



# Overt Perceived Discrimination and Racial Microaggressions and their Association with Health Risk Behaviors among a Sample of Urban American Indian/Alaska Native Adolescents

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Received: 12 August 2018 / Revised: 23 December 2018 / Accepted: 6 February 2019 / Published online: 20 February 2019  
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## Abstract

**Background** Urban American Indian/Alaska Native (AI/AN) adolescents are an understudied population in the USA who are at risk for a variety of health problems. Perceived discrimination (PD), including both overt PD and racial microaggressions (RMA), is known to adversely affect health. However, studies analyzing associations between overt PD and RMA and various health behaviors are limited.

**Methods** This study measured past-year alcohol use, heavy drinking, marijuana use, commercialized tobacco use, consequences experienced from alcohol and marijuana use in the past 3 months, mental and physical health status, AI/AN traditional activity participation, and overt PD and RMA among 182 urban AI/AN adolescents in California. To assess the association between overt PD and RMAs and health outcomes, we conducted either logistic regression (for dichotomous outcomes: past-year alcohol use, past-year heavy drinking, past-year marijuana use, consequences of alcohol and marijuana use, commercialized tobacco use) or linear regression (for continuous outcomes: mental and physical health, AI/AN traditional practices).

**Results** In contrast to our hypotheses, overt PD and RMA were not significantly associated with substance use or mental or physical health among this sample of urban AI/AN adolescents. After adjusting for age and gender, overt PD and RMA were only correlated with past-year cigarette use and alcohol-related consequences experienced in the past 3 months.

**Conclusion** Potential factors that may play a role in decreasing effects of overt PD and RMA among urban AI/AN adolescents are discussed, including participation in AI/AN traditional practices and community engagement.

**Keywords** American Indians · Alaska Natives · Urban · Discrimination

## Introduction

American Indian/Alaska Native (AI/AN) adolescents experience significant health disparities [1–9]. For example, AI/AN adolescents report high rates of alcohol use [2–4], marijuana

use [5], commercialized tobacco use [1], mental health disorders [6], and physical health problems [7–9]. The population of AI/ANs residing in urban areas has been consistently growing, and now constitutes 70% of the overall AI/AN population [10]. AI/AN adolescents residing in urban areas tend to report high rates of illicit drug use, as well as mental and physical health problems [11, 12]. AI/ANs have experienced a long and complex history of numerous traumas throughout history that may lead to risky health behaviors [13–15]. However, studies assessing factors contributing to risky health behaviors in this population are limited. Analyzing the potential effects of the broad range of perceived discrimination (PD) experiences, including both overt PD and racial microaggressions (RMA), among urban AI/AN adolescents on health outcomes offers a unique opportunity to further our understanding of these health disparities.

Researchers have theorized that exposure to various historically traumatic events is related to health disparities experienced by AI/ANs [13–15]. These historical traumas include

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forced removal from AI/AN homelands, forced placement into boarding schools with the intent of assimilating AI/AN youth into mainstream US society, and laws prohibiting AI/ANs from practicing their religious and spiritual ceremonies [14]. A US law postulated to contribute to various health disparities among urban AI/ANs is the Relocation Act of 1956 [16]. This Act financed the relocation of individual AIs and AI families to job training centers in designated US cities in the lower forty-eight states. However, the relocation of AIs to urban areas has been described as an attempt to abolish tribes through a process of assimilation, thereby “getting rid of the Indian problem” [17]. Rather than establishing economic stability, large numbers of AIs who moved to urban areas became unemployed, homeless, and disconnected from their community-based support networks [18, 19]. As a result, this relocation put AIs who migrated to urban areas at risk for a variety of health problems [18, 19] and appears to have contributed to an inter-generational effect whereby successive generations of urban AIs continue to experience various health and other disparities [20, 21].

The complex urban environment poses multiple challenges for AI/AN adolescents. Traditionally, AI/ANs lived in an extended family and community network. Through these connections, they were able to engage in AI/AN traditional practices that emphasized wellness and balance [22–24]. Although some urban AI/AN communities are comprised of tightly knit groups, many urban areas, including Los Angeles, are geographically and socially fragmented [25]. As a result, urban AI/AN adolescents often feel ostracized, socially disconnected, confused about their identity, and victimized [26, 27]. For example, in a study conducted by our group in large urban areas in California, urban AI/AN adolescents reported a wide array of PD incidents, ranging from more blatant forms of discrimination, such as mockery, bullying, stereotypes, and harassment, to more subtle forms such as being asked to be the “token Indian” [27]. Meanwhile, Jones and Galliher suggest that pressure for Native youth to assimilate into mainstream culture may sometimes create expectations for them to demonstrate more “traditional” Native behaviors per stereotyped expectations of mainstream culture. This can often place them at greater risk of “being singled out” and experiencing discrimination [28].

Many studies have revealed experiences of PD across racial/ethnic groups, as well as relationships between these experiences and negative outcomes. For example, in one study conducted among 2490 adolescents (African American 51%, Hispanic 31.4%, and White 17.8%), most (73%) reported experiencing racial/ethnic discrimination, and 42% of experiences were “somewhat” or “very disturbing” in terms of intensity [29]. PD may detrimentally affect numerous health conditions and problems among various minority racial/ethnic groups [29–32]. For example, adolescents who experienced racial/ethnic discrimination at least occasionally were more

likely to report greater physical aggression, delinquency, and suicidal ideation [29]. Also, in a study identifying trajectories of PD from 9th grade through emerging adulthood among 2722 Hispanic students, the group with increased discrimination had a higher risk of cigarette, alcohol, marijuana, and hard drug use compared to the low and stable discrimination group [31].

The history of overt racism and unjust actions experienced by AI/ANs is well documented. However, among AI/AN adolescents, most studies assessing associations of PD and health-related disorders have been conducted on US reservations and Canadian First Nation reserves. Studies conducted among these groups have shown that PD is associated with increased odds of being either a bully victim or a bully perpetrator [33], depressive symptoms [34], thinking about suicide [35], early substance use initiation [36], and increased risk for development of an alcohol use disorder [37].

RMA have recently received attention as an emerging form of PD. RMA refer to “subtle insults (verbal, nonverbal, and/or visual) directed toward racial minorities, often automatically or unconsciously” [38] and are well documented among the AI/AN population [28, 39–43]. Among AI/ANs, some examples of RMA include the following: being asked to prove one’s “Indianness” or authenticity by a non-Native person, witnessing use of Indian mascots on sports teams, being told, “but you don’t look like a real Indian,” and being told by a non-Native person that he or she was an Indian in a past life or that their grandmother was a Cherokee princess. The emergence of RMA experienced by AI/ANs is reflective of newer and subtler forms of modern racial attitudes and covert efforts to maintain racial inequality [41].

Although research on RMA among AI/ANs has been limited, existing research suggests a link between RMA and negative health outcomes. For example, Walls et al. found that reports of RMA correlated with self-reported history of heart attack, worse depressive symptoms, and prior year hospitalization among adults diagnosed with type two diabetes [43]. In a study conducted among 114 Native American young adults with representation from nearly 70 distinct Indigenous groups from the contiguous USA, Alaska, Canada, and Mexico, 98% reported experiencing at least one type of RMA. The extent to which participants were bothered by the RMA was mild. However, greater Native identification was strongly associated with more RMA experiences [28]. In a study utilizing the Microaggressions Distress Scale developed by Walters [39], greater reports of RMA were associated with higher odds of physical pain and impairment among a sample of gay, lesbian, bisexual, and other sexual-minority AI/AN adults. In addition, reports of experiencing RMA were positively associated with fair or poor health among participants with low levels of actualization, but this association was weak among those with high levels of actualization. Actualization referred to the degree to which respondents had a positive integration between self and

group identity with regard to political, ethnic, racial, cultural, and spiritual dimensions of being Native. Furthermore, actualization was suggested to buffer the negative impact of discrimination [39]. Although the literature on RMA among AI/ANs has grown substantially in recent years, studies analyzing the role of RMA in leading to risky health behaviors among urban AI/AN adolescents across various health domains are currently limited.

Among urban AI/AN adolescents, to our knowledge, only one study has examined adolescents' experiences of PD [12]. The authors conducted a secondary analyses study among a sample of 7th and 8th grade students enrolled in four urban middle schools in Washington State. Utilizing the discrimination subscale from the Multicultural Events Scale for Adolescents (MESA) [44, 45], participants reported whether six different events had occurred in the previous 3 months. Samples of events included the following: "You were unfairly accused of doing something bad because of your race or ethnicity" and "People put you down for practicing the customs or traditions of your own race or ethnicity or country of origin." They found that urban AI/AN adolescents reported more PD in comparison to non-Hispanic Whites [12].

To further our understanding of the potential effects of PD (including both overt PD and RMA) on urban AI/AN adolescents, we examine associations between overt PD and RMA experiences and a variety of health outcomes among a sample of adolescents surveyed throughout the state of California. In this study, we utilize the short version of the Microaggressions Distress Scale [46], a culturally appropriate instrument that incorporates both overt PD and RMA items. We also analyze the association between overt PD and RMA and traditional practice participation to test whether effects of overt PD and RMA are moderated for adolescents with greater participation in traditional practices. Due to numerous studies demonstrating associations between PD among AI/AN adolescents [33–37], and various minority racial/ethnic groups [29–32], we hypothesized that overt PD and RMA would be associated with alcohol and marijuana use, commercialized tobacco use, consequences of alcohol and marijuana use, mental health, and general health status among our sample of urban AI/AN adolescents. We also hypothesized that greater traditional practice participation would decrease the association between experiences of overt PD and RMA and all health risk behaviors. This study provides an opportunity to deepen our understanding of ongoing health disparities among urban AI/ANs.

## Methods

### Participants and Recruitment

We recruited participants as part of a randomized controlled trial analyzing the potential benefits of Motivational

Interviewing and Culture for Urban Native American Youth (MICUNAY), a new culture-focused substance use prevention/intervention program targeting urban AI/AN adolescents ages 14–18 [47]. MICUNAY was initially developed by Drs. D'Amico and Dickerson in collaboration with community members, providers, and a MICUNAY community advisory board through a series of focus groups [47, 48]. We developed MICUNAY in response to community recommendations for providing substance use interventions that integrated evidence-based treatments with AI/AN traditional healing practices [49, 50]. Adolescents lived in urban areas in northern, central, and southern California. Inclusion criteria included verbally self-identifying as AI/AN (or being verbally identified by a family or community member as AI/AN) and being 14–18 years of age. We recruited with flyers at organizations serving AI/ANs, Pow Wows and other community events, and community forums. A total of 185 youth completed a comprehensive baseline survey upon entering the study, including substance use characteristics, sociodemographic information, and cultural characteristics. Participants received a \$25 gift card for completing the baseline survey. The study protocol was approved by the institution's Internal Review Board. Three participants did not respond to any PD items and were therefore excluded, reducing the analytic sample size to 182 adolescents.

## Measures

**Demographics** We asked participants questions about their age, gender, and tribal affiliation. Also, using categories established by National Institutes of Health (NIH), participants were asked to "mark all that apply" for the following categories: American Indian or Alaska Native, Hispanic or Latino/Latina, Asian or Asian American, Native Hawaiian or Pacific Islander, black or African American, White or Caucasian, and other. High school degree status of parents was also obtained.

**Traditional Practices** Adolescents indicated whether they had ever participated in different traditional practices (choosing from a list of more than 20 traditional practices, such as attending Pow Wows, basket weaving, seeing a traditional healer, and playing Native hand or stick games). Adolescents reported how many times in their lives they participated in each traditional activity using a Likert scale from never, 1 time, 2 times, 3 to 10 times, 11 to 20 times, to more than 20 times. Items are based upon extensive research conducted with AI/AN adolescents, parents, and community partners [51].

### Alcohol, Marijuana Use, and Commercialized Tobacco Use

Adolescents reported past-year alcohol, marijuana, and commercialized tobacco use with existing published measures [52]. Adolescents indicated how many times they used/tried

at least one drink of alcohol or marijuana on a 6-point Likert scale from none to “more than 20 times.” Using this same scale, adolescents also reported past-year heavy drinking by indicating the number of times they used/tried five or more drinks in a row within a couple of hours. Adolescents also answered questions about past-year cigarette and electronic (e)-cigarette using the same 6-point Likert scale from none to “more than 20 times.” Adolescents answered questions about past-year smokeless tobacco use on a 4-point Likert scale from none to “more than 20 times.” These were dichotomized to “any use” versus “no use,” which is typical given low use rates at younger ages [53].

**Consequences of Alcohol and Marijuana Use** were assessed based on DSM-IV criteria with seven items for alcohol and five items for marijuana [52]. The seven questions for alcohol asked how many times in the past 3 months the following things happened because of drinking alcohol?: (1) You felt really sick because of drinking alcohol, (2) You got into trouble at school or home because of drinking alcohol, (3) You did something you later felt sorry for because of drinking alcohol, (4) You did not study for something you should have because of drinking alcohol, (5) You got into a fight or argument because of drinking alcohol, (6) You missed school because of drinking alcohol, and (7) Could not remember what you did because of drinking alcohol. The five questions for marijuana asked how many times in the past 3 months the following things because of using marijuana (pot, weed, hash): (1) You missed school because of using marijuana, (2) You did something you later felt sorry for because of using marijuana, (3) You got into trouble at school or home because of using marijuana, (4) You had trouble concentrating on what you were doing because of using marijuana, and (5) Could not remember what you did because of using marijuana. We analyzed indicators for any consequences versus no consequences in the previous 3 months.

**Mental Health** Mental health was measured with the well-validated Mental Health Inventory-5 ( $\alpha = .74$ ) [54]. This survey consists of five questions asking during the past month: (1) How much of the time have you been a very nervous person?, (2) How much of the time have you felt calm and peaceful?, (3) How much of the time have you felt downhearted and blue?, (4) How much of the time have you been a happy person?, and (5) How often have you felt so down in the dumps that nothing could cheer you up? Relevant items were reversed so that a higher total score (transformed to range from 0 to 100,  $\alpha = 0.73$ ) indicates better mental health.

**General Health Status** General health was assessed with one item (“In general, would you say health is [poor/fair/good/very good/excellent]?”) using a 5-point scale (1 = poor to 5 = excellent) from the SF-12 [55].

### Overt Perceived Discrimination and Racial Microaggressions

Experiences with both overt PD and RMA were measured using the short version of the Microaggressions Distress Scale [46]. Ten items ask about verbal, behavioral, and environmental encounters in the last year that implicitly or explicitly diminished racial heritage, identity, or culture (e.g., asked if real Indian by non-natives). The short version of the Microaggressions Distress Scale is designed to measure instances of overt PD as well as RMA specific to the experiences of AI/ANs and was developed with AI/AN community-based focus groups and reviewed for coherence and clarity by AI/AN researchers [46]. Adolescents reported whether the following events occurred in the last 12 months: (1) Have you experienced unfair treatment by the police because you are Native?, (2) Have you experienced being called a racist name like Squaw or Red Skin?, (3) Have you experienced being trailed or followed around in a store because you are Native?, (4) Have you experienced being mistaken by non-Natives as a racial group other than Native?, (5) Have you experienced being told by a non-Native person that he or she was an Indian in a past life or that their grandmother was a Cherokee princess?, (6) Have you experienced being told by non-Natives that they felt a spiritual connection to Indians?, (7) Have you experienced being told by non-Natives how “lucky” you are to be Indian?, (8) Have you experienced being asked you are a “real Indian” by a non-Native person?, (9) Have you been asked to prove your Indianness or authenticity by a non-Native person?, and (10) Have you experienced being hit, kicked, or physically attacked because you are Native? Adolescents were considered to have endorsed having experienced a form of PD if they responded “Yes” or “I’m not sure, but I think so” to an item. We included “I am not sure, but I think so” along with “Yes” due to the often subtle and indirect nature of RMA. We used the total number of forms of overt PD/RMA experienced by an individual for analysis. In the event that a respondent failed to answer all items ( $n = 3$  individuals), missing endorsements were imputed as the average of the other items. Chronbach’s alpha for the scale was 0.80.

### Statistical Analysis

To assess the association between overt PD and RMA and health outcomes, we conducted either logistic regression (for dichotomous outcomes: i.e., any use of each substance; presence of alcohol or marijuana consequences) or linear regression (for continuous outcomes: i.e., mental and physical health, traditional practices). Our power analysis found that for outcomes such as cigarette and e-cigarette use and marijuana and alcohol consequences, where the number of individuals reporting these behaviors is 25–30, we had 80%

power to detect an effect with an odds ratio of about 3 for a 5-unit increase in the short version of the Microaggressions Distress Scale. For more prevalent outcomes, such as alcohol use, we had 80% power to detect an odds ratio around 2.5.

For each outcome, we conducted a bivariate regression model to determine any unadjusted association with overt PD and RMA. We followed this with a second regression model controlling for age and gender to determine whether evidence for the association with overt PD and RMA remained after adjusting for these potential confounding characteristics. We divided the short version of the Microaggressions Distress Scale by 5 such that a 1-unit increase represents five additional discriminatory events. This 5-unit jump is equivalent to the difference between an adolescent at the 25th percentile and an adolescent at the 75th percentile of the scale. The modified short version of the Microaggressions Distress Scale is entered into all models linearly. We performed all statistical analyses with SAS v9.4.

## Results

### Demographics

The average age of the sample was 15.6, with somewhat fewer 17 (16.7%) and 18-year-olds (10.6%) in the study (Table 1). Males and females were evenly distributed. Among youth who knew about their parent's education, a high percentage of mothers (80%) and fathers (73%) completed high school. AI/AN adolescents reported various mixed races, with the highest (46%) reporting Hispanic heritage. Thirty-five youth did not check AI/AN on the survey, although they self-identified verbally as AI/AN to be in the study. Over 100 tribes are represented. To protect the confidentiality of participants, we do not report tribal affiliations [56].

### Overt Perceived Discrimination and Racial Microaggressions

Adolescents reported experiencing a mean of 3.57 (standard deviation 2.64) overt PD/RMA events in the past year (Table 1), with a 25th percentile of 1, a median of 3.5, and a 75th percentile of 6. Thirty-two adolescents (18%) reported no overt PD/RMA in the past year, and an additional 19 (10%) reported only one form of overt PD/RMA. Thirty-one adolescents (17%) reported at least seven of the ten forms of overt PD/RMA. The remaining 55% experienced between two and six forms of overt PD/RMA.

### Traditional Practices Participation

As shown in Table 1, adolescents reported having participated in an average (SD) of 95.1 (97.6) AI/AN traditional practices

during their lifetime. Going to Pow Wows was the most frequently reported activity (86%), followed by learning about tribal history (81%), eating Native foods (75%), and engaging in prayer (75%). Only 25% of our sample reporting engaging in traditional practices fewer than 21 times.

### Risk Behaviors

As shown in Table 1, during the past year, 35% of adolescents reported alcohol use, 23% engaged in heavy drinking, and 36% used marijuana. Sixteen percent of adolescents reported experiencing any consequences due to alcohol in the past 3 months, and 15% reported any consequences from marijuana use. Fifteen percent of adolescents reported cigarette use, and 16% used e-cigarettes. The average score on the MHI-5 was 67.4; a 60 or higher is considered “good” mental health for adolescents [57]. Overall, 91% of adolescents reported their general health status as good, very good, or excellent.

### Associations between Overt Perceived Discrimination and Racial Microaggressions and Health Risk Behaviors

Throughout, we report odds ratios for the effects of experiencing five additional overt PD/RMA events, the interquartile range of overt PD/RMA events in our sample. As shown in Table 2, we found that after adjusting for age and gender, each additional five overt PD/RMA events were associated with 2.49 times the odds of reporting cigarette use in the past year [95% confidence interval (CI) 1.05–5.91,  $p = 0.04$ ]. Smaller non-significant associations and similarly wide confidence intervals were found for nearly all substance use outcomes after adjusting for age and gender: e-cigarette use in the past year (adjusted odds ratio (AOR) 1.65, CI 0.74–3.66), any heavy drinking in the past year (AOR 1.23, CI 0.61–2.49), and any marijuana use in the past year (AOR 0.97, CI 0.52–1.81). There was a strong and significant association between overt PD/RMA and alcohol-related consequences in the past 3 months (AOR 3.02, CI 1.26–7.25,  $p = 0.01$ ). Furthermore, past month mental health scores were estimated to be 3.31 units lower for every five additional events after adjusting for age and gender, but the confidence interval was large, and included everything from an 8.38-unit deficit to a 1.76-unit benefit for the high-overt PD/RMA adolescents. Results were very similar for a parallel set of bivariate regression models (that is, when not adjusting for age and gender). Due to the low numbers of youth who did not engage in traditional practices (3.3%), we were unable to analyze whether effects of overt PD and RMA on health behaviors were moderated by traditional activity participation.

**Table 1** MICUNAY descriptives (*n* = 182)

Demographics	No. (%)
Age	
14-year-old	50 (28)
15-year-old	38 (21)
16-year-old	43 (24)
17-year-old	31 (17)
18-year-old	19 (10)
Sex	–
Female	94 (52)
Male	88 (48)
Race/ethnicity <sup>^</sup>	–
Hispanic/Latino(a)	83 (46)
American Indian/Alaska Native	150 (82)
Asian/Asian American/Pacific Islander	7 (4)
Black/African American	20 (11)
White/Caucasian	32 (18)
Other	8 (4)
High school degree	–
Mother	119 (80)
Father	93 (73)
Perceived discrimination and outcomes	Mean (SD) or no. (%)
Short version of the Microaggressions Distress Scale (0–9)	3.6 (2.6)
Participation in American Indian/Alaska Native traditional practices (lifetime)	95.1 (97.6)
Mental Health Inventory-5 Score (0–100)	67.4 (18.5)
General health status (present) (1–5)	3.7 (0.9)
Cigarette use (any in the past year)	27 (15)
E-cigarette use (any in the past year)	29 (16)
Alcohol use (any in the past year)	63 (35)
Heavy drinking (any in the past year)	43 (23)
Marijuana use (any in the past year)	66 (36)
Consequences of alcohol use (any in the past 3 months)	29 (16)
Consequences of marijuana use (any in the past 3 months)	28 (15)

Note that all youth had to self-identify as American Indian/Alaska Native (AI/AN) to be part of the project. They then completed a survey asking them to label their race/ethnicity. These numbers and percentages reflect what youth reported on the survey and can overlap if they identified more than one race/ethnicity. Thirty-five youth did not check AI/AN on the survey, although they self-identified verbally as AI/AN to be in the study

## Discussion

This study contributes significantly to the literature in this area by providing an understanding of the role of overt PD and RMA on health behaviors among urban AI/AN adolescents. Given that there is little work to date on AI/AN adolescents in urban settings, it is crucial that further studies be conducted analyzing the effects of overt PD and RMA among this understudied and marginalized population. Findings from this select sample of urban AI/AN adolescents provide an opportunity to explore potential protective factors that may help increase resiliency among adolescents of color, thereby decreasing health disparities experienced by disenfranchised populations. Overall, overt PD and RMA experiences among

these urban AI/AN adolescents did not significantly affect their substance use or mental or physical health. After adjusting for age and gender, overt PD and RMA was only correlated with past-year cigarette use and alcohol-related consequences experienced in the past 3 months. This was surprising, and contrasts with other studies that have demonstrated significant associations between PD and multiple health behaviors [29–37]. Due to the long history of historical trauma, overt PD, and RMA experienced by this population, one would expect to see correlations between overt PD and RMA and risky health behaviors within this population.

The correlation of commercialized smoking and overt PD and RMA among our sample of urban AI/AN adolescents is noteworthy due to the high prevalence of commercialized

**Table 2** Associations between overt perceived discrimination and racial microaggressions and health risk behaviors

Outcome	Unadjusted		Adjusted for age and gender	
	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value
Cigarettes (any in the past year)	3.13 (1.37–7.13)	0.007	2.49 (1.05–5.91)	0.04
E-cigarettes (any in the past year)	2.11 (0.98–4.56)	0.06	1.65 (0.74–3.66)	0.22
Drinking (any in the past year)	1.60 (0.89–2.88)	0.11	1.24 (0.66–2.30)	0.51
Heavy drinking (any in the past year)	1.69 (0.88–3.26)	0.12	1.23 (0.61–2.49)	0.56
Marijuana (any in the past year)	1.34 (0.75–2.38)	.32	0.97 (0.52–1.81)	0.93
Consequences relates to alcohol use (any in the past 3 months)	3.80 (1.67–8.63)	.001	3.02 (1.26–7.25)	0.013
Consequences related to marijuana use (any in the past 3 months)	1.82 (0.84–3.95)	.13	1.41 (0.63–3.17)	0.40
	<i>b</i> (95% CI)	<i>p</i> value	<i>b</i> (95% CI)	<i>p</i> value
Mental health (past 1 month)	– 4.00 (2.60)	0.13	– 3.31 (– 8.38, 1.76)	0.20
Physical health (present)	– 0.07 (0.13)	0.59	0.02 (– 0.23, 0.27)	0.89

For analysis, the short version of the Microaggressions Distress Scale has been divided by 5 such that a 1-unit increase represents five additional perceived discrimination events

smoking among AI/AN adolescents [58], and due to higher likelihood of alcohol and illicit drug use among adolescents who smoke [59]. In a study conducted among AI youth in California, historical trauma was found to be a direct risk factor for cigarette smoking [60]. Findings in our study similarly suggest the potential risk for cigarette smoking among AI/AN adolescents who experience overt PD and RMA, which may be rooted in historically based traumas experienced by this population. Nonetheless, further studies analyzing the role of overt PD and RMA and their association with commercialized smoking with larger samples of urban AI/AN adolescents are suggested.

Findings from this study help elucidate the potential protective effects of cultural connectedness as it relates to experiences of overt PD and RMA among a highly marginalized population. Cultural connectedness has been suggested to increase cultural exploration and identification with traditional Indigenous values, which may help create awareness of how to best cope with experiences of broader societal/institutional discrimination [61]. In a study conducted among a sample of Navajo adolescents, embeddedness in and connection to Navajo culture and, in some cases, connection to White American culture served as a buffer to the negative effects of discrimination [62]. The benefits of cultural connectedness for urban AI/AN adolescents are also reflected in recent statewide reports in California [49, 50]. These reports emphasize the importance that urban AI/AN communities place on participation in traditional practices and in establishing a more cohesive structured and visible AI/AN community within urban areas to reverse behavior and health problems among this population [49, 50]. Traditional practices have gained increasing recognition in the literature with regard to the potential benefits of AI/AN traditional practices on health and well-being [22–24]. We recruited nearly all participants through

community-based organizations, and the majority reported participation in traditional practices. Thus, given their higher level of cultural connectedness, these urban AI/AN adolescents may have been able to buffer some of their experiences of overt PD and RMA. Further studies with larger urban AI/AN adolescent samples are needed to analyze the potential protective effects of cultural cohesion and connectedness and other factors that may help to decrease the effects of overt PD and RMA on health behaviors. Several reports have identified factors that reduce the effects of discriminatory experiences on individuals [63]. These factors include high self-regard for one’s ancestral heritage, racial/ethnic group cohesion and connectedness, and parental processes that aid in coping strategies [63, 64]. The negative influence of discrimination on mental health and behavioral outcomes is also suggested to be buffered among those with more positive personal evaluations of their racial group [65]. Findings from our study among urban AI/AN adolescents further substantiate these factors that may help to decrease the potential effect of overt PD and RMA on various health behaviors among racial/ethnic minority groups.

Another reason we may not have found associations between overt PD and RMA and most health outcomes may be due to the age of our sample. The effects of PD may accumulate across the lifespan [38]. Experiences of discrimination during the developmental stage of adolescence may be internalized and grow over time as the adolescent’s sense of self is being formed with their experiences of discrimination [66]. Thus, effects of overt PD and RMA on health outcomes may differ between adolescents and adults given that adolescents have not had as much time to process these experiences. Further longitudinal research is needed to assess the role of overt PD and RMA on outcomes during various stages of development among urban AI/AN adolescents.

Of note, 35 adolescents did not check AI/AN on their baseline survey, although they self-identified verbally as AI/AN to be in the study. This highlights the complexities of cultural and ethnic identity among AI/AN adolescents within the urban setting [67]. To date, there are few studies that address how AI/AN view themselves and navigate their identities [68], and how this may affect overall health and well-being. Further research should examine the role of identity in urban AI/AN adolescents, and how this relates to both overt PD and RMA and health outcomes.

Unfortunately, we are unable to test whether effects of overt PD and RMA on various health domains are moderated by greater participation in traditional practices due to overall high rates of participation observed in our sample. Future studies analyzing these associations among urban AI/AN adolescents may help clarify the potential role of traditional practice engagement in developing greater cultural connectedness and decreasing effects of overt PD and RMA experienced in this population.

This study has several limitations. First, the sample was from California and reported high levels of engagement in traditional practices, likely due to our recruitment within various AI/AN clinics. Thus, results are not generalizable to all urban areas in the USA. Second, although recognized as a culturally relevant measure for overt PD and RMA, the short version of the Micoaggressions Distress Scale, to our knowledge, has not been fully evaluated psychometrically. Third, our mental health measure [54] is limited as it only included five questions. Thus, we may not have fully captured urban AI/AN adolescents' mental health symptoms. In addition, although used widely [69], our measure of physical health only had one question and may therefore not have captured physical health with sufficient sensitivity. Furthermore, adolescents in this study may have minimized their physical health problems because serious, chronic health conditions generally do not emerge until adulthood. The limited research conducted on self-rated health among adolescents indicates that chronic health conditions generally do not contribute to their assessments of self-rated health [70]. Despite limitations, results provide important information on the role of overt PD and RMA among an understudied group in the USA.

## Conclusions

Although most urban AI/AN adolescents in our California sample reported experiencing overt PD and RMA, these experiences were generally not associated with their substance use or mental and physical health. We need more longitudinal work to examine associations between overt PD and RMA and various health domains among urban AI/AN adolescents to better understand the role of overt PD and RMA in this population. Future work is also needed that considers AI/AN cultural identity and participation in traditional practices in the

context of urban environments, community attachment, and historical trauma loss to more fully contextualize our understanding of the role of overt PD and RMA on health behaviors among this population.

**Funding** Work on this article was supported by a grant from the National Institute of Alcohol Abuse and Alcoholism R01AA022066 to Drs. D'Amico and Dickerson, with co-funding from the National Institute on Drug Abuse.

## Compliance with Ethical Standards

The study protocol was approved by the institution's Internal Review Board.

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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