Deferred depression? Mediation analysis of Deferred Action for Childhood Arrivals and immigration enforcement among Undocumented Asian and Pacific Islander students

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ABSTRACT

Objectives: Undocumented Asians and Pacific Islanders (UndocuAPI) comprise 25% of undocumented students. Yet few studies have examined UndocuAPI mental health in the context of the contradictory political environment which encompasses both inclusionary policies, such as Deferred Action for Childhood Arrivals (DACA), and exclusionary policies, like immigration enforcement.

Methods: Using cross-sectional survey data collected in 2019 from UndocuAPI college students and recent alumni in California (n = 174), we used multiple logistic regression to estimate the effect of DACA status on clinical levels of depressive symptoms. We tested whether immigration enforcement experiences mediated this relationship using the Karlson, Holm, and Breen (KHB) method.

Results: Adjusted logistic regression results revealed that UndocuAPI with DACA had significantly lower odds of depression (OR = 0.32, 95% CI: 0.13–0.79). Out of five immigration enforcement factors, limited contact with friends and family (OR = 2.36, 95% CI: 1.08, 5.13) and fearing deportation most or all of the time (OR = 3.62, 95% CI: 1.15, 11.34) were associated with significantly higher odds of depression. However, we did not detect a statistically significant mediation effect of immigration enforcement using KHB decomposition.

Conclusion: Findings suggest that the benefits of DACA protected UndocuAPI in California from depressive symptoms, even when accounting for immigration enforcement experiences. Because it was unclear whether immigration enforcement mediates DACA, future research should investigate the underlying mechanisms between immigration policies and mental health with larger samples. Practitioners should consider the short-term need for mental health support and legal services for UndocuAPI students as well as the long-term goal to decriminalize immigrant communities to advance racial health equity.

1. Introduction

As key social determinants of health inequities, immigration policies define legal statuses and their associated rights and privileges for accessing health-promoting resources and avoiding harmful conditions (Castañeda et al., 2015; Wallace et al., 2019). In 2018, the legal statuses of the foreign-born population included naturalized citizens (44%), noncitizen lawful permanent residents (28%), nonimmigrant temporary visa holders (4%), and noncitizen undocumented immigrants (23%) (Caps et al., 2020). The circumstances of immigrants' arrival and subsequent integration policies structure the conditions that influence their health (Morey, Bacong, et al., 2020).

Largely shaped by the contemporary racial relations in which they were introduced, immigration policies create sometimes contradictory environments for immigrants, such as undocumented college students (Young & Wallace, 2019). Inclusive policies may integrate undocumented students into society by providing temporary relief from deportation, such as through Deferred Action for Childhood Arrivals (DACA) (Young & Wallace, 2019). Simultaneously, exclusionary policies expose undocumented students to everyday forms of criminalization, including immigration enforcement raids (Young et al., 2018). Because most immigration policy studies on health tend to focus on either

deferred deportation (Patler & Laster Pirtle, 2018) or immigration enforcement (Nichols et al., 2018; Wallace et al., 2019), the net effect of this incongruous political environment on the health of undocumented students is unclear. Investigating the underlying pathways through which immigration policy impacts undocumented students' health can offer insight for developing more effective health interventions, advocating for just policies, and advancing health equity (Jones, 2018; Thomas et al., 2011).

In this study, we examine the effects of the having DACA on depression and whether exclusionary immigration enforcement factors mediate this relationship. As the fastest growing group in the United States, with complex immigration histories which are frequently omitted from health research, we center our analysis on undocumented Asian and Pacific Islander (API) (UndocuAPI) students (Lee et al., 2018). UndocuAPI comprise 25% of undocumented students (Feldblum et al., 2020), yet few studies have quantitatively evaluated the pathways through which immigration policy may shape their mental health (Ro et al., 2021).

1.1. Inclusive policy: Deferred Action for Childhood Arrivals and depression

DACA, a federal policy, is situated within the patchwork of policies that negotiate the inclusion and exclusion of immigrants. DACA was signed as an Executive Order in 2012 (Bjorklund, 2018). Undocumented immigrants must meet stringent criteria based on age, education, criminal history, and continuous residence to be eligible for DACA.[1] After Latina/x/os, APIs comprise the largest racial group of DACA-eligible students in higher education at 17% (Feldblum et al., 2020). DACA confers several benefits, including economic stability, educational opportunities, social and community integration, and stress relief (Sudhinaraset, To, et al., 2017). One key component of DACA is the renewable two-year deferral of deportation, offering a sense of stability for a liminal population (Bjorklund, 2018).

The temporary protection from deportation may be beneficial for DACA recipients' mental health (Patler & Laster Pirtle, 2018; Siemons et al., 2017; Sudhinaraset, To, et al., 2017). A retrospective, quasi-experimental study on nationally representative non-citizen Latina/x/os found that those who met DACA eligibility criteria had better psychological outcomes than those who were ineligible (Venkataramani et al., 2017). A recent study with Latinx/a/o and API undocumented students found that DACA was significantly associated with lower odds of depression but was unable to examine UndocuAPI separately (Sudhinaraset et al., 2020).

DACA has also been found to improve undocumented students' access to basic needs and sense of belonging on campus (Teranishi et al., 2015). However, even in California, the state with the most inclusive immigrant-related policies (Wallace et al., 2019), the instability of DACA under the 45th presidential administration appeared to rekindle undocumented students' concerns about safety (Enriquez et al., 2018; Nájera, 2020; Patler et al., 2019). Therefore, the protective effects of

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[1] Eligibility criteria for Deferred Action for Childhood Arrivals (DACA) include: 1) Were under 31 years of age as of June 15, 2012, when the DACA program was announced (i.e. the person was born after June 15, 1981); 2) Entered the United States before turning 16; 3) Have continuously resided in the United States since June 15, 2007 up to the present; 4) Were physically present in the United States on June 15, 2012, and at the time of making the request for DACA; 5) Were undocumented as of June 15, 2012; 6) Are currently enrolled in school, have graduated from high school, have obtained a certificate of completion, or are an honorably discharged veteran of the U.S. Coast Guard or U.S. Armed Forces; and 7) Have not been convicted (as an adult) of a felony offense, a significant misdemeanor offense, three or more non-significant misdemeanor offenses, or do not otherwise pose a threat to national security or public safety. Source: https://www.ilrc.org/sites/default/files/resources/determining_daca_eligibility_4.2021.pdf.

DACA on recent depression among undocumented students should be reevaluated.

1.2. Exclusionary policy: immigration enforcement and depression

Undocumented college students in California contend with a myriad of everyday stressors tied to their liminal immigration status (Enriquez et al., 2018). Sociopolitical systems discipline, punish, and imprison undocumented immigrants through constant surveillance, deportation, and detention (Buenavista, 2018). Although immigration law falls within the bounds of civil law, carceral practices have increasingly been used to enforce immigration law since the 1980s, contributing to the dehumanizing racialization of immigrants (Abrego et al., 2017). Criminalizing policies and programs, such as section 287(g) of the Immigration and Nationality Act, the Secure Communities program, and the Priority Enforcement program, determine the extent to which local law enforcement cooperates with Immigration Customs and Enforcement (Abrego et al., 2017; Philbin et al., 2018). Further, undocumented immigrants may continue to manage traumas, debts, and other challenges experienced prior to or during migration (Hsin & Aptekar, 2021).

Thus, immigration enforcement experiences and related fears can negatively affect immigrants' mental health (Perreira & Pedroza, 2019). The looming threat of deportation structures the daily concerns of undocumented immigrants (Sudhinaraset, Ling, et al., 2017). Studies show the harmful effects of exposure to immigration enforcement (e.g., knowing someone who has been deported (Pinedo & Valdez, 2020) or proximity to a prominent immigration raid (Novak et al., 2017)). Immigration enforcement may constrain individuals' social connections with relatives who have been deported or detained (Martínez Rosas, 2020; Sudhinaraset, Ling, et al., 2017). Some immigrants worry that any misstep could deter their opportunity for citizenship and forgo government benefits for which they are eligible (Gee et al., 2016). Empirical research clarifying whether DACA protects against these immigration enforcement factors is needed.

1.3. Racializing UndocuAPI through immigration policy

Race, a dynamic, social classification based on similar observable traits, is commonly used to detect health inequities (Jones, 2001). Less frequently considered in health research, however, is racialization, which is the cultural process of assigning social meanings to racial groups (Hicken et al., 2018; Omi & Winant, 2001). The racialization and stigmatization of immigrants integrated explicitly into society's rules and implicitly within social structures disproportionately exposes immigrants of color to psychosocial harm (Hicken et al., 2018; Misra et al., 2021). The assumed inferiority of non-White immigrants is codified into "race-neutral" immigration policies that govern legal status. The effects of these policies may be group-specific, which Enriquez (2019) refers to as racialized illegality.

Invoking racialized illegality, we frame immigration policies as having particular pathways to depression for UndocuAPI. For example, stereotypes of obedient Asians in relation to criminal Latina/x/os complicate how UndocuAPI access resources and evade surveillance (Enriquez, 2019). In their extensive qualitative study, Hsin and Aptekar (2021) describe a myriad of harms enacted through the asylum system, which prioritizes Chinese migrants who claim persecution under coercive population control. Through a complex system of immigration policies spanning generations, Chinese asylum seekers are exposed to lengthy family separation, dangerous migration routes, and racialized perspectives on viable options for readjusting undocumented Chinese immigrants' legal statuses.

Given the heterogeneity of complicated immigration policies unique to API, examining the sociopolitical contexts of UndocuAPI may help to elucidate the underlying mechanisms between immigration policies and mental health (Bjorklund, 2018; Perreira & Pedroza, 2019; Sudhinaraset, Ling, et al., 2017). The API category is socially and legally

manufactured over time (Lee & Ramakrishnan, 2020; Pak et al., 2014). Because entry into the United States is governed by federal guidelines, our study leveraged the U.S. Census Bureau's (2020) definition, which classifies Asians as people from "the Far East, Southeast Asia, or the Indian subcontinent" and Pacific Islanders as originating from "Hawaii, Guam, Samoa, or other Pacific Islands." An estimated 14% of the 11 million undocumented immigrants in the United States are from Asia, with most Asian immigrants coming from India (32%), China (26%), the Philippines (16%), and South Korea (8%) (Caps et al., 2020). The aggregated "region" of Europe, Canada, and Oceania comprises 6% of undocumented immigrants, including those from Pacific Islands (Caps et al., 2020).

Fig. 1 depicts the complexity of API migration. Migrants from Asian countries are generally considered immigrants unless classified otherwise due to sociopolitical context (e.g., Vietnamese, Cambodian, Hmong, and Laotian refugees after the fall of Saigon in 1975 or Filipino U.S. nationals under American colonization) (Lee, 2015). Some Asians become undocumented by overstaying temporary visas (Buenavista, 2018). Stemming from different colonial histories with the United States, Pacific Islanders include immigrants (e.g., from Fiji, Tonga, Aoteroa/New Zealand) and non-immigrants (e.g., Native Hawaiian citizens, U.S. nationals from American Samoa, or Marshallese migrants through the Compact of Free Association. (Empowering Pacific Islander Communities, 2014; Morey, Tulua, et al., 2020).

The racialization of Asians as unassimilable and Pacific Islanders as exploitable has historically patterned immigration (Gee & Ford, 2011; Jen, 2011; Lee, 2015; Morey, Tulua, et al., 2020). Immigration policies restricted which Asians were permitted to enter the country including the 1875 Page Act, the 1882 Chinese Exclusion Act, the 1907 Gentlemen's Agreement, the 1917 Immigration Act, and the 1934 Tydings-McDuffee Act (Jen, 2011; Lee, 2015). More recently, educated professionals and family members from Asia migrated through the 1965 Immigration and Nationality Act while Southeast Asian refugees fled devastating wars in the 1970s (Lee, 2015). For many Pacific Islanders, the U.S. came to them, forcibly taking over, disrupting their way of life, and offering a way out through militarization (Morey, Tulua, et al.,

2020). Once in the United States, several policies forbade integration for API immigrants. Legal cases regarding education, citizenship, and marriage stymied inclusion (Jen, 2011; Pak et al., 2014). Anti-immigrant stigma, increased surveillance, and incarceration of American citizens with Asian ancestry demonstrate the tenuous limitations of legal status for Asians in the United States (Jen, 2011; Lee, 2015).

Erasure of this history perpetuates the contemporary racialization of (predominantly East) Asians as model minorities and invisibilizes UndocuAPI in immigrant justice research and practice (Buenavista, 2018; Zhou & Lee, 2017). In research, APIs continue to be othered, overlooked, and assumed to be unaffected by racism (Bacong et al., 2020). In practice, resources for undocumented immigrants are typically targeted toward Latinx/a/os. Few community spaces for UndocuAPI exist, reducing access to legal services for DACA applications and producing feelings of social isolation (Sudhinaraset, Ling, et al., 2017).

UndocuAPI experience several stressors related to their status. In a qualitative study with 32 (primarily Korean and Filipino) UndocuAPI, participants reported instances of trauma, intra- and inter-ethnic conflict, discrimination, and lack of social support and access to trained professionals (Sudhinaraset, Ling, et al., 2017). Among UndocuAPI, isolation has been associated with higher odds of depression (Ro et al., 2021). Additionally, the racialization of (predominantly East) Asians as model minorities and undocumented immigrants as criminal may produce dissonant identity development for UndocuAPI (Hsin & Aptekar, 2021). UndocuAPI who ascribe to exceptionalism may distance themselves from other undocumented students (Buenavista, 2018). Indeed, additional research is needed to understand how the unique racialization of APIs contribute to broader racial inequities.

UndocuAPI are not immune from the effects of immigration enforcement (Sudhinaraset, Ling, et al., 2017). The aim of this study was to examine the extent to which immigration enforcement stressors mediate the relationship between DACA and depression. Because DACA defers deportation, we hypothesize that it would protect, at least partially, from immigration enforcement stressors. That is, those with DACA would be expected to have fewer experiences and fears related to
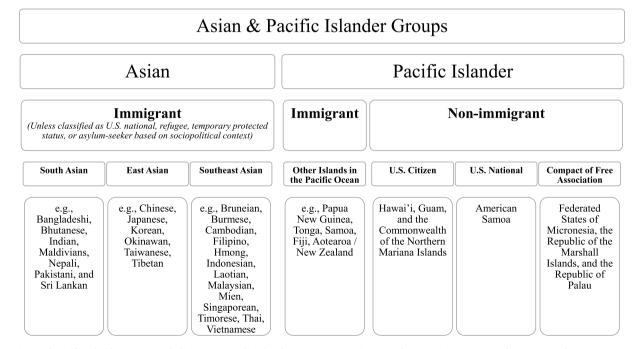

Asian & Pacific Islander Groups						
Asian			**Pacific Islander**			
Immigrant *(Unless classified as U.S. national, refugee, temporary protected status, or asylum-seeker based on sociopolitical context)*			**Immigrant**	**Non-immigrant**		
South Asian	East Asian	Southeast Asian	Other Islands in the Pacific Ocean	U.S. Citizen	U.S. National	Compact of Free Association
e.g., Bangladeshi, Bhutanese, Indian, Maldivians, Nepali, Pakistani, and Sri Lankan	e.g., Chinese, Japanese, Korean, Okinawan, Taiwanese, Tibetan	e.g., Bruneian, Burmese, Cambodian, Filipino, Hmong, Indonesian, Laotian, Malaysian, Mien, Singaporean, Timorese, Thai, Vietnamese	e.g., Papua New Guinea, Tonga, Samoa, Fiji, Aotearoa / New Zealand	Hawai'i, Guam, and the Commonwealth of the Northern Mariana Islands	American Samoa	Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau

Fig. 1. Asian and Pacific Islander groups and their corresponding legal statuses. Note: Given our focus on immigration policy, we use the U.S. Census Bureau's definition of Asian which includes South, East, and Southeast Asia. Adapted from Empowering Pacific Islander Communities & Asian Americans Advancing Justice. (2014). A Community of Contrasts: Native Hawaiians and Pacific Islanders in the United States, 2014. Los Angeles, CA and Pak, Y. K., Maramba, D. C., & Hernandez, X. J. (2014). Asian Americans in Higher Education: Charting New Realities. ASHE Higher Education Report, 40(1), 1–136. https://doi.org/10.1002/aehe.20013.

immigration enforcement which would lower depressive symptomology. Specifically, we tested the following hypotheses:

H1. UndocuAPI with DACA have lower odds of immigration enforcement factors than those without DACA.

H2. UndocuAPI with DACA have lower odds of clinical level of depressive symptoms than those without DACA.

H3. Immigration enforcement factors mediate the relationship between DACA and clinical levels of depressive symptoms.

2. Contributions

This study makes at least three contributions to the literature. First, our survey contained a direct measure of DACA status among a hidden population. Larger studies on the effects of DACA and health, particularly for Latina/x/os, assume that those who are eligible for DACA possess DACA (Patler & Laster Pirtle, 2018; Venkataramani et al., 2017). Due to the sensitivity of the question, other studies may use proxy variables such as length of time in the United States (Eskenazi et al., 2019). However, indirect measurement is less appropriate for UndocuAPI who are less likely to apply for DACA, even when eligible (Ro & Van Hook, 2021a). Indeed, a recent comparison of estimation strategies for undocumented populations found greater biases for Asian versus Latina/x/o immigrants (Ro & Van Hook, 2021a). In contrast, our research team gained the trust of respondents to self-report their DACA status through community-engaged recruitment. Additionally, some respondents had DACA renewals pending so were considered as not having DACA for our analysis. Given DACA's limit of deferred action for only two years and administrative delays processing renewals, DACA status cannot be assumed when assessing short-term indicators of mental health (Chacón, 2015).

Second, our study adds to the scant empirical studies which center the experiences of UndocuAPI. Due to the invisibility of API in health research, very few studies include UndocuAPI (Bacong et al., 2020; Perreira & Pedroza, 2019). Even fewer studies exclusively sample UndocuAPI, leverage appropriate community-oriented recruitment strategies, and use historical context to inform explanatory theories (Maglalang et al., 2021).

Third, studies examining pathways to immigrant health through a structural racism lens are rare (Misra et al., 2021). To our knowledge, racialized illegality has primarily been examined qualitatively (Cha et al., 2019; Enriquez, 2019; Enriquez et al., 2019). We share this mediation analysis of immigration policy and mental health, contextualized through racialized illegality, to assert the importance of race conscious, empirical research.

3. Methods

3.1. Sample

This paper uses data from the 2019 BRAVE (Building community Raising API Voices for health Equity) Study, as previously described by Ro et al. (2021). This survey data was collected online between June and August 2019 using Qualtrics. We employed a community-engaged approach by working with the BRAVE Community Advisory Board (CAB) and community interns (who were from the undocumented community themselves) to co-develop study materials and facilitate participant recruitment. This approach allowed us to more effectively engage the community in determining appropriate domains of interest, co-creating and pilot-testing new items for face validity, and exchanging knowledge about public health research methods and network-based assets for recruitment efforts.

There is no official registry of UndocuAPI from which to generate a random sample. We used convenience sampling to recruit participants. We first developed a database of all community colleges, Cal States, and

University of California in California, in addition to immigrant-serving organizations obtaining data on number of undocumented students and API students when available on school websites. With the help of our CAB and student interns, we reached out through school resource centers, including undocumented student services centers; community-based organizations; and social media campaigns. Eligible individuals were: 1) Asian or Pacific Islander; 2) undocumented with or without DACA; 3) between the ages of 18–31; 4) enrolled in a private college or university, California Community College, California State University, and/or University of California campus after June 15th, 2012, when DACA was first enacted; and 5) able to take a 30-min online survey in English. Upon completion of the survey, all survey participants who submitted valid email addresses entered a raffle for a $100 electronic gift card and the first 180 participants also received a $5 electronic gift card. Our project was approved by the University of California Los Angeles Institutional Review Board.

We received 264 survey responses. Because identifying as UndocuAPI was part of the eligibility criteria, we excluded 50 respondents that did not select "Asian/Asian American" or "Pacific Islander" as their racial category. We dropped one participant who identified only as Native Hawaiian, because Native Hawaiians are not immigrants. Additionally, 32 were missing race and birth country. For the remaining 17, we verified their ineligibility by reviewing their self-reported countries of birth. For example, race/country of birth combinations included American Indian/Alaska Native born in England; White born in Russia, United States, Mexico, Spain, or Turkey; other race born in Mexico and El Salvador; and bad data (e.g., "1993").

Of the eligible API respondents (n = 214), 18.7% (n = 40) were completely missing the outcome, comprised of 10-item depression screening tool. We considered substituting the mean for these respondents, but we decided to remove them from the final sample because they were also missing other key variables (e.g., DACA or immigration enforcement variables). Multiple imputation was not appropriate because the data was not missing at random. The complete case analytical sample included 174 respondents.

3.2. Measures

We created a binary outcome variable to indicate clinically significant depressive symptomology. Symptoms of depression (e.g., felt hopeful about the future (reverse coded), restless sleep) were screened using the 10-item version of the Center for Epidemiologic Studies Depression Scale (CES-D-10) (Andresen et al., 1994), which has been widely used among Asian Americans (Kim et al., 2015). Frequency of symptoms within the past week were coded ordinally as "Rarely or none of the time (less than 1 day)" = 0 to "All of the time (5–7 days) = 3. The possible range of scores for all ten items was 0–30.

Twenty-eight were missing 1–2 items, which is allowable per CESD guidance. We also kept nine responses that were missing 3–4 items because the total mean CESD score was similar (without the nine: mean 11.6 SD 5.2; with the nine 11.4, SD 5.1). Consistent with other community-based studies, we coded CESD-10 total scores equal to or greater than 10 as indicative of clinically significant depression (Andresen et al., 1994; Björgvinsson et al., 2013; Kim et al., 2015).

The key independent variable was DACA status. We asked, "Are you currently a DACA recipient?" We dichotomized the four possible responses into "Yes current DACA" and "No current DACA"; no included renewal pending, application denied, and never applied. Respondents with pending renewals could have been included under a "Yes ever DACA" category, but, due to the volatile status of DACA at the time of data collection and the recency of the depressive symptoms, we focused on current protection from deportation. DACA status was cross-checked for consistency with respondents' eligibility details (e.g., age of immigration).

Five immigration enforcement variables were included as potential mediators. Four binary items indicated respondents' experiences:

whether the respondent had ever decided to not apply for non-cash government benefits, such as Medi-Cal, food stamps, or housing subsidies, because of worries that doing so would disqualify them or a family member from obtaining a green card or becoming a U.S. citizen (hereafter Public Charge); whether the respondent or someone they knew experienced an immigration raid at work or at home; whether the respondent knew someone who had ever been deported or detained; and whether the respondent's documentation status limited their contact with family or friends.

We also asked two questions about immigration enforcement fears. For the question, "Do you fear getting deported?", response options included "no," "some of the time," "most of the time," and "all of the time." Because of the smaller number of "all of the time" responses (n = 18), we combined "most" and "all" to produce a three-level categorical variable. Another particularly sensitive question regarding disclosure was asked but omitted from analysis due to high missingness: "Are you fearful of revealing your documentation status to others?" Of the eligible API respondents (n = 214), 92 (43%) were missing this question. In the complete case analytical sample (n = 174), 53 (30%) were missing this question. Further, bivariate association between non-missing for fear of disclosure and depression was not statistically significant. Thus, we excluded fear of disclosure from our analyses.

We controlled for demographics and socioeconomic status. Gender was dichotomized as Woman/Other (including one preferred not to state) and Man. We also included age (continuous) and socioeconomic status, assessed as the respondent's educational attainment, mother's educational attainment, and difficulty paying rent.

Respondents could indicate multiple racial categories. For analytical purposes, respondents were categorized as "Asian" if they selected "Asian/Asian American" or "Asian" with a non-Pacific Islander race. They were categorized as "Pacific Islander" if they selected "Pacific Islander," or "Pacific Islander" or "Native Hawaiian/Kanaka Maoli" and another race (including Asian). If they did not mark "Asian," or "Pacific Islander," we reviewed their free text response for birth country. If they mentioned an API country (e.g., "China"), they were recategorized accordingly.

3.3. Statistical analysis

Univariate and bivariate descriptive statistics generated distributions for categorical variables and the spread of continuous variables and basic correlations between the variables of interest. To estimate the associations between DACA and immigration enforcement stressors (H1), we ran bivariate logistic regressions; ordered logistic regression was used for fear of deportation. To estimate the associations between DACA and depression, we ran sequential logistic regressions, modeling the unadjusted bivariate associations between DACA and depression (Model 1), and then controlling for demographics (Model 2).

To estimate whether DACA protected UndocuAPI from immigration enforcement stressors (H3), we added to Model 2 each immigration enforcement variable separately and then with the entire immigration enforcement block (Model 3). Lastly, we used the Karlson–Holm–Breen (KHB) decomposition method to assess the direct effect of DACA on depression and any indirect effects via statistically significant immigration enforcement variables from Model 3 (Kohler et al., 2011). KHB decomposition disentangles logistic regression coefficients for key predictor variables by distinguishing how much of the change between nested models is due to confounding versus rescaling. The KHB method determines how much potential mediating variables contribute to the indirect and total effects. Control variables were used as concomitant variables. We ran all analyses using Stata 16.1 (StataCorp, 2019).

4. Results

4.1. Descriptive statistics

Table 1 shows bivariate descriptive statistics of clinical depression with demographics, socioeconomic indicators, DACA, and immigration enforcement variables. The average age of respondents was 23.40. The sample was 47.1% women/other and 66.7% Asian. College graduates comprised the largest educational category for both student respondents (37.9%) and their mothers (48.9%). Roughly one-third (32.8%) had difficulty paying rent. Most of the respondents currently had DACA (73.6%) and reported clinical levels of depressive symptoms (54.0%).

DACA recipients had lower levels of clinical depression compared to non-recipients (62.8% vs. 73.6% of the sample). Immigration enforcement-related experiences were common among depressed respondents: 59.6% reported deciding not to apply for government

Table 1
Self-reported depressive symptoms by demographic, socioeconomic, DACA status, and immigration enforcement factors, BRAVE 4 study (N = 174).

	Depressed (YN) %			
	No	Yes	Total	p-value
	N = 80	N = 94	N = 174	
Age (m, SD)	23.41 (2.2)	23.39 (4.2)	23.40 (3.4)	NS
Gender				NS
Man	57.5	48.9	52.9	
Woman/Other	42.5	51.1	47.1	
Race				.007
Asian	56.3	75.5	66.7	
Pacific Islander	43.8	24.5	33.3	
Student's Education				.037
High school or equivalent	40.0	24.5	31.6	
Some college	31.3	29.8	30.5	
College grad or higher	28.7	45.7	37.9	
Mother's Education				NS
High school or less	31.3	33.0	32.2	
Some college	17.5	20.2	19.0	
College grad or higher	51.2	46.8	48.9	
Difficulty Paying Rent				<.001
No	83.8	53.2	67.2	
Yes	16.3	46.8	32.8	
DACA Status				<.001
No DACA	13.8	37.2	26.4	
Has DACA	86.3	62.8	73.6	
Ever decided to not apply for non-cash government benefits? (Public charge)				.010
No	60.0	40.4	49.4	
Yes	40.0	59.6	50.6	
You or someone you know experienced an immigration raid at work or at home?				NS
No	50.0	50.0	50.0	
Yes	50.0	50.0	50.0	
Know someone ever deported or detained?				.033
No	65.0	48.9	56.3	
Yes	35.0	51.1	43.7	
Has documentation status limited contact with family or friends?				.001
No	63.7	39.4	50.6	
Yes	36.3	60.6	49.4	
Fear getting deported?				<.001
No	28.7	16.0	21.8	
Some of the time	57.5	42.6	49.4	
Most/All of the time	13.8	41.5	28.7	

Note: Having clinical depression was assigned to scores of 10 or higher on the Center for the Epidemiological Studies of Depression Short Form (CES-D 10); p-values indicate significance for Pearson chi-square test of independence between Depression and variable.

benefits, 50.0% experienced an immigration raid or knew someone who did, 48.6% knew someone ever deported or detained, and 51.1% felt that their documentation status limited contact with family or friends. Most depressed respondents reported fearing deportation either some of the time (42.6%) or most/all of the time (41.5%).

4.2. DACA and immigration enforcement

Table 2 shows unadjusted bivariate logistic regression results for the association of DACA and immigration enforcement variables. UndocuAPIs who had DACA were statistically significantly associated with higher odds of experiencing a raid (OR = 2.66; 95% CI: 1.31–5.40) and lower odds of fearing deportation most or all of the time (OR = 0.38; 95% CI: 0.20–0.74). The other three immigration enforcement variables (public charge, knowing someone who was deported or detained, or immigration status limiting contact with friends or family) were not statistically significantly associated with DACA. Thus, our first hypothesis was partially supported; UndocuAPI with DACA had lower odds of fearing deportation most or all of the time compared with those without DACA.

4.3. DACA and depression

In Table 3, Models 1 and 2 show multiple logistic regression results for the association of DACA on depression. In Model 1, DACA was statistically significantly associated with lower odds of depression (OR = 0.27, 95% CI: 0.13–0.58). That is, UndocuAPIs who had DACA at the time of data collection had 73.1% lower odds of reporting clinical levels of depression compared to those without DACA. This association remained significant in the adjusted model with control variables (Model 2) (OR = 0.29, 95% CI: 0.12–0.69). In Model 2, being a college graduate (OR = 3.10, 95% CI: 1.19–8.07) and having difficulty paying for rent (OR = 4.22, 95% CI: 1.93–9.23) were associated with higher odds of depression. Thus, our second hypothesis that having DACA was associated with lower odds of depression was supported, all else equal.

4.4. DACA, immigration enforcement, and depression

Table 3 Model 3 shows multiple logistic regression results for the association of DACA and depression with control variables and all immigration enforcement variables. The odds of having depression for UndocuAPI with DACA remained statistically significantly lower than those without DACA (OR = 0.32, 95% CI: 0.13–0.69). Two immigration enforcement variables were statistically significant. Immigration status limiting contact with friends and family more than doubled the odds of having depression (OR = 2.36, 95% CI: 1.08–5.13). Fearing deportation most or all of the time more than tripled the odds of having depression (OR = 3.62, 95% CI: 1.16–11.34). The other immigration enforcement variables were not statistically significant. Due to rescaling within logistic regression, Model 3 cannot be meaningfully compared with the prior models.

Table 4 shows the estimated total, direct, and indirect effects of DACA on depression using KHB decomposition. The decomposition results shown were based on including only the statistically significant immigration enforcement variables from Model 3 (status limits contact and fear of deportation), though we also estimated each immigration enforcement variable separately and as an entire block. KHB decomposition estimates indicated that both the total effect (OR = 0.25, 95% CI: 0.10–0.63) and the direct effect (OR = 0.31, 95% CI: 0.12–0.77) of having DACA was statistically significantly associated with lower odds of depression.

Whether there is an indirect effect of DACA on the odds of having depression due to immigration enforcement is unclear. The indirect effect was not statistically significant (OR = 0.81, 95% CI: 0.60–1.08). Average partial effects indicated that, on average, the probability of having depression decreased by 25 percentage points among UndocuAPI with DACA compared to not having DACA. After controlling for immigration enforcement, this average decrease was reduced to 21 percentage points. That is, the total effect of DACA lowering the odds of depression was greater than its direct effect, indicating that immigration enforcement may potentially suppress the protective effect of DACA. This suggests that having DACA may limit exposure to immigration enforcement, which then could translate to a lower probability of depression by an average of 4 percentage points. However, because the indirect effect was not statistically significant, this should be interpreted with caution.

We also summarized the confounding effects of immigration enforcement, net of rescaling. The total effect of DACA on depression controlling for immigration enforcement was 1.19 times greater than the direct effect. Immigration enforcement accounted for 15.63% of the total effect. Immigration enforcement components were disentangled to illustrate contributions to the indirect and the total effects. Fear of deportation most or all of the time constituted 83.48% of the indirect effect and 13.05% of the total effect. Immigration status limiting contact with family and friends constituted 21.49% of the indirect effect and 3.36% of the total effect.

However, these results were not conclusive. KHB decomposition estimates suggested potential differences between total and direct effects but not a statistically significant indirect effect. Zhao et al. (2010) refer to this as a "direct-only non-mediation" which may warrant further theorization of an omitted mediator. Alternatively, because limited contact and fear of deportation were statistically significant predictors of depression in the adjusted logistic regression and contributed to 15.63% of the total effect, it is possible that the lack of significant results may be due to an underpowered sample.

5. Discussion

We examined the associations between DACA, immigration enforcement factors, and depression among UndocuAPI. Our hypotheses were partially supported. DACA was associated with two of the five immigration enforcement factors, though only fear of deportation had lowered odds (H1). UndocuAPI with DACA had significantly lower odds of depression than those without DACA (H2), but we did not detect a

Table 2

Bivariate logistic regression results for immigration enforcement and DACA Status, BRAVE 4 Study (N = 174).

	Public Charge		Experienced Raid		Know Deported/Detained		Status Limits Contact		Fear of Deportation	
Variable	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
DACA Status										
No DACA	*Ref*		*Ref*		*Ref*		*Ref*		*Ref*	
Has DACA	1.16	0.59–2.28	2.66 ***	1.31–5.40	0.90	0.46–1.77	0.86	0.44–1.69	0.38 ***	0.20–0.74
Constant	0.92	0.51–1.63	0.48 **	0.26–0.90	0.84	0.47–1.50	1.09	0.61–1.95		
/cut1									0.13 ***	0.07–0.25
/cut2									1.27	0.73–2.22

Note: *p < 0.05; **p < 0.01; ***p < 0.001. Ordered logistic regression was used for Fear of Deportation; cut1 = y-intercept for "most/all of the time"; cut2 = y-intercept for "some of the time."

Table 3

Logistic regression results for clinical depression, DACA, and immigration enforcement, BRAVE 4 Study (N = 174).

Variable	Model 1		Model 2		Model 3	
	OR	95% CI	OR	95% CI	OR	95% CI
DACA						
No DACA	*Ref*					
Has DACA	0.27***	0.13–0.58	0.29***	0.12–0.69	0.32**	0.13–0.79
Age			0.91	0.81–1.02	0.92	0.81–1.04
Gender						
Man			*Ref*		*Ref*	
Woman/Other			1.12	0.56–2.25	1.07	0.51–2.25
Race						
Asian			*Ref*		*Ref*	
Pacific Islander			0.53	0.25–1.14	0.65	0.29–1.46
Student's education						
High school			*Ref*		*Ref*	
Some college			1.59	0.62–4.10	1.06	0.37–3.03
College grad or higher			3.10**	1.19–8.07	2.45*	0.87–6.91
Mother's education						
High school			*Ref*		*Ref*	
Some college			1.00	0.37–2.76	1.44	0.50–4.17
College grad or higher			0.99	0.42–2.32	0.95	0.38–2.41
Difficulty paying rent						
No			*Ref*		*Ref*	
Yes			4.22***	1.93–9.23	3.94***	1.67–9.31
Public Charge						
No					*Ref*	
Yes					1.49	0.68–3.26
Experienced Raid						
No					*Ref*	
Yes					0.85	0.39–1.88
Know Deported/Detained						
No					*Ref*	
Yes					1.10	0.50–2.42
Status Limits Contact						
No					*Ref*	
Yes					2.36**	1.08–5.13
Fear of Deportation						
No					*Ref*	
Some of the time					1.15	0.45–2.93
Most/All of the time					3.62**	1.16–11.34

Note: *p < 0.05; **p < 0.01; ***p < 0.001. Model 1 examines the association between DACA status and depression with no other covariates. Model 2 adds control variables. Model 3 adds all immigration enforcement variables.

significant mediation via immigration enforcement factors (H3). This study demonstrates that DACA offers some protection against depression among UndocuAPI, but protection against immigration enforcement factors may be limited to reducing deportation fears.

We hypothesized that DACA would influence immigration enforcement stressors because DACA defers deportation, but for the most part, it does not. DACA was significantly associated with lower odds of deportation fear but higher odds of knowing someone who experienced a raid. UndocuAPI have high rates of avoiding non-cash government benefits, knowing someone who was deported or detained, and experiencing limited contact with friends or family whether they have DACA or not. Thus, UndocuAPI DACA recipients are not consistently protected from certain aspects of immigration enforcement.

Notably, UndocuAPI DACA recipients had lower odds of fearing deportation compared with those without DACA (OR = 0.38, 95% CI: 0.20–0.74). Yet most DACA recipients reported fearing their own deportation either some of the time (50.78%) or most or all of the time (23.44%). This finding aligns with the omnipresent threat of deportation that characterizes much of the extant research on undocumented immigrants but contradicts recent studies which found that undocumented young adults in California were less concerned with their own deportability (Enriquez et al., 2018; Enriquez & Millán, 2021).

Counterintuitively, UndocuAPI with DACA are 2.66 times as likely to have experienced or know someone who experienced a raid than someone without DACA (95% CI: 1.31–5.40). UndocuAPI are less likely to apply for DACA compared with their Latina/x/o counterparts (Migration Policy Institute, 2020) and UndocuAPI with DACA have

more social ties (Ro et al., 2021). Thus, it is likely that those with DACA are more connected to the undocumented community and potentially know more people who have experienced raids. Alternatively, knowing someone who had been in a raid may prompt UndocuAPI to seek out deportation protections. Our study could not determine who the person that experienced the raid was nor when the respondent encountered them. Further research on UndocuAPI's experiences with immigration enforcement could provide insight to the temporality (i.e., before or after obtaining DACA), racial composition (i.e., API, Latinx), and type (i.e., family, friend) of UndocuAPI's undocumented networks. Questions about undocumented networks should be approached cautiously and intentionally to avoid inciting unintended harm (Choi & Sudhinaraset, 2021).

Depression was prevalent among most respondents (54.0%). This prevalence was higher than previous depression studies with similar samples: 37.5% among UndocuAPI (Sudhinaraset, Ling, et al., 2017); 30.7% (Sudhinaraset et al., 2020) and 47% (Enriquez et al., 2020) among Latinx and API undocumented young adults; and 12.7–38.5% (Kim et al., 2015) among API college students.

Depression may have been more common in this study due to measurement, timing, and composition. First, various instruments and cut-offs have been used to assess depression (Amtmann et al., 2014; Kim et al., 2015). Second, this data was collected during a time of heightened anti-immigrant climate, which may have exacerbated respondents' recent depressive symptoms compared with earlier studies. Third, our study included a diverse sample of API undocumented students and recent alumni from community colleges, California State University

Table 4
Decomposition of DACA on Depression using the KHB-Method.

Depression	KHB		Average Partial Effects	
	OR	95% CI	Coef.	95% CI
DACA				
No DACA	*Ref*		*Ref*	
Has DACA				
Total Effect	0.25**	0.10–0.63	−0.25**	−0.40–−0.10
Direct Effect	0.31*	0.12–0.77	−0.21**	−0.37–−0.05
Indirect Effect	0.81	0.60–1.08	−0.04	—

Summary of Confounding			
Variable	Confounding Ratio	Confounding Percent	Rescale Factor
No DACA	*Ref*		
Has DACA	1.19	15.63	1.11

Components of Difference				
Z-Variable	Coef.	SE	% Indirect Effect	% Total Effect
No DACA	*Ref*			
Has DACA				
Status Limits Contact (Yes)	−0.05	0.09	21.49	3.36
Fear of Deportation (Some of the time)	0.01	0.03	−4.96	−0.78
Fear of Deportation (Most/All of the time)	−0.18	0.13	83.48	13.05

Note: KHB = Karlson–Holm–Breen. KHB decomposition is expressed on the odds scale and the components of difference are expressed on the logit scale. Only statistically significant immigration enforcement variables from Table 3 Model 3 (status limits contact and fear of deportation) were included as Z-variables for decomposition. Control variables were included as concomitant variables. The average partial effects method does not produce standard errors of difference. The total effect of DACA on depression with statistically significant immigration enforcement is 1.19 times larger than the direct effect of DACA on depression alone, and 15.63% of the total effect is due to immigration enforcement. The rescale factor refers to the size of the change in the logit scale due to the inclusion of immigration enforcement, net of confounding.

campuses, University of California campuses, and private colleges. API college students have reported worse depressive symptoms compared with non-API college students (Chen et al., 2019; Liu et al., 2019). Although recent studies on API college student mental health have included international students, UndocuAPI have not explicitly been considered (Stevens et al., 2018). A meta-analysis of depression prevalence among API adults found that marginalized populations, such as mothers, caregivers, and queer people, had nearly twice the prevalence as the general population (58.8% vs. 29.3%, p = 0.003) (Kim et al., 2015); perhaps UndocuAPI do, as well.

Having DACA appears to protect against depression among UndocuAPI, consistent with extant literature documenting DACA's health benefits. In a nationally representative retrospective study of 5000 Latino non-citizens, DACA-eligible people were less likely to report psychological distress than those who were ineligible (Venkataramani et al., 2017). In studies directly measuring DACA among undocumented Latina/x/o and API young adults in California, having DACA was associated with significantly lower rates of stress and depression compared to not having DACA (Enriquez et al., 2018; Patler & Laster Pirtle, 2018; Sudhinaraset et al., 2020).

It is still unclear whether DACA status protects against depression via reduced immigration enforcement factors. The inability to detect a statistically significant indirect effect may be related to our small sample size. Our null finding may also reflect the realities of undocumented immigrants' liminal status. DACA is neither a permanent solution nor a pathway to citizenship (Chacón, 2015). DACA status does not protect relatives from detainment or deportation (Enriquez & Millán, 2021). With more than 16.7 million people in mixed status families, the potential reach of immigration enforcement expands beyond the deported individual (Mathema, 2017; Valdivia, 2019). Nevertheless, the

fundamental role of deferred deportation still appears to be critical for reducing depression amidst the continued tenuous anti-immigrant climate.

These findings nuance the complex pathways between immigration policy and mental health. While immigration policies seemingly target Latina/x/o groups (Wallace, 2014), this study demonstrates that UndocuAPI are not exempt from experiencing immigration enforcement in the form of raids, deportations, and detainment, even with DACA. Given the different contexts facing UndocuAPI and undocumented Latinx/a/o groups (Buenavista, 2018; Enriquez, 2019), further research is needed to determine the extent to which mediators within extant literature are relevant among UndocuAPI (Misra et al., 2021). Having DACA likely connects with mechanisms adjacent to immigration enforcement that may alleviate deportation fears, cultivate hope among UndocuAPI, and reduce their odds of depression.

For example, having DACA may facilitate access to social support. We found that UndocuAPI whose immigration status limited contact with friends and family had higher odds of reporting depression, echoing Hsin and Aptekar's (2021) framing of severed transnational ties as legal violence for undocumented Chinese immigrants in New York. UndocuAPI in California also described social isolation as a barrier to health (Sudhinaraset, Ling, et al., 2017) and DACA as a facilitator for social integration (Sudhinaraset, To, et al., 2017). Similarly, Ro et al. (2021) found that UndocuAPI with DACA had more social ties than those without DACA and that high levels of social ties were significantly associated with lower odds of depression. Given the social isolation that UndocuAPI experience at the nexus of illegality and the model minority myth, access to social ties bridged via DACA networks may also reduce the salience of deportability (Enriquez & Millán, 2021; Ro et al., 2021). In contrast, another study among predominantly Latina/x/o undocumented young adults found that neither DACA nor social support were significantly associated with depression when controlling for perceived immigration policy effects (Velarde Pierce et al., 2021).

Another key consideration is that DACA offers work permits, which may partially alleviate the economic insecurity experienced by undocumented families (Enriquez & Millán, 2021; Luna & Montoya, 2019; Sudhinaraset, Ling, et al., 2017). As a control variable, we found that difficulty paying rent was associated with almost four times the odds of having depression (OR = 3.94, 95% CI: 1.67–9.31). Indeed, food insecurity, as a proxy for economic insecurity, was associated with higher levels of depression among undocumented young adults in California (Velarde Pierce et al., 2021). Further, UndocuAPI may need work permits to compensate for lost income if a family member was deported. Formal social ties with university staff or immigrant rights organizations gained by acquiring DACA could increase access to employment opportunities—especially jobs, internships, or scholarships that do not stigmatize legal status, further alleviating perceived deportation threat (Ro et al., 2021).

Access to care may be another potential mechanism because legal status has been thought to be a barrier to accessing health services. However, recent analysis of nationally representative data found that UndocuAPI actually have higher levels of health insurance than their API legal permanent resident counterparts (Ro & Van Hook, 2021b). Thus, other factors may explain the relationship between DACA and depression, including multiple manifestations of stigma (Cha et al., 2019).

Our study empirically contributes to recent conceptualizations of deportability (Enriquez & Millán, 2021) by assessing real and perceived immigration enforcement factors as potential determinants of immigrant mental health (Gee et al., 2016; Velarde Pierce et al., 2021). That is, real incidents (i.e. knowing someone who had been detained or deported) may function differently from perceptions (i.e. fear of deportation) as predictors of depressive symptomology. Although both indicators were significantly more prevalent among UndocuAPI with depression, only fear of deportation had a statistically significant effect on depression. As recently theorized by Enriquez and Millán (2021),

situational triggers shape deportability's salience, emphasizing the importance of assessing context within immigrant health research.

6. Limitations & future directions

As telling as these findings were, this study could be improved upon in at least three ways. First, the sample was not nationally representative of all UndocuAPI young adults. Similar analyses of cross-sectional, internet-based surveys of UndocuAPI students have described potential biases regarding the overrepresentation of DACA among respondents compared with less privileged UndocuAPI young adults who have not attended college (Ro et al., 2021; Sudhinaraset et al., 2020). Because DACA status increases access to higher education, employment, health services, and social support (Ro et al., 2021; Sudhinaraset et al., 2020), it is possible that depression rates and experiences with immigration enforcement are even higher among the UndocuAPI non-students who were ineligible for this study or beyond our recruitment network. The survey was only offered in English, but most DACA-eligible UndocuAPI would be proficient in English due to their earlier childhood entry into the United States. Because no national sampling frame exists, we relied on UndocuAPI ambassadors to reach community organizations and trusted networks. Given this need for community engagement, the study was initiated in California which is home to a sizeable UndocuAPI population with supporting immigrant organizations. As UndocuAPI networks gain visibility across the nation, opportunities to incorporate varied geographic experiences in research may grow, too.

Second, our study sample of UndocuAPI college students and recent alumni was small. High missingness for sensitive questions further minimized the analytic sample. The non-significant indirect mediation effect of immigration enforcement among a vulnerable population may have been due to limited statistical power. The multiple marginalization of UndocuAPI complicates recruitment. As other studies have suggested (Buenavista, 2018; Enriquez, 2019; Ro et al., 2021), UndocuAPI may be harder to reach than their Latinx peers due to stigmatization within the broader API community and isolation in the undocumented community. Efforts to reduce mental health stigma in the API community should include UndocuAPI and UndocuAlly trainings should include API organizations. Having demonstrated the need to include UndocuAPI in immigrant health research, future studies could invest further in culturally relevant resources for creative recruitment strategies and sensitive data collection.

Third, our study did not include a comparison group. With a larger sample size, disaggregated data could allow for within-group comparisons of the various ethnic groups that comprise UndocuAPI (Bacong et al., 2020). Future studies could examine different migration contexts for Pacific Islanders (Morey, Tulua, et al., 2020). Because our study is the first to empirically test the relationship of DACA, depression, and immigration enforcement centering UndocuAPI, we offer a baseline for further research.

7. Conclusion

Findings indicate that DACA protected UndocuAPI in the inclusive state of California from depressive symptoms. It is still unclear whether DACA is mediated by immigration enforcement factors. The realities and threats of family separation persist among UndocuAPI. The volatility of DACA amidst the anti-immigrant climate appears to be a relevant stressor for UndocuAPI. This study highlights the need to examine assumptions regarding the health of API immigrants and to critically investigate the mechanisms of immigration policy. Practitioners should consider the short-term need for mental health support, legal services, social connections, and financial assistance for UndocuAPI students as well as the long-term goal to decriminalize immigrant communities to advance racial health equity.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding authors on reasonable request.

Ethics approval and consent to participate

The study received IRB approval from the University of California Los Angeles Institutional Review Board (IRB#19–001077). Informed consent was obtained from all participants in the study and all protocols were carried out in accordance with relevant guidelines and regulations.

Author statement

Erin Manalo-Pedro: Conceptualization, Methodology, Software, Formal Analysis, Writing – Original Draft, Writing – Review & Editing, Visualization.

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Declaration of competing interest

The authors have no conflicts of interest or competing interests to declare.

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