groups by up to 13 years; and cancer is also the second leading cause of death (24%) for all NHPI (EPIC & AAAJ, 2014; Galinsky et al., 2017; Jane-Llopis & Matytsina, 2006; Park et al., 2009). Considering the above health disparities, increasing access to care is a pivotal step toward preventing these critical issues from persisting among NHPIs. Thus, given that NHPIs utilize health services at significantly lower rates and are uninsured at higher rates than other populations (NCHS, 2012; NCHS, 2017), research on health care access allows for interventions for these adverse health conditions to be appropriately theorized.

The Current State of Mental Health and Mental Health Care Utilization

Even prior to the COVID-19 global pandemic, NHPI have demonstrably endured a heavy burden of alcohol, tobacco and other drug (ATOD) use in prior U.S.-collected datasets, which may have further exacerbated existing mental health illness. More recently, Subica et al. (2022) found in a sample of $N = 306$ NHPI adults that:

“During COVID-19, 47% and 22% of NH/PI adults reported current alcohol and cigarette use, while 35% reported lifetime illicit substance use (e.g., cannabis, opioid). Depression and anxiety were high, and alcohol use disorder, major depression and generalised anxiety disorder prevalence were 27%, 19% and 27%, respectively. One-third of participants reported past-year treatment need with lifetime illicit substance use, COVID-19 distress and major depression respectively associating with 3.0, 1.2, and 5.3 times greater adjusted odds for needing treatment” (p. 1).

With scant research on the mental illness prevalence among NHPI, one national study found that 36% of NHPI youth reported past-year depressed mood vs. 26% of White youth, while a community-based study revealed NHPI adults experience major depression and generalized anxiety disorder at three times and two times the U.S. population rate for these disorders, respectively (Subica et al., 2018; Subica et al., 2019). This limited data suggests that NHPI may be at heightened risk for experiencing significant depression, anxiety, and psychological distress following the most severe years of the COVID-19 pandemic.

Prior to COVID-19, a community sample found that 76% of NHPI adults reported avoiding or delaying needed treatment services (Subica et al., 2019). Furthermore, and more recently, Subica et al. (2022) found that 60% of participants needing treatment reported avoiding or delaying treatment, despite 27% and 19% of participants meeting the diagnostic thresholds for MDD [major depressive disorder] and GAD [generalized anxiety disorder], respectively. Fifteen percent met diagnostic thresholds for both disorders, indicating comorbid MDD and GAD, with “One-third of NH/PI participants reported needing past-year behavioural health treatment with significantly more women versus men (35% versus 22%; $p < 0.05$). Nine percent reported needing both substance use and mental health treatment during COVID-19” (p. 7). Results of the study revealed that heightened depression, anxiety, and psychological distress was reported by participants during the COVID-19 pandemic, with over one-quarter of NHPIs screening positive for MDD and one-fifth for GAD, which significantly exceeded the general population rates for these disorders, respectively.

In light of the aforementioned findings, there is clearly a significant disparity in the prevalence of mental health distress measured among NHPI adults and the utilization and

engagement rates with mental health care services in the U.S., particularly in the aftermath of COVID-19. Importantly, the burden of COVID-19 illness and death among NHPIs, and its resulting loss, grief, trauma, and disruptions in way of life may further exacerbate mental health disparities in this already vulnerable population. Relatedly, SAMHSA reported that only 6.1% of NHPI adults received mental health services in the past year and only 5.2% of adults received prescription medications for mental health treatment or counseling. Another study examining psychological distress among NHPI adults found that out of 439 respondents, nearly half reported moderate or severe psychological distress, yet only about one-tenth took prescription medication for mental health and less than half utilized a mental health provider in the past year (Cha et al., 2023). The present study may contribute even more nuanced information about the mental health care-seeking attitudes and behaviors among NHPI adults, contributing to this particular knowledge gap in the community.

Conceptual Frameworks for NHPI Health Determinants

The National Institute on Minority Health and Health Disparities (NIMHD) advocates for a multi-dimensional research framework that approaches understanding health disparities for minorities across the entire lifespan (Alvidrez et al., 2019). The Nā Pou Kihī model (which was adapted to reflect social and cultural influences of Native Hawaiian health) groups influences across four levels (individual, interpersonal, community and societal) as well as across five domains of influence (biological, behavioral, physical/built environment, sociocultural environment, and healthcare system). Inclusion of these cross sections of levels and domains has been adapted specifically to reflect the historic and sociocultural influences of NHPI. Selection of variables for the proposed study are based on the Nā Pou Kihī NIMHD conceptual framework, as well as previous studies that have

outlined important correlates of health care access for NHPI (as outlined below in the variable rationales and study measures sections).

Although social determinants have been crucial in determining the extent of health disparities for minority populations, a body of new research suggests that additional innovative health determinants need to be considered. Novel health determinants that reflect behavior and lifestyle, biological factors, sociocultural environment, physical environment and healthcare and related systems could provide detailed insight into health outcomes via a more complex system analysis (Duran & Pérez-Stable, 2019). Proposed measures attempt to span the domains of influence outlined by the research framework, including, but not limited to the following examples: biological (e.g., sex¹), behavioral (e.g., religious centrality and cultural efficacy), sociocultural environment (e.g., income and racial discrimination), and healthcare system (e.g., insurance coverage status, medical mistrust and service preference). These exhaustive systems analyses therefore could not only improve our understanding of NHPI health outcomes but could help establish the infrastructure needed for intervention research and implementation.

The present study also considers Andersen's healthcare utilization model in conjunction with the NIMHD framework, which demonstrates the factors that lead to the use of health services (Andersen, 2015). The healthcare utilization model delineates health service use as a result of predisposing factors (i.e., demographics, social factors, and health beliefs), enabling factors (i.e., income, health insurance, and availability of health-related

¹ The NIH Office of Research on Women's Health states that sex as a biological variable is expected to be factored into research designs, analyses, and reporting in human studies given potential sex differences in physiology, metabolism, and many other biological functions. Thus, I plan to recruit approximately equal women and men in the sample (Ritz et al., 2014).

information), as well as need factors (i.e., perceived need for health services and one's viewpoint of their health). In order to best measure health service use among NHPI adults, the present study also includes items and measures spanning these three factors, including predisposing factors (i.e., demographics that include relationship status, education, age, and more; social factors including *Pacific Cultural Efficacy*, *Perceived Ethnic Discrimination*, *Pacific Connectedness and Belonging*, and *Religious Centrality and Embeddedness*; and health beliefs that include *Medical Mistrust* and comfort levels, or preferences, with different health service providers); enabling factors (i.e., income and health insurance); and need factors (i.e., *Perceived Health Status*, *Depression/Anxiety*, and *Perceived Stress*), among others.

Overall, the study's proposed variables and research findings serve a greater capability of capturing the circumstantial health indicators and determinants most relevant to NHPI mental health care service utilization in the U.S. The social disadvantages faced by NHPI that create unequal health outcomes between NHPI and the rest of the U.S. population are not currently embodied by existing health literature. However, these population differences as well as sociocultural contexts are important to acknowledge in health disparities research at every level of measurement and evaluation (Dye et al., 2019). Health disparities also generally occur in the social and structural determinants of health, but previous studies on NHPI health outcomes tend to focus on the individual-level of health determinants analyses (Agurs-Collins et al., 2019; Zelaya et al., 2017).

Rationale for Study Variables and Profile Descriptions

The latent variable categories that ultimately described the resulting profiles included the **Symptom Distress**, **Protective Factors**, and **Health Attitudes** categories. The Symptom Distress category includes an item measuring perceived health status, the Patient

Health Questionnaire-4 (PHQ-4) measuring depression and anxiety (Kroenke et al., 2009), the Perceived Stress Scale (Cohen et al., 1983; Crosswell et al., 2020), and the Brief Perceived Ethnic Discrimination Questionnaire–Community Version (PEDQ-CVB; Blair et al. 2020; Brandolo et al., 2005). The Protective Factors category includes four subscales of the *Pacific Identity and Wellbeing Scale-Revised* (PIWBS-R; Manuela & Sibley, 2015), specifically the Cultural Efficacy (CE) subscale, the Pacific Connectedness and Belonging (PCB) subscale, the Religious Centrality and Embeddedness (RCE) subscale, and the Perceived Societal Wellbeing (PSW) subscale. Finally, the Health Attitudes category includes The Group-Based Medical Mistrust Scale (GBMMS; Thomsson et al., 2004), and a service preference questionnaire adapted from Aronson et al. (2016). Latent variables were grouped in order to facilitate describing the resulting latent profiles, and rationale for their inclusion in the present study is given below.

Symptom Distress Category. Measuring symptom distress in the study sample prefaces a measure of *need* for mental health care services, as outlined by Andersen’s healthcare utilization model, thereby emphasizing the necessity to survey NHPI participants about psychological and other psychosocial forms of distress (e.g., perceived health status, anxiety and depression, stress, and perceived racial/ethnic discrimination). Regarding the measurement of perceived health status, Chen and Liu (2021) found that among a set of predictors measuring risk factors relating to psychological distress during COVID-19, that self-rated health was ranked as the second most “essential” predictor for measuring psychological distress, given that participants with lower levels of self-rated health were more likely to also have a higher level of psychological distress. On the other hand, the PHQ-4 was created as an ultra-brief and accurate measurement of core symptoms and signs of

depression and anxiety, based on the fact that anxiety and depression are two of the most prevalent illnesses among the general population (Kroenke et al., 2009). Because these two mood disorders are frequently comorbid and the nature of these mood disorders can make filling out long questionnaires difficult if patients are suffering from fatigue or loss of concentration, the PHQ-4 was selected over the longer PHQ-9 measure, which would also call into question the ethicality of its inclusion in the study since it includes a critical item measuring suicidality yet with no capability of following up with study participants. That is, due to the anonymity of the study's survey questionnaire, there would be no possibility for me to inquire about a participant's wellness if this critical item on the PHQ-9 assessing suicidality were marked highly on the survey, which would be highly unethical. Furthermore, to better compare the present study participants to one another regarding psychological distress, the Perceived Stress Scale was included because it contains items that were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives (Cohen et al., 1983; Crosswell et al., 2020). The scale also includes a number of direct queries about current levels of experienced stress, and individuals may exhibit different levels of perceived stress and stress responses even when confronted with the same stressors. Finally, The Brief Perceived Ethnic Discrimination Questionnaire–Community Version (PEDQ-CVB; Blair et al. 2020; Brandolo et al., 2005) was included based on prior studies that found racial discrimination was a prevalent factor in NHPI well-being and positively associated with four indicators of psychological distress, including anger, depression, anxiety, and stress (Allen et al., 2017). Studies have otherwise indicated that ethnic discrimination among NHPI should be accounted for as it predisposes individuals to depressed mood and suicide (Subica & Wu, 2019) or may inhibit help-seeking behaviors (Subica et al., 2019).

Protective Factors Category. Theorized protective factor latent determinants include four subscales of the *Pacific Identity and Wellbeing Scale-Revised* (PIWBS-R; Manuela & Sibley, 2015), measuring cultural efficacy, connectedness and belonging, religious centrality and embeddedness, and perceived societal wellbeing; all within the context of Pacific Islander identity and community. Besides the implementation of measures assessing protective factors as a strengths-based approach to research with minoritized communities, there is also limited prior research on the risk and protective factors of problem behaviors such as substance use and suicide among NHPIs as well as mental health care seeking behavior that has alluded to the importance of NHPI historical and cultural factors in promoting or reducing risk. A prior study on psychological distress among NHPIs during the COVID-19 pandemic revealed the importance of having a strong social network for NHPIs, and that sources of support for this population were likely compromised by the pandemic. Findings suggested that faith-based and community-based organizations may be integral to educating, promoting, and providing mental health care for NHPIs—based on the fact that risk of moderate and severe psychological distress were found to be significantly greater among those who felt “marginalized or excluded from society” or “isolated and alienated from society” in the past 30 days compared to reporting little to no psychological distress (Cha et al., 2023). Additionally, the risk of severe psychological distress was lower among those NHPI feeling “never,” “rarely,” or “sometimes” “balanced in mind, body, spirit, and soul” or “connected to their culture” in the past 30 days compared to their counterparts. The study reinforces the importance of recognizing the relationship between mental health and culture, as well as the historical context for NHPI. Furthermore, findings emphasized the importance of sociocultural protective factors in mitigating psychological distress and

adverse health outcomes in the community. The potential health benefits of sustaining a strong cultural identity and/or participating in cultural activities have been documented in prior research with Indigenous and other non-white samples in Western settings. For example, possessing a strong cultural identity has been found to promote resilience, enhance self-esteem, engender pro-social coping styles, and has served as a protective mechanism against mental health symptoms (Shepherd et al, 2017). Identifying and engaging in Indigenous cultures was also linked with enhanced self-assessed health. Moreover, cultural identity may buffer discrimination-induced distress (Shepherd et al, 2017; Subica et al., 2019). Thus, a positive cultural identity can provide an individual with a sense of belonging, purpose, social support and self-worth (Shepherd et al, 2017). There are no prior studies that have examined the relation of Pacific Islander cultural identity protective factors as they relate to mental health care service utilization, yet findings would contribute to a dearth of literature on health protective factors in this community. While cultural efficacy, connectedness and belonging, and perceived societal wellbeing are all important to consider as they relate to the context of Pacific Islander identity, religiosity and spirituality are also beliefs endorsed by many NHPI communities (Manuela & Sibley, 2015). Commitment to religious and spiritual beliefs has been found to be a protective factor in regard to healthy psychological wellbeing among NHPI young adults (Allen & Heppner, 2011).

Health Attitudes Category. The Group-Based Medical Mistrust Scale (GBMMS; Thompspon et al., 2004), and a service preference questionnaire adapted from Aronson et al. (2016) makeup the Health Attitudes category, which are meant to capture overall health attitudes from participants on comfort levels with both the U.S. healthcare system and different health providers. A prior study documented that Native Hawaiian adolescents do

not seek help for their mental health problems from physicians as often as other groups, yet they do seek help from Native Hawaiian healers more often than other groups (Bell et al, 2001). Furthermore, adolescents who had stronger Hawaiian cultural identification were more likely to use Native Hawaiian healers for mental health issues. Although there is also a lack of literature on health attitudes and care seeking behavior among Native Hawaiian and Pacific Islander adults, such preferences for Indigenous providers have strong justification given that prior studies have at least documented that NHPIs report receiving worse care than Whites. An Agency for Healthcare Research and Quality (AHRQ) found that across one-third of quality measures in healthcare, NHPIs received worse care than Whites (AHRQ, 2019). No prior studies however have explicitly measured for medical mistrust among NHPI adults, nor their comfort levels with different health service providers. In fact, there are no psychological measures that specifically assess for comfort levels for different providers, necessitating the adaptation of such a measure from a prior study examining provider preferences among American Indian adults with diabetes (Aaronson et al., 2016). The inclusion of a health attitudes measure will also allow for a nuanced analysis and discussion of the outcome variable *intended mental health service utilization* to examine if there are in fact differences found between participants' health attitudes and comfort with medical systems and providers who indicate "Yes" to wanting to see a mental health professional in the next 12 months, as opposed to those in the "No" group. Furthermore, from a clinical lens, ethnic minority mental health treatment engagement and retention are highly dependent on perceptions of providers and of the healthcare system providing psychotherapeutic care (Zeber et al., 2017). Measuring perceptions of providers and healthcare systems are pertinent not just for assessing if a patient is comfortable enough to

engage in services, but for gauging patients' comfort levels with continuing to see a psychotherapist for care on a regular basis (dependent on treatment goals and desired therapeutic outcomes).

Order of Latent Categories. While the present study considers several frameworks for the selection of variables (i.e., NIMHD Nā Pou Kihī framework and Andersen's healthcare utilization model) there is no inherent hierarchical order of the categories of Symptom Distress, Protective Factors, and Health Attitudes. Rather, willingness to engage in treatment (i.e., health seeking) should be viewed as an iterative process from a holistic behavioral perspective, in which individuals operate within a cultural, community, and societal context where they evaluate their need for services along with considerations for economic, family, or social functions and obligations or duties. Essentially, behavioral health help-seeking processes may start with becoming aware of one's complaints as a symptom of mental health issues, forming an intention, and eventually seeking help, which are often balanced or counteracted by an individual's *ability* and/or *means* to engage in care (McLaren, Peter, & Tomczyk, 2023).

The Present Study

The present study sought to collect data from a sample of at least 300 adult NHPI (aged 18 years and older) via an online survey. Data was collected as one assessment via rigorous Internet-based data collection procedures (described below). Participant recruitment included targeted recruitment in online social networking groups and to community-based agencies and organizations serving NHPI in states where NHPI populations are highest (e.g., Hawai'i, California, Nevada, Utah, etc.) and other specific

metropolitan areas in which NHPI populations are highest (e.g., Honolulu County, Hawaii County, Los Angeles County, Maui County, San Diego County, etc.).

Consultation with community leaders and stakeholders, as well as adequate collaboration, assisted with optimizing the survey's reach, and future collaboration will be essential for the appropriate implementation of the study's findings for increasing health access within and across NHPI communities. Elders in the NHPI community play an important role in decision-making processes and are consulted on the basis of respect within NHPI cultures (Panapasa et al., 2012). Obtaining direct consultation and approval from elders in the Pacific Islander community is a strong indicator of endorsement for conducting research with Pacific Islander populations (Panapasa et al., 2012). Utilizing existing professional organizations for consultation with community elders and for participant recruitment was crucial during the process of recruiting a diverse sample. Outreach to several health professionals, community elders, and Native Hawaiian and Pacific Islander-serving national and local organizations also allowed for increased collaboration and consultation about the study.

Study Aims

Aim one is to empirically identify latent profiles of study participants based on theorized symptom distress, protective factors, and health attitude latent determinants of intended mental health care service utilization. The NIMHD has expanded the domains of influence that affect health outcomes from “social determinants” to “health determinants” to include a broader, systems-wide approach to understanding health disparities (Duran & Pérez-Stable, 2019). The application of this approach has yet to be implemented for analyzing mental health service utilization for Native Hawaiians and

Pacific Islanders in the U.S. Given the scarcity of research on determinants of NHPI health outcomes, the proposed study's approach is to analyze NHPI health outcomes from this extensive angle of "health determinants" to contribute to the NIMHD-identified knowledge gap. Latent profile analysis is a statistical approach that allows latent indicators across the symptom distress, protective factors, and health attitudes categories to be considered in one multidimensional indicator (Fairley et al., 2014). It is hypothesized four profiles will be found to best fit the groups in the proposed study's sample.

H1: I hypothesize that analyses will yield a four-profile solution, where one profile will indicate the lowest symptom distress, highest protective factors, and most comfortable or trusting health attitudes; with profiles 2-4 indicating more symptom distress, less protective factors, and less comfort and trust with medical providers and U.S. healthcare systems.

The second aim of the present study is to determine intended or planned mental health care utilization as an outcome across the identified profiles by using an outcome variable assessing participants' plans to see a mental health professional in the next 12 months (i.e., "Yes" or "No"). In other words, how does mental health service utilization relate with profile membership? Latent profiles of NHPI study participants will vary in terms of which health determinants are most pertinent to their group's ("Yes" or "No") intention to access mental health care services. Additionally, NHPI are more likely to be in fair or poor health than the total U.S. population, but health conditions (in addition to health care access and insurance rates) vary and can be worse

when broken down by additional subgroups (Galinsky et al., 2017). Data reporting and analyses should account for demographic covariates given the distinct health disparities and health determinants that exist between disparate Native Hawaiian and Pacific Islander subgroups. Findings of the proposed study would help clarify patterns of mental health care service utilization outcomes among NHPI that are not fully explained nor deeply examined in the current literature.

H2: I hypothesize that participants in the “No” group to wanting to see a mental health professional in the next 12 months will belong to a latent profile consisting of participants who indicate lower symptom distress scores, higher protective factors, and more comfortable/trusting health attitudes with U.S. healthcare systems and different types of providers more often than peers in the other four profiles, and vice versa.

CHAPTER 3

METHOD

Sample

Data was collected from consenting, adult respondents who met the following inclusion criteria: (a) self-identify as Native Hawaiian or other Pacific Islander (e.g., Sāmoan, Tongan, Fijian, Chamorro, Tahitian, etc.); (b) are aged 18 years and over. An online survey was sent to community leaders and advertised on social media websites (i.e., Instagram and Facebook). Research has pointed to a recent increase in automated accounts (“bots”) that may spam online surveys – thus preventative measures were taken prior to survey distribution (Bybee et al., 2021). Out of 453 respondents, 58 responses were deemed invalid, suspected bots, or were incomplete questionnaires that were omitted from the resulting analyses with the use of listwise deletion during data analyses, described below. Qualtrics surveys are submitted to the database after two weeks of inactivity, regardless of whether they are complete or incomplete. Listwise deletion was utilized because incomplete surveys were often submitted after the two-week inactivity period was up, missing significant data on the main latent health indicators of the study across all three categories. Additional recommendations that were implemented for preventing and tracking bot spam included tracking timestamps (bots complete surveys abnormally fast), using CAPTCHA and reCAPTCHA technology and tools embedded in the Qualtrics software, and flagging potential duplicate responses (e.g., a respondent took the survey multiple times in order to engage in multiple instances of entering into the gift card drawing). Of the omitted 58 survey respondents, six declined to consent to the study, 42 were filtered out as suspected bots, and 10 were missing data on the main study variables and were thus excluded during analyses via

listwise deletion, a commonly recommended procedure for missing data (Little & Rubin, 2020). Among the final sample ($N = 395$), item-level missingness across survey items ranged from .2% to 1.7%.

The 395 participants were self-identified Pacific Islander adults (*Table 1*; $M_{age} = 32.3$ years, $SD = 8.2$) consisting of 207 men (51.6%) and 184 women (46.1%), with 33.3% of the sample identifying as Kānaka Maoli, 19.8% Carolinian, 14.8% Sāmoan, and 14.3% Chamorro. Regarding citizenship, 82.7% of the sample indicated U.S. Citizenship, 6.7% U.S. National, 5.9% COFA Citizen, and 3.2% identifying as U.S. Foreign Nationals. Regarding education and income, 35.1% identified having a bachelor's degree, 17.3% with some graduate school, 21% with a master's degree, 11.1% with some college experience, and 7.2% with an associate's degree; with 25.9% of the sample indicating income levels between \$50,000 to \$74,999, 21.2% as having income levels between \$100,000 to \$149,000, and 14% with levels between \$75,000 to \$99,999. Out of the sample, 4.7% indicated being uninsured, 30.1% with private health insurance, and 63.5% with public health insurance.

Measures

Symptom Distress Determinants

Health Status. Participants were asked to rate their health status using an item adapted from the NCHS household questionnaire (e.g., “*In general, would you say your health is: 1=excellent, 2=very good, 3=good, 4=fair, 5=poor?*”; NCHS, 2019). Higher scores indicate poorer health status.

Depression and Anxiety. The Patient Health Questionnaire 4-item measure (Kroenke et al., 2009) was utilized to assess participants' depression and anxiety symptoms (e.g., “*Over the*

last two weeks, how often have you been bothered by the following problems? Feeling down, depressed or hopeless”). The PHQ-4 is a composite of the Patient Health Questionnaire-2 and Generalized Anxiety Disorder-2 scales (GAD-2; Kroenke et al., 2009), two-item scales designed to screen for depression and anxiety over the prior two weeks, respectively. Items are self-selected on a Likert-type scale from 1 (*Not at all*) to 4 (*Nearly every day*). A mean score for each participant was calculated, where higher scores indicate greater depressive and anxious symptom distress. This scale has shown acceptable internal consistency (Cronbach’s $\alpha > .70$) in the general U.S. population (Löwe et al., 2010), suggesting that an ultra-brief 4-item measure can reliably and validly measure depression and anxiety in the general population. Cronbach’s α for the present study was .83.

Perceived Stress. The Perceived Stress Scale (Cohen et al., 1983; Crosswell et al., 2020) was utilized to assess current psychosocial stress levels (e.g., “*In the last month, how often have you been upset because of something that happened unexpectedly?*”). Items are self-selected on a Likert-type scale from 1 (*Never*) to 5 (*Often*). A mean score for each participant was calculated, where higher scores indicate greater levels of perceived stress. PSS items are general in nature rather than event-specific and evaluate the extent to which individuals perceive their lives to be “unpredictable, uncontrollable, and overloading”. The psychometric properties of the PSS-10 were originally evaluated in a large national sample of 2,387 American adults (Cohen, 1988), which reported that scores on the PSS-10 demonstrated adequate internal consistency reliability ($\alpha = .78$), demonstrating it is a reliable measure for general population samples. Cronbach’s α for the present study was .74.

Racial Discrimination. The Brief Perceived Ethnic Discrimination Questionnaire–Community Version (PEDQ-CVB; Blair et al. 2020; Brandolo et al., 2005) assessed

participants' experiences with racial discrimination related to microaggressions (e.g., “*Have others made you feel like an outsider who doesn't fit in because of your dress, speech, or other characteristics related to your ethnicity?*”). The 17-item scale measures frequency of perceived ethnic discrimination across various settings. Items are self-selected on a Likert-type scale from 1 (*Never Happened*) to 5 (*Happened Very Often*). A mean score for each participant was calculated, where higher scores on the PEDQ-CVB indicate higher frequency of racist experiences related to identifying as NHPI. This scale has shown acceptable internal consistency (Cronbach's $\alpha > .90$) in a sample of Native Americans (Blair et al. 2020). Cronbach's α for the present study was .83.

Protective Factors Determinants

Pacific Cultural Efficacy. The Cultural Efficacy (CE) subscale of the *Pacific Identity and Wellbeing Scale-Revised* (PIWBS-R) assessed how participants feel they have the personal and cultural resources to act within a Pacific cultural or social context (e.g., “*I find it easy to participate in Pacific cultural events?*”; Manuela & Sibley, 2015). Items are self-selected on a Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*). A mean score for each participant was calculated, where higher scores indicated greater Pacific cultural efficacy. The PIWBS-R is a 35-item self-report measure that assesses five factors of Pacific identity and wellbeing. The measure provides a platform to statistically model Pacific identity and explore how culture and identity may contribute to positive health outcomes. Most importantly, it is designed as a culturally-appropriate measure for capturing a holistic and heterogeneous conceptualization of Pacific Peoples' self-concept and wellbeing. The CE subscale, as well as the three subsequent subscales of the PIWBS-R described below (i.e., PCB, RCE, and PSW), all evidenced acceptable internal reliability with Cronbach's α s $> .70$ in a sample of 919 Pacific

Peoples in New Zealand (Manuela & Sibley, 2015). Cronbach's α for the CE subscale in the present study was .86.

Pacific Connectedness and Belonging. The Pacific Connectedness and Belonging (PCB) subscale of the *Pacific Identity and Wellbeing Scale-Revised* (PIWBS-R) assessed participants' sense of belonging and connections with the Pacific group (e.g., “*I feel at home around other Islanders, even if they are not from my island*”; Manuela & Sibley, 2015). Items are self-selected on a Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*). A mean score for each participant was calculated, with higher scores indicating greater Pacific connectedness and belonging. Cronbach's α for the present study was .81.

Religious Centrality. The Religious Centrality and Embeddedness (RCE) subscale of the *Pacific Identity and Wellbeing Scale-Revised* (PIWBS-R) assessed how individuals feel that religion is intertwined with one's Pacific culture and identity (e.g., “*Going to church is part of my culture and religion*”; Manuela & Sibley, 2015). Items are self-selected on a Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*). A mean score for each participant was calculated, where higher scores indicated greater religious centrality. Cronbach's α for the present study was .80.

Perceived Societal Wellbeing. The Perceived Societal Wellbeing (PSW) subscale of the *Pacific Identity and Wellbeing Scale-Revised* (PIWBS-R) assessed participants' perceived satisfaction with U.S. society (e.g., “*The support you receive as a Pacific Islander in the community you live in*”; Manuela & Sibley, 2015). Items are self-selected on a Likert-type scale from 1 (*completely dissatisfied*) to 7 (*completely satisfied*). A mean score for each participant was calculated, with higher scores indicating greater perceived societal wellbeing. Cronbach's α for the present study was .93.

Health Attitudes Determinants

Medical Mistrust. The Group-Based Medical Mistrust Scale (GBMMS) was used to assess participants' perceived mistrust of traditional healthcare systems and medical providers used in the U.S. (e.g., "*People of my ethnic group should not confide in doctors and healthcare workers because it will be used against them*"; Thompspon et al., 2004). The response key is a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A mean score for each participant was calculated, where higher scores indicate greater medical mistrust. The GBMMS is a 12-item scale developed to measure race-based medical mistrust: the suspicion of mainstream healthcare systems and professionals and the treatment provided to individuals of the respondent's ethnic or racial group. Cronbach's α for the present study was .82.

Service Preference. Items assessing participant service preference were adapted from the service preference questionnaire section from Aronson et al. (2016) asking participants to rate their comfort with seeing a specified provider type from a list of different medical professionals and other service types (medical doctor, mental health professional, tribal elder, traditional healer, etc.). Participants were asked to respond to the following: "*How comfortable would you feel [talking/going to this service] about health issues?*" with four response options: 1 (*Don't Know*), 2 (*Not at all comfortable*), 3 (*Somewhat comfortable*) and 4 (*Very comfortable*). "Don't know" was included as a negative response because it provides information about disconfirmation of perceived efficacy of the service being inquired about (thereby utilizing the same methodology for categorizing negative responses as the original study; Aaronson et al., 2016). Mean combined scores for each participant were calculated for a combined traditional or Native healer category and a combined medical doctor/nurse

category, where higher scores indicate more comfort with seeing those provider types. Service types that participants rated their comfort level seeing for health services included a medical doctor, nurse, mental health professional, Native/tribal elder, traditional healer (e.g., a traditional healer in Sāmoa is a *Taulasea*), family member, pastor/priest/minister, group meetings (e.g., Alcoholics Anonymous), and Internet. Cronbach's α for the present study was .86.

Demographic Covariates

Demographic Covariates. Numerous demographic variables have been identified as correlated with healthcare access among NHPI in the body of health literature (Manuela & Anae, 2017; Manuela & Sibley, 2015; Townsend et al., 2015; Zelaya et al., 2017). The following covariates are accounted for: **age** (years), **gender** (1=female, 2=male, 3=transgender man, 4=transgender woman, etc.); **ethnicity** (e.g., 1=Native Hawaiian, 2=Sāmoan); **geographical location** (city and state); **relationship status** (1=single, 2=dating, 3=partnered or married); **education** (1=less than high school, 2=high school diploma or GED, 3=some college, 4=four-year college degree or higher); **income** (12 month income adjusted by dependents); **self-identified sexual orientation** (1=straight or heterosexual, 2=gay or homosexual, 3=bisexual, etc.); **citizenship status** (1=U.S. Citizen, 2=U.S. National, 3=Non U.S. Citizen); **length of time in the U.S. or affiliated territory** (years); and **insurance coverage status** (1=noninsured, 2=public health insurance, 3=private) and type of insurance coverage (e.g., Medicare, Medicaid, Blue Anthem etc.) of participants were assessed using items adapted from the 2019 National Center for Health Statistics (NCHS) National Health Interview Survey (NHIS; e.g., “*What type of health insurance coverage are you currently covered under, if any?*”; 2019).

Intended Mental Health Service Utilization Outcome Variable

Intended or planned mental health care service utilization by study participants was measured by assessing intended utilization within the next 12 months (“Yes” or “No”) using an item adapted from the 2019 NCHS NHIS (e.g., “*In the next 12 months, do you plan to see or talk to any of the following health care providers about your own health? A mental health professional such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker?*”; NCHS, 2019).

Analytic Plan

Overview

The primary purpose of the proposed project is to (1) empirically identify profiles of study participants based on symptom distress, protective factors, and health attitude latent determinants of mental health care service utilization and (2) examine how does mental health service utilization relate with profile membership while accounting for demographic covariates. To address these objectives, the following data analytic plan consists of eight steps: **AIM 1 ANALYSES:** **First**, data will be assessed for univariate normality and potential multicollinearity. **Second**, latent profiles will be identified based on measures of symptom distress, protective factors, and health attitudes. The number of profiles will be found using an iterative process assessing the fit of these models. Criteria used to select the final LPA model will include the change in likelihood between models, Bayesian Information criterion (BIC), and entropy (Nylund, Asparouhov & Muthén, 2007). **AIM 2 ANALYSES:** **Third**, latent profiles will be split into two different groups (i.e., a “Yes” and “No” group) according to participant responses to the outcome variable, intended mental health care service

utilization in the next 12 months. **Fourth**, latent profiles will be regressed onto the covariate predictors in order to account for demographic predictors of profile membership. **Fifth**, Wald tests of parameter restrictions will be performed to examine whether latent variable estimates significantly differed between groups (“*Yes*” or “*No*” to intended mental health service utilization in the next 12 months) *within* each respective profile. **Sixth**, participant response means (i.e., mean score estimates) will be plotted by profile and by group (i.e., “*Yes*” vs. “*No*” to intended mental health care service utilization) for ease of interpretation of results. **Seventh**, differences in intended mental health care service utilization will be examined by profile and by group (i.e., mean scores across the latent determinants will be compared for the “*Yes*” and “*No*” groups both within and across the resulting latent profiles). **Eighth**, a logistic regression of odds ratios was performed to examine differences in mental health care utilization across profile membership.

Statistical Analyses of Specific Aims

To achieve the study aims, I first cleaned and managed the organization of the dataset in SPSS. I then assessed the assumption of univariate normality for all variables in the proposed study using a descriptive analysis conducted in SPSS with the demographic covariates and indicator variables. Normality assumptions were assessed based on suggested cut-off of skewness < 3, kurtosis <8 (Osborne, 2012). Not all demographic variables were included as covariates in the final model solutions due to violations of skewness and kurtosis found during univariate normality analyses (i.e., citizenship status, gender identity, and sexual orientation; skewness >3, kurtosis >8). Then, a bivariate correlation matrix (*Table 2*) was calculated with all latent indicator variables to assess potential multicollinearity (correlations

between distinct indicators should be $<.90$; Tabachnick & Fidell, 2012; see *Table 1*). Bivariate correlations analysis (*Table 2*) consisted of patient health status (HS), the Patient Health Questionnaire (PHQ), The Brief Perceived Ethnic Discrimination Questionnaire–Community Version (PEDQ-CVB), The Group-Based Medical Mistrust (MM) Scale (GBMMS), the Cultural Efficacy (CE) subscale of the PIWBS-R, the Pacific Connectedness and Belonging (PCB) subscale, the Religious Centrality and Embeddedness (RCE) subscale, the Perceived Societal Wellbeing (PSW) subscale, and the service preference questionnaire assessing participants’ comfort in accessing various healthcare providers (HEAL: traditional and native healers; and DOC: medical doctor or nurse practitioner).

Latent profile analysis was then conducted using Mplus 8.4 statistical software to examine whether different conceptually meaningful profiles of Native Hawaiians and Pacific Islanders emerged based on levels of hypothesized and intersecting symptom distress, protective factors, and health attitude latent determinants of mental health care service utilization while accounting for demographic covariates (Muthén & Muthén, 2017). The percentage change in the log-likelihood will be compared for each model, selecting models where there was not too much discernable difference by adding another profile. An optimal profile solution is also determined through the evaluation of multiple indicators of approximate fit including: the Akaike information criterion (AIC), Bayesian information criterion (BIC), and sample size-adjusted BIC (SABIC). Bayesian Information Criterion will be considered as a measure of model fit with penalization for additional profile; thus, models with lower values are considered a better model fit. Entropy will also be considered, which measures how well a participant fits into a specific profile with values ranging from 0 to 1 with values closer to 1 indicating better fit. Two likelihood ratio tests will also be considered:

the Vuong-Lo–Mendell–Rubin likelihood ratio test (VLMR-LRT) and bootstrapped likelihood ratio test (BLRT) compare the current profile solution (k) to the solution with one less profile ($k - 1$). For both ratio tests, a statistically significant test at $p < .05$ indicates that the previous solution, $k - 1$, was a significantly worse fit than the current profile solution, k . Classification diagnostics (entropy) were consulted to ensure that the solutions distinguished distinct profiles. Entropy values greater than 0.80 indicate adequate accuracy of profile assignment (Clark & Muthén, 2009; Wang et al., 2017).

Next, a LPA was conducted in Mplus 8.4 with listwise deletion using 11 continuous variables which assessed participants on the symptom distress, protective factors, and health attitudes latent indicators across two different groups (i.e., a “Yes” and “No” group) according to participant responses to the outcome variable, intended mental health care service utilization in the next 12 months. Latent profiles were then regressed onto the covariate predictor variables using multinomial logistic regression, while accounting for potential misclassification, utilizing an approach where profile classifications are treated as fixed, categorical variables, rather than latent profiles with flexibility (e.g., the probability associated with them; Bakk & Vermunt, 2016; Ferguson et al., 2020). To further examine symptom distress, protective factors, and health attitudes latent indicators of profile membership within the context of the covariate predictors, demographic variables (education, income, relationship status, insurance status, age, and years in U.S.) were examined to test how these variables were associated with the probability of profile membership. The posterior probabilities associated with each profile were then examined to determine whether there were high probabilities that people would belong to the profile to which they were assigned and low probabilities of them belonging to the other profiles.

To examine whether participant Symptom Distress (i.e., health status, depression and anxiety, perceived stress, and ethnic discrimination), Protective Factors (cultural efficacy, Pacific connectedness and belonging, religious centrality and perceived societal wellbeing) and Health Attitudes (medical mistrust and service preferences/comfort) varied by profile membership and by group (“Yes” and “No” groups on the outcome variable, intended mental health care service utilization), profile-specific means (intercepts) of each variable (e.g., depressive and anxious symptoms) per the two groups were estimated in Mplus, while controlling for demographic covariates (*Table 5*). Wald tests of parameter restrictions were performed to examine whether latent variable estimates significantly differed between groups (“Yes” or “No” to intended mental health service utilization in the next 12 months) *within* each respective profile. Means were then plotted both by profile (Profile 1-4) and by group (“Yes” or “No” to intended mental health service utilization in the next 12 months; *Figures 2 and 3*) for ease of interpretation both within and across each respective profile. Finally, a simple logistic regression with odds ratios was additionally conducted to examine differences between profiles in mental health care utilization (*Table 6*). A conceptual model demonstrating the latent variable indicators and logistic regression onto the demographic covariates is demonstrated in *Figure 1*.

CHAPTER 4

RESULTS

Prior to running the main analyses, normality was assessed, where several demographic variables (i.e., citizenship status, gender identity, and sexual orientation) were excluded from analyses due to violating assumptions of normal data distribution by exceeding acceptable skewness and kurtosis values. The rest of the demographic predictor variables and all latent indicator variables met the normality criteria for skewness (<3) and kurtosis (<8 ; Osborne, 2012). Sample statistics and bivariate correlations are presented in *Table 1* and *2*. Fit statistics AIC, BIC, and SABIC are presented in *Table 3* and indicated that the four-profile solution fit the data best. A one-profile model was fit first, and successive profiles were added to determine the number of profiles that best fit the data; the model was estimated with up to five profiles, at which point the model failed to converge. The BLRT indicated that each successive profile fit significantly better than the preceding solution and was therefore noninformative. The VLMR-LRT indicated that the two-profile solution had superior fit to that of the one-profile solution, but that the addition of a subsequent four-profile solution did improve fit over both the two-profile and three-profile solutions. Many LPA studies use profile size as an informal measurement of solution fit, recommending against solutions with class sizes fewer than $n = 50$ or 5% of the overall sample (Weller et al., 2020). Fit statistics and VLMR-LRT indicated that the four-profile solution is superior, with the smallest profile size having 21 participants assigned to it (Profile 4: $n = 21 / 5\%$), meeting the designated cutoff.

Profile Descriptions

Item and scale response means were plotted by profile for interpretation (*Figures 2 and 3*). For interpretation descriptions, I broadly describe the latent indicators as measuring symptom distress (e.g., health status, depressive and anxious symptoms, perceived stress levels, and ethnic discrimination), protective factors (e.g., cultural efficacy, connectedness and belonging, and societal wellbeing), and health attitudes, or beliefs, referring to perceptions of U.S. healthcare systems and health providers (e.g., medical mistrust as well as comfort with medical providers and traditional or native healers). All indicator variable estimates were statistically significant at the $p < .001$ level.

AIM 1 RESULTS:

Profile 1: Very Low Symptomatic Profile (*Very low symptom distress; Very high in protective factors; Very comfortable with both provider types and health systems*)

Profile 1 ($n = 138, 35\%$), which was the second largest profile, was characterized by participants endorsing very low symptom distress and medical mistrust; very high scores in protective factors; and were somewhat comfortable with traditional/native healers and very comfortable with medical doctors/nurses. Participants in this profile indicated the highest mean scores on protective factor indicators, as well as the highest mean scores on comfort/preference for a medical doctor or nurse, which was preferred moreover than a Native or traditional healer. Furthermore, participants in this profile reported the lowest mean scores in Health Status, indicating participants rated their health as (slightly) better on average compared to Profile 2 and 3, and much better on average compared to Profile 4. Profile 1 can thus be characterized by health attitudes that are very comfortable with

different healthcare provider types and are more likely to trust than mistrust the U.S. medical care system and medical doctors/nurses.

Profile 2: Low Symptomatic Profile (*Low symptom distress; Low to moderate in protective factors; Low comfort with either provider type*)

Profile 2 ($n = 94$, 24%) was characterized by participants endorsing low symptom distress, neutral medical mistrust and low to moderate in protective factors, as well as low comfort with either provider type (traditional or native healers versus medical doctors and nurses). This profile endorsed mean scores that were between “*not at all comfortable*” and “*somewhat comfortable*” on average for seeing either a Native or traditional healer or medical doctor/nurse; mean scores that are only slightly higher than for participants in Profile 4. Participants in Profile 2 also indicated scores lower than the sample average on all indicators regarded as protective factors (i.e., Cultural Efficacy, Pacific Connectedness and Belonging, Religious Centrality and Embeddedness, and Perceived Societal Wellbeing). Health attitudes demonstrated by participants in Profile 2 can be characterized as having low comfort accessing health services from the provider options listed (i.e., Native/traditional healers and medical doctors/nurses) and neutral trust in the medical system.

Profile 3: Moderate Symptomatic Profile (*Moderate symptom distress and medical mistrust; High protective factors; Somewhat comfortable with either provider type*)

Profile 3 ($n = 142$, 36%), which was the largest profile, was characterized by participants endorsing moderate symptom distress and medical mistrust; high in protective factors; and were somewhat comfortable with either provider type. Participants in this

profile indicated the highest mean scores on medical mistrust in conjunction with the second highest mean score on comfort with Native or traditional healer, and alongside Profile 4, endorsed scores indicating more comfort with a Native or traditional healer than with a medical doctor or nurse. Compared with Profile 2, participants in Profile 3 were more likely to indicate higher scores in symptom distress, but congruently reported higher scores on average in protective factors, and reported higher scores on average with preferring either provider type over participants in Profile 2. Health attitudes demonstrated by participants in Profile 3 are thus characterized as having slight mistrust in medical care providers and systems, and with a slight preference for Native/traditional healers over medical doctors/nurses.

Profile 4: High Symptomatic Profile (*High symptom distress; Very low in protective factors; Not at all comfortable with either provider type or health systems*)

Profile 4 ($n = 21$, 5%), which was the smallest, was characterized by participants endorsing very high symptom distress; moderate medical mistrust; very low in protective factors; and were not at all comfortable with either provider type. Participants in this profile indicated the highest mean scores on symptom distress indicators as well as indicated poorer perceived health status on average. Participants in this profile also indicated the lowest scores on average across all protective factors compared to the other profiles. There was also a slight preference for a Native or traditional healer over a medical doctor or nurse. Health attitudes displayed by participants in Profile 4 indicate the most mistrust in the medical care system as well as the most discomfort with accessing health services from either Native/traditional healers and medical doctors/nurses.

AIM 2 RESULTS:

Intended Mental Health Care Service Utilization and Wald Tests of Parameter

Restrictions

Approximately 72% ($n = 285$) of the sample indicated “Yes” to wanting to see a mental health professional in the next 12 months, and 28% ($n = 110$) indicated “No”. Across Profile 1 (*Very Low Symptomatic*), Profile 2 (*Low Symptomatic*), and Profile 4 (*High Symptomatic*), participants in the “No” group generally endorsed lower mean scores across Symptom Distress latent indicators (perceived health status, depression and anxiety, perceived stress, and perceived ethnic discrimination) and higher mean scores across Protective Factor latent indicators (Pacific cultural efficacy, Pacific connectedness and belonging, religious centrality and embeddedness, and perceived societal wellbeing), and higher mean scores across Health Attitude latent indicators (medical mistrust and service preferences) compared to peers in the “Yes” group across Profiles 1, 2 and 4. Furthermore, across the profiles, Wald tests of parameter constraints yielded results that many of the indicated mean scores between the “Yes” and “No” groups were statistically significantly different, rejecting the null hypotheses that the two groups are equal to one another (*Table 5*). For participants in the “No” group in Profile 3 (*Moderate Symptomatic*), however, the opposite was demonstrated—in which participants endorsed lower Protective Factor and Health Attitude mean scores on average compared to their “Yes” peers. Furthermore, Wald tests in Profile 3 demonstrated that scores between the “Yes” and “No” groups were statistically significantly different across all latent indicators except perceived health status and medical mistrust, demonstrating that participants in the Profile 3 “Yes” group indicated statistically significantly different scores

across all three categories (i.e., Symptom Distress, Protective Factors, and Health Attitudes). This means that while participants in the “No” group across Profile 1 (*Very Low Symptomatic*), Profile 2 (*Low Symptomatic*), and Profile 4 (*High Symptomatic*) generally said no to intended or planned mental health care service utilization in the next 12 months because their symptom distress was lower and protective factors were higher and health attitudes were comfortable with U.S. healthcare systems and providers compared to their “Yes” peers; participants in the “Yes” group in Profile 3 (*Moderate Symptomatic*) actually endorsed higher protective factor scores and higher health attitudes scores.

Covariate Predictors of Profile Membership

Univariate multinomial logistic regression was used to test whether profile membership systematically differed by sociodemographic factors (e.g., age, education, and income; *Table 4*). Continuous covariates (i.e., age and years in the U.S.) were grand-mean centered, all other covariates were entered as ordinal variables. Results demonstrated that there were statistically significant differences in profile memberships across income, relationship status, insurance status, age, and years in the U.S., but not for education. There were statistically significant differences in income levels between Profile 1 and all other profiles (Profile 2 $OR = 0.71, p < .001$; Profile 3 $OR = 0.7, p < .001$; Profile 4 $OR = 0.31, p < .001$), given that participants with the highest indicated incomes were more likely to be in Profile 1, and those with lower incomes were more likely to be in Profile 4. Participants with public/private insurance were more likely to be in Profile 1 ($OR = 2.13, p = .04$) when compared to Profile 3, and the majority of noninsured participants were assigned to Profile 2 when compared with Profile 1. And participants who have spent more years living in the

U.S. were more likely to be in Profile 1 than Profile 2 ($OR = 0.94, p < .01$) and Profile 3 ($OR = 0.85, p < .001$). Those who were uninsured were more likely to be assigned to Profile 3 ($OR = 2.13, p = .04$) compared to Profile 1. Finally, participants assigned to Profiles 2 ($OR = 2.00, p < .001$) and 3 ($OR = 4.71, p = .004$) were more likely to be dating or married when compared to Profile 1, which had more single participants assigned to it than any other profile.

Logistic Regression Odds Ratios for Intended Mental Health Care Service

Utilization Across Profiles

Results from the logistic regression on the outcome variable intended mental health care service utilization to examine differences across profiles (*Table 6, Model 3*) demonstrated that Profile 2 (*Low Symptomatic*; $OR = .44, p < .05$), Profile 3 (*Moderate Symptomatic*; $OR = .28, p < .001$) and Profile 4 (*High Symptomatic*; $OR = .07, p < .001$) were more likely to indicate “Yes” to mental health care utilization compared with Profile 1 (*Very Low Symptomatic*) as reference group and while accounting for demographic covariates.

Model 4 demonstrated that participants in Profile 4 (*High Symptomatic*; $OR = .16, p < .05$) are more likely than Profile 2 (*Low Symptomatic*; reference group) to indicate “Yes” to mental health care utilization while accounting for demographic covariates. Profiles 2 and 3 did not differ from one another.

Model 5 demonstrated that participants in Profile 3 (*Moderate Symptomatic*; reference group) indicated “Yes” to intended mental health care utilization less than Profile 4 (*High Symptomatic*) while accounting for demographic covariates.

Across all models, insurance status (public $OR = 4.92, p < .05$; private $OR = 4.42, p < .05$), income between \$25,000 and \$49,999 ($OR = .19, p < .01$), income between \$50,000 and \$74,999 ($OR = .30, p < .05$) and years in the U.S. ($OR = .95, p < .05$) were significant covariates and predictors of mental health care service utilization in this sample.

CHAPTER 5

DISCUSSION

Despite having some of the highest healthcare needs, NHPI continuously experience barriers to accessing healthcare and utilizing quality services, including poverty, unemployment, or even homelessness and disproportionate imprisonment rates (Mokau et al., 2016; Morisako et al., 2017; Sasa & Yellow Horse, 2021). Yet little research has been done on determinants of low healthcare utilization and access rates among this population, particularly in regard to detailing the nuanced health attitudes and behaviors of NHPI Peoples – a community that has historically experienced data injustices and harms from the federal government due to conflation and poor sampling methodologies. The present study sought to better understand the latent health indicators (i.e., Symptom Distress, Protective Factors, and Health Attitudes) of NHPI adults in relation to intended mental health care service utilization, to potentially improve mental health care access in this medically underserved population. The first aim was to empirically identify latent profiles of NHPI participants based on hypothesized determinants of healthcare access across three categories: Symptom Distress (perceived health status, depression and anxiety, perceived stress, and perceived ethnic discrimination), Protective Factors (Pacific cultural efficacy, Pacific connectedness and belonging, religious centrality and embeddedness, and perceived societal wellbeing), and Health Attitudes (medical mistrust and service preferences). The present study used a profile-based approach to reveal distinct groups based on participant associations among a set of latent health indicators. **Findings regarding aim one** demonstrated that among NHPI participants ($N = 395$), participant responses to the continuous indicator variables across three categories (i.e., symptom distress, protective

factors, and health attitudes) allowed for the detection of four latent groups based on patterns of responses to observed variables, and grouping participants based on similarity of latent characteristics endorsed. I found that: Profile 1 ($n = 138, 35\%$), which was the second largest profile, was characterized by participants endorsing very low symptom distress and medical mistrust; very high in protective factors; and were somewhat comfortable with traditional/native healers and very comfortable with medical doctors/nurses. **This finding confirms the study's first hypothesis that one profile will indicate the lowest symptom distress, highest protective factors, and most comfortable health attitudes when compared to peers assigned to other profiles.** Profile 2 ($n = 94, 24\%$) was characterized by participants endorsing low symptom distress, neutral medical mistrust and lower protective factors, and low comfort with either provider type (traditional or native healers versus medical doctors and nurses). Profile 3 ($n = 142, 36\%$), which was the largest profile, was characterized by participants endorsing moderate symptom distress and medical mistrust; high in protective factors; and were somewhat comfortable with either provider type. Profile 4 ($n = 21, 5\%$), which was the smallest, was characterized by participants endorsing very high symptom distress; moderate medical mistrust; very low in protective factors; and were not at all comfortable with either provider type.

The relationship of intended mental health care service utilization in the next 12 months (“Yes” or “No” to planning to see or talk to a mental health care provider about their own health) was also examined among the latent health indicators and across the identified profiles (i.e., profile membership). Across Profile 1 (*Very Low Symptomatic*), Profile 2 (*Low Symptomatic*), and Profile 4 (*High Symptomatic*), participants in the “No” group generally endorsed lower mean scores across Symptom Distress latent indicators (perceived health

status, depression and anxiety, perceived stress, and perceived ethnic discrimination) and higher mean scores across Protective Factor latent indicators (Pacific cultural efficacy, Pacific connectedness and belonging, religious centrality and embeddedness, and perceived societal wellbeing), and higher mean scores across Health Attitude latent indicators (medical mistrust and service preferences) indicating more trust and comfort with medical systems and providers compared to peers in the “Yes” group of these three profiles. Furthermore, across all the profiles, Wald tests of parameter constraints yielded results that demonstrated at least one of the indicated mean scores between the “Yes” and “No” groups were statistically significantly different.

The study also tested profile membership probabilities based on covariate demographics, where the latent indicator variables were then regressed onto the covariate predictor variables using multinomial logistic regression. Findings demonstrated that demographic covariates including income, years in the U.S., relationship status, and insurance status varied significantly among the profiles, depending on the reference group (*Table 4*). Education was not found to be a significant covariate in this study sample. This is also in line with the results of the logistic regression examining odds ratios of the outcome variable intended mental health care utilization across profiles.

Findings from the logistic regression for aim two confirms the study’s second hypothesis, that participants in the “No” group to wanting to see a mental health professional in the next 12 months will belong to a latent profile consisting of participants who indicate lower symptom distress scores, higher protective factors, and more comfortable/trusting health attitudes with U.S. healthcare systems and different types of providers more often than “Yes” peers. Results from the logistic regression on the outcome

variable intended mental health care service utilization to examine differences across profiles (Table 6, Model 3) demonstrated that Profile 2 (*Low Symptomatic*), Profile 3 (*Moderate Symptomatic*) and Profile 4 (*High Symptomatic*) were more likely to indicate “Yes” to mental health care utilization compared with Profile 1 (*Very Low Symptomatic*) as reference group and while accounting for demographic covariates. Model 4 demonstrated that participants in Profile 4 (*High Symptomatic*) are more likely than Profile 2 (*Low Symptomatic*; reference group) to indicate “Yes” to mental health care utilization while accounting for demographic covariates. Profiles 2 and 3 did not differ from one another. Model 5 demonstrated that participants in Profile 3 (*Moderate Symptomatic*; reference group) indicated “Yes” to intended mental health care utilization less than Profile 4 (*High Symptomatic*) while accounting for demographic covariates. Across all models, insurance status (both public and private), income between \$25,000 and \$49,999, income between \$50,000 and \$74,999 and years in the U.S. were significant covariates and predictors of mental health care service utilization in this sample.

Logistic regression results support the notion that participants assigned to the profile with higher scores on symptom distress indicators and lower scores in protective factors will be more likely to indicate “Yes” to intended mental health care utilization compared to peers assigned to profiles with lower scores on symptom distress indicators and higher scores in protective factors – even when indicating higher levels of medical mistrust and lower levels of comfort with health service providers.

Significant covariates and predictors of mental health care service utilization in the sample included insurance status (public $OR = 4.92, p < .05$; private $OR = 4.42, p < .05$), income between \$25,000 and \$49,999 ($OR = .19, p < .01$), income between \$50,000 and

\$74,999 ($OR = .30, p < .05$) and years in the U.S. ($OR = .95, p < .05$) in the final model. Within the context of these results, it would be important to mention prior studies that describe a framework that emphasizes the socioeconomic gradient (or “wealth-health” gradient), which highlights the positive relationship between wealth and health (McMaughan et al., 2020; National Academies of Sciences, 2018). That is, as wealth increases so does health, with the opposite also holding true. There is also consistent evidence of positive effects of health insurance on health care utilization (Erlangga et al., 2019). Given that health insurance in the U.S. is also tied to job status, joblessness and lower economic status both lead to poorer health, which in turn leads to a dangerous cycle of further impoverishment. Results demonstrate that perhaps because having higher symptomatic distress (i.e., higher prevalence of anxiety, depression, perceived stress, and ethnic discrimination), participants in Profile 4 were more likely to say “Yes” to intended mental health care service utilization compared to all other profiles 2 and 3.

A particular strength of this study was the measurement and testing of latent indicators demonstrating broad heterogeneity among the study sample. Individual experiences with the healthcare system, medical providers, ethnic discrimination and other latent variables may vary significantly based on diverse social, political, and cultural differences that affect that individual’s health attitudes and health-seeking behaviors disparately than other members of the NHPI community. For example, findings demonstrated that participants in Profiles 3 (*Moderate Symptomatic*) and 4 (*High Symptomatic*) were more likely on average to endorse higher medical mistrust and experiences of ethnic discrimination occurring more often than participants in Profiles 1 (*Very Low Symptomatic*) and 2 (*Low Symptomatic*). Given the broad heterogeneity among NHPI individuals and

communities, many of these experiences may vary across geographical location, racialized phenotypic appearance, social and cultural capital, etc.

Another strength to note is that the study uniquely examines behavioral health perspectives in the NHPI community, with measures that are not captured in government surveys and that are outlined as important predictors of health access in the community. Study findings will allow for more targeted and focused mental health outreach and education to the community. In particular, understanding health access and equity in NHPI communities is foundational to achieving health equity, as there is a significant need to destigmatize all health services, but especially behavioral health services within the community. For example, while 66% of the sample indicated that they had spoken to a psychiatrist, psychologist, psychiatric nurse or clinical social worker in the past 12 months, 28% of the sample reported not having any plans to see a mental healthcare provider in the next 12 months.

One of the advantages of performing a latent profile analysis is that it detects latent or unobserved heterogeneity in the sample, and by using the person-centered mixture modeling, it can thus identify latent subgroups. While initially hesitant to accept a small profile size just representing over 5% of the sample (Profile 4, *High Symptomatic*, $n = 21$), this group of participants was also visibly distinct from the other profiles when mean scores were plotted (*Figures 2 and 3*). The group stands on its own, given that mean scores demonstrated participants experience poorer health status, very high symptom distress including high depressive and anxious symptoms, high perceived stress levels, and frequent experiences of ethnic discrimination. While this was the smallest profile, it was clearly distinct in that participants indicated very low levels of comfort seeing either provider types, indicating that

participants in Profile 4, and perhaps Profile 3, may seek health services outside of both a traditional healer or a medical professional. Some insight is offered through the endorsement of higher scores on Religious Centrality and Embeddedness, more so than the other protective health indicators, potentially suggesting that participants in Profile 4 may seek help or find solace through religious beliefs or leaders from a religious institution they attend. Rarely do federal or national surveys capture the wide-ranging belief systems that NHPI may ascribe to, yet having this information allows for a more nuanced understanding of health access in the community. Thus, rather than attempting to assign participants in this profile to other profiles, the information offered by this group of participants is valuable to understanding the heterogeneity in this sample and within the NHPI population.

Alternatively, people with poorer health experience more healthcare access barriers even after controlling for insurance and other measures, indicating the need to cater health interventions to similar individuals in the community that may experience as many barriers and symptom distress as participants in Profile 4 (Wang et al., 2013).

On the other hand, the second largest group, Profile 1 ($n = 138$, 35%), indicated their health to be between “*Very good*” and “*Good*”, reported the most comfort with seeing either provider type and lowest medical mistrust on average, and also demonstrated low mean symptom distress scores in conjunction with high scores in protective factors across the latent indicators. As hypothesized, the largest profile consisted of participants who endorsed latent health indicators that were facilitative in nature and oriented toward using mental health care services (i.e., higher protective factor scores and higher trust in medical systems and providers), and participants reported more comfort seeking help from different medical and healthcare providers. With the exception of Profile 3, where participants were

on average “*Somewhat comfortable*” with either provider type, the other profiles did classify participants who experienced more symptom distress and lower in protective factors compared to Profile 1, confirming hypothesis one.

Intended mental health care service utilization in the “*Yes*” group was indicated by higher mean scores in symptom distress and lower mean scores in protective factors relative to their “*No*” group peers across Profiles 1, 2, and 4, demonstrating that participants were more likely to say “*No*” with lower symptom distress scores, higher protective factor scores, and more trust in medical systems and providers (meaning they trust providers and healthcare systems but are not experiencing enough distress or a dearth of protective factors to feel the need to say “*Yes*” to wanting to see a mental health professional). However, Profile 3 (*Moderate Symptomatic*) was the only profile to be opposite to Profiles 1, 2 and 4 regarding those in the “*Yes*” group across Protective Factors and Health Attitudes, demonstrating that unlike those in the “*Yes*” group in Profiles 1, 2 and 4, those in Profile 3’s “*Yes*” group indicated higher protective factor scores and health attitude scores.

Theoretically, this may suggest that the protective factor measures may operate in two ways. The first is that participants who said “*No*” with lower symptom distress scores, higher protective factor scores, and higher health attitude scores in Profiles 1, 2 and 4 have enough cognitive and psychological resources to be able to mitigate symptom distress enough that they do not feel the need to access mental health care services at this time. However, the opposite was true for those in the “*Yes*” group in Profile 3 (*Moderate Symptomatic*) because participants in this profile indicated enough distress and not enough protective factors to help mitigate their distress that they intended to see a mental health professional in the next year, bolstered by the fact that the “*Yes*” group in this profile

indicated more comfort with medical systems and providers than those in the “No” group. This may indicate that protective factors, in conjunction with positive health attitudes, may lead participants who are on the fence with engaging with mental health care services to be more comfortable in doing so; as opposed to their “No” peers in other profiles who were either not experiencing enough distress to want to see a provider, or otherwise had enough protective factors to help mitigate the distress (Profiles 1 [*Very Low Symptomatic*] and 2 [*Low Symptomatic*]), or otherwise did not feel comfortable enough with medical providers yet said “Yes” due to overwhelming symptom distress and a lack of protective factors or mitigating resources (Profile 4 *High Symptomatic*).

Furthermore, findings of the univariate logistic regression of the latent profiles on the predictor covariates are in line with results of other studies, where participants who indicate higher income levels, are insured, and have spent more years living in the U.S. would indicate less symptom distress and more protective factors (Profile 1 *Very Low Symptomatic*) than peers who are in lower income brackets (Profile 4 *High Symptomatic*), are noninsured at higher rates (Profile 3 *Moderate Symptomatic*), and who have not lived in the U.S. as long as their peers (Pandey et al., 2019; Wang et al., 2013). Additionally, although directionality and causality cannot be implied from this cross-sectional study, results are consistent with previous work, particularly those works demonstrating the importance of understanding medical mistrust and access to mental health care for Indigenous communities (Guadagnolo et al., 2009).

Many interventions that have previously aimed at overcoming healthcare impediments require trust between healthcare providers and vulnerable populations. Mistrust of and dissatisfaction with the healthcare system have been most thoroughly investigated as

barriers for African American patient populations (Kennedy, Mathis & Woods, 2007), and thorough evidence exists that Native Americans also feel mistrust of healthcare providers and express dissatisfaction with their healthcare experiences (Hunt et al., 2007). However, the present study highlights that this issue persists within Native Hawaiian and Pacific Islander communities as well, and understandably so given that participants in Profiles 3 and 4 also endorsed scores indicating that experiences of ethnic discrimination occur, on average, at least “*Sometimes/Somenbat often*” (Profile 3 *Moderate Symptomatic*) or “*Happened very often*” (Profile 4 *High Symptomatic*). These findings underscore the need for successful clinical or public health interventions to be better engaged and involved with NHPI communities in order to establish trust and deliver culturally competent care.

Limitations and Future Directions

Findings from this study should be contextualized within certain limitations. First, the use of a convenient sample precludes generalizability of the findings given the lack of a truly representative sample of the NHPI population in the U.S. Given the cross-sectional nature of this study, the findings also cannot be used to imply causal links between the variables. Future research should be conducted to examine and replicate findings for consistency. The inclusion of other latent constructs to capture health access in this population may also contribute to an even more nuanced understanding of health access and barriers among NHPI, including but not limited to other forms of social (i.e., interpersonal), cultural and community supports, other constructs that measure known physical or built environment indicators that affect health or access to services (e.g., neighborhood efficacy), and additional measures that capture an individual’s health attitudes and health-seeking

behaviors (e.g., satisfaction with previous medical care). Further exploration and collection of data regarding trust and perceptions of healthcare are critical in helping to formulate medical care interventions in this vulnerable population. Additionally, many of the measures used in the study have not been previously psychometrically tested in large NHPI samples. However, Cronbach's alpha levels demonstrated good internal reliability in the present study sample. Finally, one of the original intentions of the study was to examine differences in latent indicators across insured and uninsured groups, however, with only 4.7% of the sample indicating being uninsured, the skewness of the data makes this analysis impractical.

Clinical Implications

Findings of the study arguably demonstrated that participants in Profile 3 (*Moderate Symptomatic*) may make an ideal target group for clinical community intervention, while participants in Profile 4 (*High Symptomatic*) may make an ideal target group for more systemic interventions. In other words, participants in Profile 3 may benefit from therapeutic interventions that bolster sociocultural protective factors in therapy to be able to help mitigate psychological distress, given that they have more means to access mental health care (i.e., income) than participants assigned to Profile 4 despite having more noninsured participants assigned to Profile 3. Mean scores in this profile demonstrate a willingness to trust healthcare providers and systems, yet enough symptom distress and less protective factors compared to peers in other profiles (Profiles 1 *Very Low Symptomatic* and 2 *Low Symptomatic*) that indicate a greater need for psychological services. Arguably, Profile 4 has the highest need out of participants assigned to any other profile, given that participants in this profile indicated the highest mean scores on average in symptom distress, the lowest

mean scores on average in protective factors, and the highest mistrust in medical systems and providers, coupled with participants in the lowest income brackets being assigned to Profile 4 as well. Participants in Profile 4, then, may benefit from more systemic interventions such as providing financial assistance for therapy services, or otherwise directing participants to low-cost community clinics with culturally-competent clinicians (e.g., many community clinics often offer a sliding scale fee for low-income patients).

Furthermore, the present study is the first to my knowledge to analyze the relationship of Pacific identity-specific protective factors with intended mental health care service utilization, and that protective factors may work in two ways. The first is that higher scores in protective factors across Profile 1, 2, and 4's "No" groups, in conjunction with lower symptom distress scores, allowed participants to feel more comfortable with saying no to intended mental health care service utilization at the time the survey was taken, which may suggest that participants indicated "No" because they had sufficient psychological and cognitive resources to mitigate their current levels of distress. On the other hand, Profile 3's "Yes" group indicated higher mean scores in protective factors, in conjunction with more positive health attitudes, indicating that protective factors such as cultural efficacy, Pacific connectedness and belonging, religious centrality and embeddedness, and perceived societal wellbeing, may help to bolster NHPI individuals' intention to see a mental health professional in the next year because they are experiencing moderate levels of symptom distress (i.e., greater psychological distress than those in Profiles 1 and 2).

It is also worth highlighting that perceived ethnic discrimination was statistically significantly different across the two groups in all four profiles, indicating that NHPI individuals in the "Yes" group experienced significantly more distressing and frequent

experiences of ethnic discrimination than their “*No*” peers across all four profiles. This was also the only latent indicator to be significantly different across both groups in all four profiles, demonstrating the highly adverse effects of ethnic discrimination on mental health and symptom distress levels, effectively influencing the resulting health-seeking behaviors of NHPI adults in this study sample such that participants who experienced greater and more frequent ethnic discrimination were more likely to say “*Yes*” to wanting to see a mental health professional in the next 12 months.

Finally, participants were also allowed the option to write-in a preferred provider if they wished to add a provider that was not included on the list. Approximately $n = 19$ participants wrote in a *Native* provider with this option, including $n = 2$ for *lomilomi*, an ancient Hawaiian restorative healing system (also refers to a specific massage technique), $n = 2$ for *taulasea*, a type of Indigenous Sāmoan healer, $n = 1$ for *Kabuna Lapa'au*, a type of Kānaka Maoli or Native Hawaiian traditional healer. Other answers included $n = 1$ for a nun, $n = 1$ for the Sāmoan Wellness Initiative, a community collaboration for Richmond Area Multi-Services (RAMS) Asian and Pacific Islander Mental Health Collaborative, and $n = 1$ for the AANHPI 'Ohana Center of Excellence. Such answers highlight the importance of some of the study's findings, including the clinical impacts of community organizations (specifically Pasifika cultural organizations and healers) on the health-seeking beliefs and attitudes held by many NHPI adults. Several answers specified that they would also prefer a Native doctor or M.D., demonstrating that some NHPI adults may prefer a racial identity match with their health provider.

Conclusions

Findings from this study have implications for medical-based interventions in the field of health and community psychology, as well as for specific settings that can support community and group belongingness, such as community-based organizations. Results, for example, suggest that profiles of NHPI are heterogeneous and distinct, but that NHPI who indicated high CE, PCB, RCE and PSW also reported better health statuses and more comfort with medical systems and providers than their peers. This supports the notion that increasing protective factors for individuals and the community may also facilitate better health outcomes as well as willingness to engage in mental health care services. Results may also assist with the theoretical implementation and dissemination of targeted material about the benefits of mental health care and other medical services for NHPI communities and Peoples. This could include resources on finding culturally-appropriate behavioral health services and providers, as well as information on finding affordable services. This is particularly crucial given previous study findings demonstrating that during the COVID-19 pandemic depression and anxiety among NHPIs were high, and alcohol use disorder, major depression, and generalized anxiety disorder prevalence were 27%, 27% and 19%, respectively (Subica et al., 2022). However, NHPIs consistently report low levels of help-seeking behaviors, lack of native language providers as a deterrent, and cost as a barrier (Allen et al., 2019; Lim et al., 2019; Subica et al., 2019). The application of the study findings may then help to alleviate the aforementioned barriers to accessing behavioral health services among the NHPI community, providing direction in the form of various protective factors (*Pacific cultural efficacy, Pacific connectedness and belonging, religious centrality and embeddedness, and perceived societal wellbeing*) that may (1) bolster the psychological resources needed to mitigate psychological distress or (2) facilitate mental health care-seeking behaviors among NHPI

adults coupled with positive and more comfortable health attitudes regarding healthcare systems and mental health providers.

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APPENDIX A
TABLES

Table 1*Sample Demographic Characteristics (N = 395)*

Age <i>M(SD)</i>	32.28(8.19)	Sexual Identity	%
Gender	%	Heterosexual	73.8
Cisgender Man	51.6	Bisexual	14.3
Cisgender Woman	46.2	Queer	5.7
Transgender Man	0.7	Gay	2.7
Transgender Woman	0.5	Lesbian	1.7
Genderqueer	0.5	Fluid	0.7
Two Spirit	0.2	Aromantic	0.2
Nonbinary	0.2	Asexual	0.2
		Questioning	0.2
Ethnic Identity	%	Citizenship Status	%
Native Hawaiian	33.3	U.S. Citizen	82.7
Carolinian	19.8	U.S. National	6.7
Sāmoan	14.8	COFA Citizen	5.9
Chamorro	14.3	U.S. Foreign National	3.2
Cook Islander	9.9	Non-U.S. Citizen	1
Chuukese	5.9		
Tongan	5.7	Education	%
Fijian	4.9	Bachelor's degree	35.1
Solomon Islander	3.2	Master's degree	21
Kanak	3	Some graduate school	17.3
Tahitian	2.7	Some college	11.1
Māori	2.7	Associate's degree	7.2
Papa New Guinean	2.7	Doctorate degree	4.7
Marshallese	2.2	High school diploma	3
West Papuan	2.2	Some high school or less	0.7
Kosraean	2		
Tokelauan	1.7	Income	%
Rapa Nui	1.7	Less than \$10,000	6.2
Pohnpeian	1.2	\$10,000 to \$14,999	3.5
I-Kiribati	1.2	\$15,000 to \$24,999	3.2
Yapese	1.2	\$25,000 to \$34,999	5.4
Ni-Vanuatu	1.2	\$35,000 to \$49,999	7.7
Niuean	1.2	\$50,000 to \$74,999	25.9
Tuvaluan	0.7	\$75,000 to \$99,999	14.3
Palauan	0.7	\$100,000 to \$149,999	21.2
		\$150,000 to \$199,999	10.4
		\$200,000 or more	2

Table 2*Range Statistics and Correlations (N = 395)*

Variable	Range	1	2	3	4	5	6	7	8	9	10
1. HS: Health Status	1-5	—									
2. PHQ: Patient Health Questionnaire	1-4	.258	—								
3. PSS: Perceived Stress Scale	1-5	.257**	.679**	—							
4. PEDQ: Brief Perceived Ethnic Discrimination Questionnaire	1-5	.266**	.687**	.642**	—						
5. MM: Medical Mistrust	1-5	.155**	.320**	.270**	.414**	—					
6. CE: Cultural Efficacy	1-7	-.121*	-.170**	-.060	-.144**	-.214**	—				
7. PCB: Pacific Connectedness and Belonging	1-7	-.158**	-.276**	-.125*	-.299**	-.369**	.698**	—			
8. RCE: Religious Centrality and Embeddedness	1-7	-.051*	-.223**	-.086	-.144**	-.359**	-.384**	.454**	—		
9. PSW: Perceived Societal Wellbeing	1-7	-.266	-.119*	-.124*	-.064	-.447**	.426**	.419**	.511**	—	
10. HEAL: Native/Traditional Healer	1-4	-.096	.003	.191	.032	-.004	.221**	.192**	.033	.209**	—
11. DOC: Doctor/Nurse Practitioner	1-4	-.050	-.113*	.003	-.056	-.168**	.251**	.294**	.311*	.340**	.863**

Note. * $p < .05$ ** $p < .01$.

Table 3*Profile Fit Statistics (N = 395)*

K	Log Likelihood	AIC	BIC	SABIC	df	Entropy	VLMR p-value	VLMR Meaning	BLRT p-value
1	-11,298.32	22,664.65	22,799.93	22,692.05	34	-	-		
2	-5,566.67	11,213.33	11,372.49	11,245.57	40	0.87	<0.001	2>1	<0.001
3	-5,359.20	10,834.40	11,065.17	10,881.14	58	0.88	0.255	3<2	<0.001
4	-5,199.08	10,550.16	10,852.56	10,611.41	76	0.90	0.004	4>3	<0.001

Note. K = number of profiles; AIC = Akaike information criterion; BIC = Bayesian information criterion; SABIC = sample size-adjusted Bayesian information criterion; VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio test; BLRT bootstrap likelihood ratio test. Selected solution is bolded for emphasis.

Table 4

Multinomial Logistic Regression of Demographic Predictors on Profile Membership (N = 395)

Covariate	P1: Very Low Symptomatic <i>n</i> = 138 (reference)						P2: Low Symptomatic <i>n</i> = 94 (reference)					
	Profile 2		Profile 3		Profile 4		Profile 1		Profile 3		Profile 4	
	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]
Education	1.15	[0.90, 1.46]	1.2	[0.89, 1.61]	1.32	[0.82, 2.13]	0.87	[0.68, 1.10]	1.04	[0.81, 1.35]	1.15	[0.73, 1.82]
Income	0.71	[0.56, 0.90]	0.7	[0.56, 0.86]	0.31	[0.21, 0.47]	1.41	[1.11, 1.78]	0.98	[0.79, 1.21]	0.44	[0.30, 0.66]
Relationship Status	2.00	[1.25, 3.21]	4.71	[2.63, 8.44]	2.00	[0.69, 5.86]	0.50	[0.31, 0.80]	2.35	[1.29, 4.29]	1.00	[0.34, 2.92]
Insurance Status	0.91	[0.44, 1.86]	0.47	[0.23, 0.95]	0.51	[0.20, 1.28]	1.10	[0.54, 2.26]	0.52	[0.23, 1.16]	0.56	[0.23, 1.39]
Age*	1.04	[0.97, 1.18]	0.97	[0.90, 1.04]	1.03	[0.93, 1.14]	0.96	[0.90, 1.03]	0.93	[0.87, 1.00]	0.99	[0.90, 1.09]
Years in U.S.*	0.94	[0.89, 0.98]	0.89	[0.85, 0.94]	0.93	[0.87, 1.00]	1.07	[1.02, 1.12]	0.95	[0.91, 1.00]	0.99	[0.93, 1.06]
Covariate	P3: Moderate Symptomatic <i>n</i> = 142 (reference)						P4: High Symptomatic <i>n</i> = 21 (reference)					
	Profile 1		Profile 2		Profile 4		Profile 1		Profile 2		Profile 3	
	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]
Education	0.84	[0.62, 1.3]	0.96	[0.74, 1.24]	1.11	[0.69, 1.78]	0.76	[0.47, 1.22]	0.87	[.55, 1.37]	0.91	[.56, 1.45]
Income	1.44	[1.16, 1.80]	1.03	[0.830, 1.27]	0.45	[0.31, 0.66]	3.19	[2.11, 4.82]	2.27	[1.52, 3.39]	2.21	[1.51, 3.24]
Relationship Status	0.21	[0.12, 0.38]	0.43	[0.23, 0.78]	0.43	[0.15, 1.24]	0.50	[0.17, 1.46]	1.00	[0.34, 2.92]	2.35	[0.81, 6.85]
Insurance Status	2.13	[1.05, 4.31]	1.93	[0.86, 4.32]	1.08	[0.46, 2.55]	1.97	[0.78, 4.96]	1.78	[0.72, 4.41]	0.92	[0.39, 2.17]
Age*	1.04	[0.96, 1.12]	1.08	[1.00, 1.16]	1.07	[0.98, 1.11]	0.97	[0.88, 1.07]	1.01	[0.92, 1.11]	0.94	[0.86, 1.03]
Years in U.S.*	1.12	[1.07, 1.18]	1.05	[1.00, 1.10]	1.04	[0.98, 1.11]	1.08	[1.00, 1.16]	1.01	[0.94, 1.07]	0.96	[0.90, 1.02]

Note. OR = odds ratio. CI = confidence interval. Significant predictors (estimates $p < .05$) are bolded for emphasis. * Denotes grand mean centered variables.

Table 5

Means, Standard Errors, and Wald Parameter Tests for Indicator Variables by Latent Profile ($N = 395$) and Outcome Group (“Yes” and “No”)

Variable	Group	P1: Very Low Symptomatic		P2: Low Symptomatic		P3: Moderate Symptomatic		P4: High Symptomatic	
		<i>M(SE)</i>	<i>p</i>	<i>M(SE)</i>	<i>p</i>	<i>M(SE)</i>	<i>p</i>	<i>M(SE)</i>	<i>p</i>
Health Status (HS)	<i>Yes</i>	2.50(0.10)	.037	2.57(0.13)	.304	2.48(0.14)	.461	4.70(0.15)	<.001
	<i>No</i>	2.03(0.20)		2.34(0.19)		2.62(0.13)		2.62(0.21)	
Depression/Anxiety (PHQ)	<i>Yes</i>	1.92(0.06)	.017	2.26(0.01)	<.001	2.73(0.08)	.012	3.78(0.13)	.971
	<i>No</i>	1.50(0.17)		1.56(0.17)		2.41(0.10)		3.77(0.20)	
Perceived Stress (PSS)	<i>Yes</i>	2.88(0.05)	.049	2.87(0.08)	.076	3.36(0.07)	.003	4.49(0.04)	<.001
	<i>No</i>	2.61(0.13)		2.89(0.19)		3.09(0.06)		3.82(0.08)	
Perceived Ethnic Discrimination (PEDQ)	<i>Yes</i>	2.32(0.08)	<.001	2.64(0.12)	.002	3.51(0.12)	<.001	4.92(0.06)	<.001
	<i>No</i>	1.65(0.16)		2.07(0.15)		2.92(0.08)		3.43(0.10)	
Cultural Efficacy (CE)	<i>Yes</i>	6.23(0.10)	.251	3.90(0.27)	<.001	5.63(0.14)	<.001	2.13(0.57)	<.001
	<i>No</i>	6.50(0.23)		5.84(0.31)		4.07(0.20)		6.81(0.14)	
Pacific Connectedness & Belonging (PCB)	<i>Yes</i>	6.18(0.05)	.251	4.20(0.19)	<.001	5.41(0.17)	<.001	2.27(0.13)	<.001
	<i>No</i>	6.53(0.18)		5.96(0.21)		4.10(0.16)		6.43(0.20)	
Religious Centrality & Embeddedness (RCE)	<i>Yes</i>	5.82(0.09)	.133	3.89(0.16)	<.001	5.14(0.14)	<.001	3.78(0.36)	.075
	<i>No</i>	6.18(0.22)		5.14(0.30)		4.13(0.18)		2.71(0.49)	
Perceived Societal Wellbeing (PSW)	<i>Yes</i>	5.59(0.17)	.026	3.97(0.20)	.336	5.30(0.14)	<.001	2.20(0.16)	<.001
	<i>No</i>	6.13(0.17)		4.32(0.31)		4.09(0.15)		4.03(0.23)	
Medical Mistrust (MM)	<i>Yes</i>	2.06(0.09)	.286	2.99(0.06)	.641	3.21(0.04)	.455	3.51(0.13)	.017
	<i>No</i>	1.86(0.17)		2.89(0.19)		3.14(0.08)		3.16(0.07)	
Traditional/Native Healer (HEAL)	<i>Yes</i>	3.09(0.07)	.138	2.55(0.15)	.895	3.19(0.06)	<.001	2.20(0.15)	<.001
	<i>No</i>	3.46(0.24)		2.58(0.23)		2.58(0.12)		3.77(0.12)	
Medical Doctor/Nurse (DOC)	<i>Yes</i>	3.76(0.05)	.037	2.65(0.12)	<.001	3.25(0.07)	<.001	2.00(0.12)	.003
	<i>No</i>	3.91(0.06)		3.35(0.12)		2.66(0.13)		2.50(0.11)	

Note. Profile 1: $n = 138$; Profile 2: $n = 94$; Profile 3: $n = 142$; Profile 4: $n = 21$. Significant Wald test results are given in boldface.

Table 6*Logistic Regression Odds Ratio Results (Outcome Variable: Intended Mental Health Service Utilization)*

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Latent Profiles						
Profile 1 (Very Low Symptomatic)	ref	ref	ref	2.29 *	3.61 ***	13.89 ***
Profile 2 (Low Symptomatic)	0.47 *	0.48 **	0.44 *	ref	1.58	6.07 *
Profile 3 (Moderate Symptomatic)	0.44 **	0.45 **	0.28 ***	0.63	ref	3.85 *
Profile 4 (High Symptomatic)	0.19 ***	0.19 ***	0.07 ***	0.16 *	0.26 *	ref
Covariate						
Insurance Status						
No insurance (ref)		-	-	-	-	-
Public insurance		1.52	4.92 *	4.92 *	4.92 *	4.92 *
Private insurance		1.30	4.42 *	4.42 *	4.42 *	4.42 *
Education						
High school or less (ref)			-	-	-	-
Some college			2.03	2.03	2.03	2.03
College			1.01	1.01	1.01	1.01
Beyond college			1.39	1.39	1.39	1.39
Income						
Less than \$25,000 (ref)			-	-	-	-
\$25,000-\$49,999			0.19 **	0.19 **	0.19 **	0.19 **
\$50,000-\$74,999			0.30 *	0.30 *	0.30 *	0.30 *
\$75,000-\$99,999			0.80	0.80	0.80	0.80
More than \$100,000			0.42	0.42	0.42	0.42
Relationship Status						
Married			0.69	0.69	0.69	0.69
Age						
Age			0.97	0.97	0.97	0.97
Years in the US						
Years in the US			0.95 **	0.95 **	0.95 **	0.95 **
Constant	4.75 ***	3.33 *	3.67	1.60	1.02	0.26

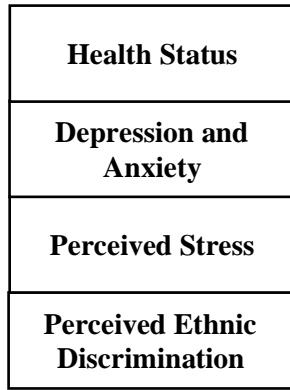
Note. Profile 1: $n = 138$; Profile 2: $n = 94$; Profile 3: $n = 142$; Profile 4: $n = 21$.

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

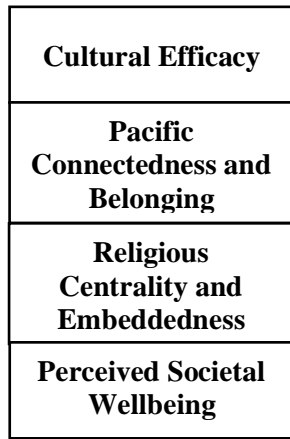
APPENDIX B
FIGURES

Figure 1
Conceptual Model

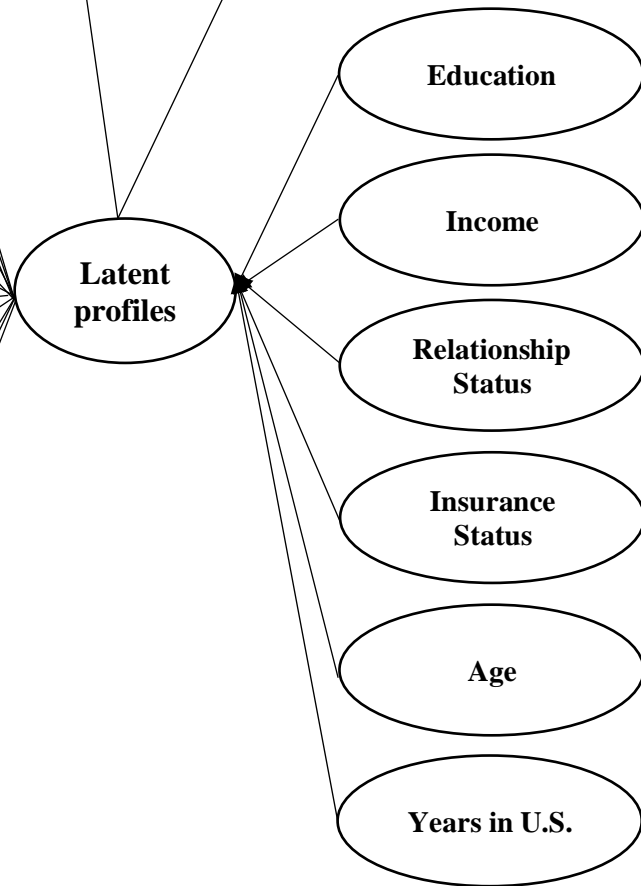
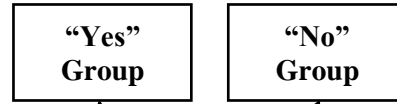
1. Symptom Distress Indicators



2. Protective Factors Indicators

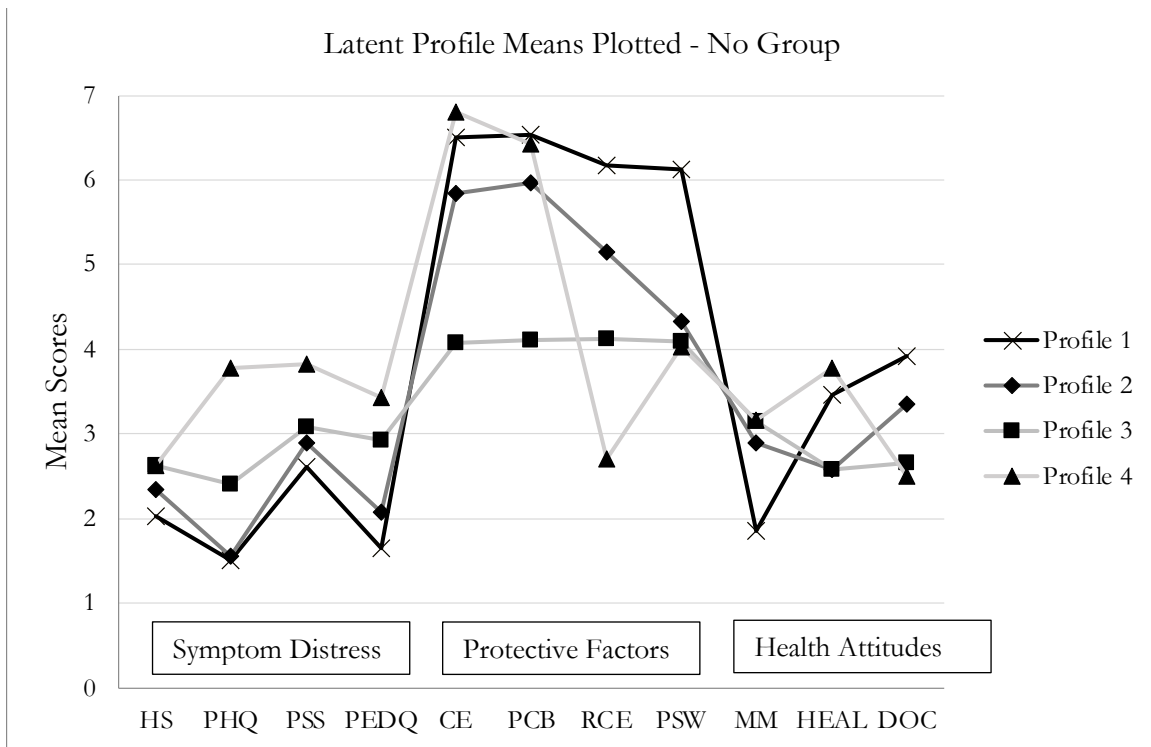


3. Health Attitudes Indicators



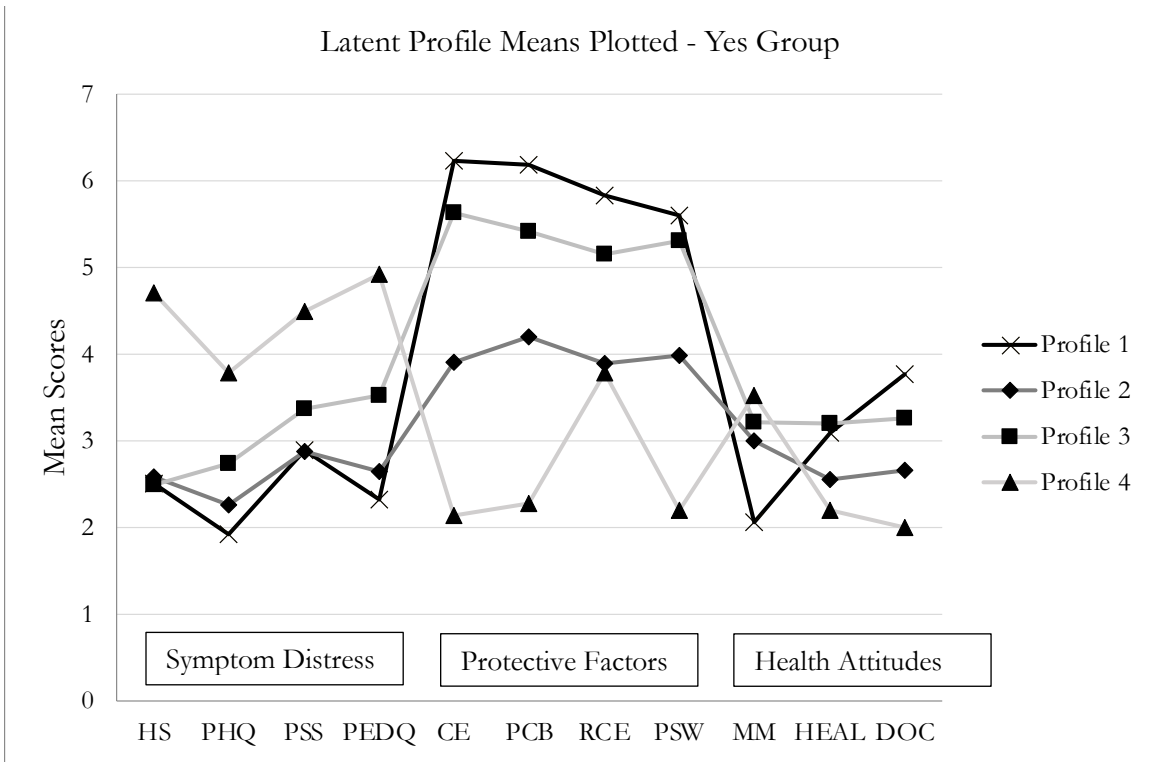
Note. Visual representation of the conceptual model that regressed the latent profile onto the demographic covariates.

Figure 2
Latent Profile Means Plotted – “No” Group



Note. Profile 1: $n = 138$; Profile 2: $n = 94$; Profile 3: $n = 142$; Profile 4: $n = 21$. HS=Health Status (Range: 1-5); PHQ=Patient Health Questionnaire (1-4); PSS=Perceived Stress Scale (1-5); PEDQ=Perceived Ethnic Discrimination Questionnaire(1-5); CE=Cultural Efficacy (1-7); PCB=Pacific Connectedness and Belonging (1-7); RCE=Religious Centrality and Embeddedness (1-7); PSW=Perceived Societal Wellbeing (1-7); MM=Medical Mistrust (1-4); HEAL=Traditional/Native Healer (1-4); DOC=Medical Doctor/Nurse (1-4).

Figure 3
Latent Profile Means Plotted – “Yes” Group



Note. Profile 1: $n = 138$; Profile 2: $n = 94$; Profile 3: $n = 142$; Profile 4: $n = 21$. HS=Health Status (Range: 1-5); PHQ=Patient Health Questionnaire (1-4); PSS=Perceived Stress Scale (1-5); PEDQ=Perceived Ethnic Discrimination Questionnaire (1-5); CE=Cultural Efficacy (1-7); PCB=Pacific Connectedness and Belonging (1-7); RCE=Religious Centrality and Embeddedness (1-7); PSW=Perceived Societal Wellbeing (1-7); MM=Medical Mistrust (1-4); HEAL=Traditional/Native Healer (1-4); DOC=Medical Doctor/Nurse (1-4).